

Poetry and mathematics in relation

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We are critical mathematics educators interested in how different ideologies about mathematics and mathematics education have wider effects in the social and ecological worlds that we live in. In this presentation, we consider how poetry can contribute to this project, based on some of our recent writing. The mathematics education literature does include some writing about poetry, as a metaphor for teaching mathematics (Taylor, 1980), or about poetic linguistic patterns in students' mathematical talk (Staats, 2008), to give two examples. Our goal in this paper, however, is to consider how poetry can help us to better understand relational aspects of mathematics, prompted by the kinds of responses that poetry can provoke.

Critical mathematics, particularly as represented by the work of Skovsmose (1994), has argued that mathematics has a “formatting” role in society. That is, the language game of mathematics embeds particular logics and assumptions, often through technology, into society and has real effects. O’Neil (2017), for example, examines how human-designed mathematical systems produce structural inequality in relation to policing, health, insurance or advertising. In our own work, we have explored how mathematics shapes discourses related to climate change, environmental sustainability, obesity, or social justice. We think about these kinds of issues in terms of the kinds of relations that mathematics makes visible or obscures. Mathematics or mathematics-informed discourses may, for example, through mathematical modelling, construct the Earth’s climate as a controllable system, and thus a relation in which humans control the Earth. Or mathematical discourses may construct some forms of mathematics as universal and a relation of dominance between people who have access to these forms and those who do not. We have both written about the problematic way in which such relations are implicit and uninterrogated.

In this presentation, we reflect on how poetry can highlight the taken-for-granted relations that mathematics constructs. Poetry offers a language game that contrasts with the language game of mathematics or the language of mathematics education and that evokes personal, emotional responses. We each present one way that we have drawn on poetry in our attempts to think about the relations that mathematics makes invisible.

RB: In recent writing about wolf culling, I have woven responses to a poem about a wolf with analysis of the mathematical discourses apparent in scientific or political texts (Barwell, forthcoming). Mathematical discourses render wolves as anonymous variables in models and graphs, which feed into broader ideologies in which wolf populations can and should be ‘managed’ in ways that are driven by human needs and desires, such as in relation to agriculture, hunting or conservation. The poem, entitled *Wolfwatching*, by Ted Hughes, is, among other things, an observation of a wolf in a zoo. The poem evokes a different kind of relation from that engendered by mathematical models; it highlights the individuality and dignity of the wolf and thus provides a contrast to the mathematically produced relation between humans and wolves. The poem highlights the being of wolves, as well as the relation between humans and wolves through the act of wolfwatching. Set against the discourses of wolf management, the poem allows us to see how mathematics obscures these relations, rendering wolves collective and anonymous, and also how

this relation is obscured, due to the discourse of mathematics as a direct description of the world, rather than as a form of watching.

YA: In my writing, I have drawn from the philosophical standpoint of Rumi, written in the form of poetry (Abtahi, 2021). I reflected on a short poem that portrays a construct of life as *beings-in-relation*. Rumi relates living to making circles using a drafting compass. To live – as effective as a circle that is drawn by compass – one needs to have a leg rooted in personal experiences and reflections and a leg that moves and makes relations with humans, plants or animals that one is in relation with. It is in this understanding of self-in-relations that I conceptualised the ethical issues that arise when teaching the dominant mathematics in a Canadian Indigenous context (Abtahi, 2021). I explain how the types of mathematical knowledges that I taught ignored my students as selves-in-relations. Neither the knowledges of mathematical concepts, nor the pedagogy of teaching and learning of these concepts was attuned to the two metaphorical legs of the students, rooted and moving in relations valued in Canadian Indigenous communities. This understanding of selves-in-relations highlights that unless we can imagine the world from the point of view of others – people and things whose experiences and ways of living that may be very different from our own – we are likely to act in ways that are harmful to these others' individual or communal well-being.

We reflect on these two examples to discuss what prompted us to draw on poetry in our writing, as well as how this poetry brought into relation different dimensions of mathematical and non-mathematical experience. In both cases, poetry led us to see and to feel relations with Others, that are missing in mathematics. In both examples, unless we imagine the others as selves-in-relation, our actions, no matter how mathematically correct, may be harmful to their individual or communal well-being. The language game of poetry, we suggest, helps to make salient this important idea.

References

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