

Thank you, Yasmine, Arthur and all of you for this opportunity to provoke you.

I reflect, here, on a storyline—the story that mathematics is (or should be) done objectively, and the corollary that disavows subjectivity.

My focus on storylines stems from my work with Beth Herbel-Eisenmann and others using and theorizing positioning.

- people position each other
- people enact positions within storylines
- storylines are described as known stories.
- In this way, .... storylines are the social structures available for making sense of interaction, ... and positioning is the allocation of roles within these structures.
  - Both carry politics:
    - storylines are the structures of power, and
    - positioning is the allocation of power within a structure.
  - Research that focuses on storylines addresses the fundamental structures underneath interactions.

## **SUBJECTIVITY (0:48)**

My home political activism has led me to reflect on the importance of subjectivity for understanding mathematics as a social force.

- In a paper in FLM in 2022, I drew on this context along with experiences of teaching mathematics to argue that, to understand mathematics deeply, people need to study the mathematics that operates on them.
- I have since referred to this as *diamathematics*—the mathematics that works in and through us.

- Most recently, I found language in the writing of Gabriel Marcel to distinguish between this diamathematics and the mathematics typically done in schools.

Marcel's distinction between mystery and problem centres on the role of the subject in action, but he wasn't writing about mathematics.

- If I work on a situation in which I am not implicated by the results of my choices, I am working on a *problem*.
- If I am implicated, it is a *mystery*.

I see the math taught in schools as exclusively in the realm of *problem*:

- The math *taught* in schools obsesses with mathematics removed from the direct experience of the students.
- The math *done on* students in schools is different, for example quantified assessment.
  - The students are subject to this mathematics. Their lives are impacted by the mathematical structures and calculations.
- Why isn't this real math discussed in math classes?
  - Students and teachers could work on the justification of weightings, the way averages are calculated, the use of linear scales, etcetera.
  - I suggest that the students' highly implicated positioning in the discussion would help them learn how mathematics is used for political purposes, and they would also have high motivation to understand the mathematical procedures and processes at play.
- In my current research, I have had some conversation with students about mathematical structures at work on them.
  - You are welcome to ask me about that sometime.

## THE FIELD OF MATHEMATICS EDUCATION (2:57)

But I want to focus today on subjectivity in the field of mathematics education.

- This is provoked by recent feedback we have received as editors of *Educational Studies in Mathematics*—ESM.
- While there has been development of socio-political research in the field, we have not received explicit complaints about these papers in ESM until papers part of the new special issue on “Race, racism, and racialization in mathematics education” started appearing in online first.
- While there are several viable explanations for the timing of the complaints, one explanation relates to subjectivity.
- As described by Francesco Beccuti and his colleagues, there are prevalent characterizations of mathematics that are sources of identity for mathematics teachers. I sense that most of these characterizations are present among mathematics education researchers too. Two of them focus on the power of mathematics:
  - “Mathematics is useful in everyday life” and
  - “Mathematics is a tool of science”.
- While people in our field talk about mathematics being powerful, many seem embarrassed or angry when reminded how the power is used against people they care about—when people are subject to mathematics.
  - For example, Jihad Alshwaikh’s article in that special issue was published in August last year.
  - He described how mathematics and an Israeli mathematician worked to restrict people’s food supply to control the people in the Gaza Strip.

- This mathematics feels different than school math because it subjects people.
  - It is painful to feel associated with a discipline that is used to discipline a racialized group in this way. (4:44)
- The expressions of concern mostly claimed to be interested in what counts as mathematics education research—they said they were not upset about the politics of Jihad’s concerns.
  - In an editorial addressing the concerns, we said, “By publishing articles that cover the full range of the field, we hope to reflect the ever-broadening views on the identity of the field.”
  - We asked: What is the core of the field?
    - I think the people with concerns about socio-political work in our field assume that objective mathematics is the core and that political mathematics is on the boundary, or out of scope.
    - But I think in reply: If mathematics is powerful, then we should expect it to do powerful things—good and bad.
    - Mathematics that affects people might rather be seen as the core—math that makes some people subject to others.

Nevertheless, feelings of identity are not easily argued.

- The point is that many people who have leadership roles in the formation of mathematics education contexts have the sense that subjectivity should not be part of the mathematics taught in school.
  - These people include scholars in our field and mathematics teachers such as the ones analyzed by Francesco and his colleagues.
  - These people are saying that mathematics should not be used to address real socio-political challenges.

- Another one of the characterizations of mathematics distilled by Francesco and his colleagues is this: “Mathematics is a refuge from worldly preoccupations.”
  - But we who do socio-political work in our field do not see math as a refuge from the world. We see math deeply implicated in the world.
  - I have read papers that identify a political turn in our field, and they usually cite Rochelle Gutiérrez.
    - But she described a split, rather than a turn.

### **AVAILABLE POSITIONING (6:54)**

Now I think of the subject positions available to the people within the storylines that disavow subjectivity in mathematics.

- If the subjectivity of mathematics is excluded from the experience of mathematics students, they construct a mathematics that operates only in apolitical contexts.
- I fear, and see, in personal experience, that most citizens are not equipped to recognize mathematics at work on them—for example, in structures of democracy, in assessments of their work or studies, in the foregrounding of money in decision making, and in the presentation of data described as facts.
- Of course, some people are able to make the turn away from this storyline, and they can see the way mathematics and mathematics education is political...
  - but the weight of the people unable to make the turn dominates.

### **I HAVE SOME QUESTIONS FOR US. (7:51)**

I have some questions for us.

First, what storylines could replace the ones that disavow subjectivity? (I suggest trying to say them without specialist language.) Here are some with different meanings:

1. The math people choose to do is impacted by their background experiences and their foregrounds (their imaginaries).
2. The way they do that math is similarly impacted.
3. Our access to resources and pathways are regulated by math done by others.
4. People who do math need to feel the weight of their decisions.

And I have questions about our field:

- To help us feel the weight, let me ask first if you want your children or grandchildren to be good at objectivity-focused math?
  - (BTW, Marcel writes about the dangers of the *spirit of abstraction* too.)
- What should we do to promote storylines that embrace subjectivity in mathematics?
  - Here are some thoughts to start our reflection on this question:
  - As an editor, I read a lot of reviews in peer review processes. I notice that people who do socio-political work are exceptionally hard on each other.
    - Why is that?
    - Can we soften up to smooth the path to publication?
    - How do we do that?
    - What are the implications?
- And, should we question the validity of the work that disavows subjectivity? Like others question our work?

- In other words, is there a place for their work?
- Finally, because our work is more situated, it is relatively hard to see international applicability of any one claim.
  - What kinds of larger ideas or claims can we make that are at the heart of our work?
    - I think these should be repeated often—in the field and in public discourses.
    - That's how storylines take root.
      - We cannot force a storyline.