

TOWARD A RICHNESS OF BEING IN MATHEMATICS EDUCATION

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Following Feyerabend, we tend to overlook the complex and profound nature of human existence. I explore how his philosophy implies, for mathematics education, engaging with the richness of mathematics.

Feyerabend and the richness of being

While appreciating Kuhn and Lakatos' insights into the intricacies of science and mathematics, Feyerabend asserts that their focus on rationality overlooks the richness of human existence. In *The Conquest of Abundance* (1999), Feyerabend emphasizes the complexity of human life, including the practice of science and mathematics, cautioning against reductionist tendencies and the pursuit of universal answers, asserting that this oversimplifies reality and limits us. Feyerabend advocates for embracing diversity, pluralism, and highlights the ethical implications of our knowledge quest. He promotes an open-ended, dialogic approach to inquiry, emphasizing the value of creating discussions over establishing and implementing consensuses.

Feyerabend and mathematics education

Feyerabend's ideas have been discussed in mathematics education (e.g. Geelan 2001, Welch 2015), but a sustained examination of his work is yet to be done in regard to his critique of rigid and one-size-fits-all approaches to teaching and learning mathematics. In this theoretical poster, I discuss some of the issues related to the appreciation of a "richness of being" in mathematics education. I examine the notion of *creating and seizing mathematical opportunities* as opposed to that of teaching for consensual curriculum (standards) and learning outcomes. I thereby suggest focusing on *activity* over mathematical knowledge or understanding. This, I contend, requires thinking in terms of *mathematicising* instead of ascribing something as being mathematics (or not), and it leads to the rejection of the notion of mathematical expertise in favour of what I call *familiarity*.

This profoundly dynamical approach supports the project to rethink mathematics education, in terms of a field aimed at offering a great *variety of mathematical experiences* (as opposed to a global uniformization). In a nutshell, I argue that it is highly problematic to look at/hope for "what works" and what could be "the best way(s)" to teach mathematics. Instead, I ask for approaches that open possibilities and create conversations, rather than attempt to provide answers that interrupt dialogues, and suggest nourishing mathematics teachers' personal relation to mathematics. These are practical ways to realize Feyerabend's vision of encouraging teachers and students to explore and appreciate the richness and diversity of mathematical ideas and history.

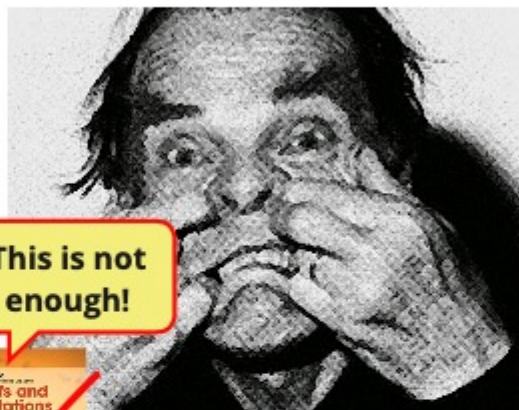
References

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- Welch, A. (2015). Evidence-Based Policy: Epistemologically Specious, Ideologically Unsound. In: Proctor, H., Brownlee, P., Freebody, P. (eds) *Controversies in Education. Policy Implications of Research in Education, Vol. 3*. Springer, Cham.

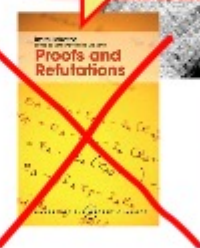
Toward a Richness of Being in Mathematics Education

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Feyerabend asserts that their focus on rationality overlooks the richness of human existence



This is not enough!



Caution against **reductionist tendencies and the pursuit of universal answers** regarding human life and experiences, including the practice of science and mathematics

Advocates **embracing diversity, pluralism**, promotes an open-ended, **dialogic approach to inquiry**, emphasizing the value of **discussions over consensus**

Highlights the **ethical implications** of our knowledge quest.

In science, we ignore (even eliminate!) idiosyncrasies in hope for global and secured explanations, models, etc.

"Progress" toward universality leads to unethical scientific management?

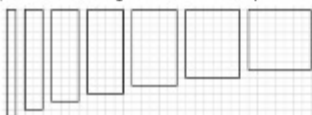
Geelan, 2001:

Feyerabend's 'anything goes' epistemological perspective has much to offer in supporting educational research...

...[which] is rich in alternative descriptions, competing orientations, incommensurable perspectives...

...[to develop] an ever richer blend of approaches to understanding the rich, complex life that occurs wherever people are learning together.

Seven sheets of paper, each presenting a rectangle the students drew using the same piece of string, are aligned up on the board as the result of a sorting activity (as represented in figure 1). Rachel questions on the number of squares in each rectangle (their area) before focusing attention on the perimeters:



Rachel: Tom, what was the same about all these rectangles? They all have...

Tom: These two ones...

Rachel: Oh, but we are talking about all these rectangles, all of them. They all have what?

Tom: They all... have... I don't know

Luc: Hum.. They are all rectangles because they are tinier than squares, they are longer and skinnier

Rachel: What else is the same about all of them? Melinda?

Melinda: They all have 4 edges and 4 vertices

Rachel: They all have 4 edges or 4 sides, and they all have 4 vertices or 4 corners. And here is something else. They all use the same ... did we use different loops of string? Did you use a different loop of string for each rectangle?

Students: Noooo!

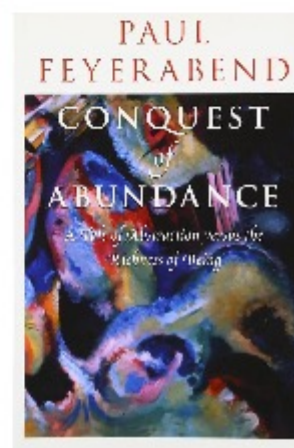
Rachel: They were all made with the... same piece of string! Yet, they made very different rectangles from the same piece of string.

Don't we often tend to debate on what is **"really"** going on? Assess what students or teachers supposedly **"know"** or **"learn"**? Focus on what **"should"** be going on or not? Look for the **"right"** or the **"best"** way to teach this or that?

What about research in mathematics education?



Neyland very well made the ethical argument against scientific management of teaching (math)



An Ethical Critique of Technocratic Mathematics Education: 'Towards an Ethical Philosophy of Mathematics Education'

by Jim Neyland

PhD Thesis

2001
Victoria University of Wellington
New Zealand

Interesting distinction here : Neyland values mastery

How open is the question of "What is mathematics"?

Creating and seizing mathematical opportunities

As opposed to that of teaching for consensual curriculum (standards) and learning outcomes

Focusing on doing mathematics, mathematizing

As opposed to organize around mathematical knowledge or understanding

Thinking about culturing and growing familiarity

As opposed to developing skills and expertise

Offering a great variety of mathematical experiences (as opposed to a global uniformization)



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