

Commentary on the Chapter by Paul Dowling and Jeremy Burke, “Shall We Do Politics or Learn Some Maths Today? Representing and Interrogating Social Inequality”

Mathematics Educators as Political Activists: Dissonance, Resonance, or Critical

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To start on a personal note, I consider the opportunity to respond to the chapter by Dowling and Burke to be an honour and privilege indeed. In the past I have always found Dowling and his colleagues’ writings to be a challenge to many of our widely accepted views and practices in mathematics education—even for those mathematics educators, may I add, writing from sociopolitical or sociocultural perspectives. Reading this chapter at this particular time was opportune for me. It spoke directly to findings of a recent research project I have participated in as well as some writing I am currently undertaking on the Australian national curriculum. Reading this chapter, I found myself agreeing with the majority of arguments developed, with the exception of one (minor?) point I will address in the last paragraph below. Here I will restrict my comments to two points that the chapter raised for me: the construction of the relationship between mathematics and the world (in particular the social world), and the corresponding tasks for mathematics education (in particular with respect to the agenda of social justice).

1 Mathematics and the World

The chapter by Downing and Burke has identified four domains of action in mathematics education that are useful to describe the relationship of mathematics to the social world which they call “esoteric” (when mathematical language is used to refer to mathematical content; e.g. mathematical proofs); “descriptive” (when mathematical language is used to refer to aspects of the world; e.g. modelling); “expressive” (when everyday language is used to refer to mathematics; e.g. use of the metaphor

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I borrow the subtitle from a discussion by Skovsmose and Valero (2001) on the relationship of mathematics education and democracy.

of balance to represent an equation); and finally, “public domain” (when everyday language is used to describe the world; e.g., media reporting on some research findings).

It seems to me that these are very useful analytic tools to describe the different practices of relating institutionalised mathematics in schools as well as its use in society. Here I like to argue that their implication for practice does depend on the view one takes of what we take as “mathematics” in mathematics education. In this context, I can identify two alternative positions one can take (perhaps there are others). On one hand, the mathematics in mathematics education can refer to refer to a *body of knowledge* (without neglecting its cultural and historical roots) that is (re)presented in formal curricula, textbooks and examinations. From this view, the task of mathematics education is ultimately to develop this body of knowledge among its students. This is what Downing and Burke call the domain of the “esoteric” practices. From this particular perspective, the other three domains of action are legitimated as far as their contribution to the esoteric domain. This view is consistent with “generally privileging the mathematical discourse of the esoteric domain” (p. 9).

On the other hand, an alternative understanding of the mathematics in mathematics education may be constructed as an activity of a reading of the world. Mathematics in this view is a *process* rather than a body of knowledge. However, as Skovsmose reminds us, this way of reading the world has also the function of formatting the world (Skovsmose 1994). Here, the task of mathematics education is seen as a development of a capacity to read the world and, perhaps now or in the future, of writing the world. According to this understanding of mathematics, the “esoteric” practices lose their privilege (albeit, unfortunately, not necessarily in formal curricula and regimes of testing!). One can go further and posit the facilitation of participation in “public domain” action as the ultimate value of mathematics education.

Arguably, analytic tools are useful to describe a phenomenon and understand its complexity. However, they may not be sufficient to inform practice that essentially involves questions of values. The challenge that this presents to mathematics education (which I take in this context in its widest possible meaning) is to engage in a continued discussion from different perspectives (including sociology, the discipline of mathematics, politics, general education and philosophy) towards normative decision making at all levels of action. This discussion would lead to the very purpose(s) of mathematics education itself, which Biesta (2010) reminds us is noticeably absent from current educational discourse.

2 Mathematics Education and Social Justice

The above alternative understandings of mathematics and of mathematics education also have implications for the conceptualisation of the role of social justice in mathematics education. According to the first view of mathematics as a body of knowledge, social justice concerns are arbitrary and optional extras in mathematics

education. At worst, they may be seen as contrary to the purposes of mathematics education as we will see below; or they may have heuristic value to motivate students to see a value for, and meaning of, mathematical knowledge; or at best, as important in their own right but for non-mathematical reasons. However, from the alternative perspective that constructs mathematics as a particular activity of a reading the world, social justice is intrinsically related to mathematics education since social injustice is a significant feature of the social world.

Certainly Dowling and Burke are right in the analysis they provide about the problem of using social justice in mathematics education. Such a reading of the world necessarily is subjected to the simplification of the phenomenon being read and the simplification of the mathematics used to read it (based on the level of knowledge available to the student). Further, any reading of the world—or writing the world for that matter—is subject to certain assumptions about the lens through which we look at the world, and about which aspects of the world it makes visible. Most crucially, these limitations are subject to questions of values, both personal and communal. Hence, a prerequisite for a productive reading of the world through mathematics is the need to be aware of the limitations and assumptions one makes about the mathematics, the world, and the viewer. Perhaps this makes reading the world through mathematics both necessary yet impossible. The challenge is to find a way to chart a course between the two traps of inaction that leads to failure to achieve what we must, and zealous uncritical action that leads to frustration of what we are proposing to do in the first place.

Finally, the chapter by Dowling and Burke has spoken to me with respect to two teachers who were involved in a recent project we called Socially Responsible Mathematics Education (Atweh and Brady 2009), designed in line with the literature on critical mathematics education (Skovsmose 1994) and social justice pedagogy (Gutstein 2006). We based the conceptualisation of this project on ethics and, in particular, the concept of responsibility. The project aimed to assist teachers to develop and trial middle school activities to teach mathematics through real world activities that also aimed at developing understanding of the social world. We, as project designers, had a strong commitment to social justice; but this commitment varied with the various participating teachers. Reading the chapter by Dowling and Burke reminded me of the experiences of two teachers in the project who we will call T₁ and T₂ (the reason behind this particular reference will be clear below¹). Both teachers were very experienced in teaching mathematics, and both enjoyed great rapport with their students. They both were acknowledged as leaders in mathematics education in their respective schools.

T₁ was from a primary school teaching background and had transferred to middle school teaching when he moved into a small town. One of the passions of his life was a dedication to industrial matters related to the conditions of work of teachers, and a strong commitment to social justice. He was elated at the commencement

¹It so happened that the two teachers shared the first name. In the common, apparently irreverent but affectionate, Australian humour, the two teachers were referred to in the project as Name 1 and Name 2.

of the project which he saw as an opportunity to put into practice what he always wanted to do. T_2 was a geologist by training and had a strong commitment to the development mathematical knowledge and the achievement of his students that might open doors for their post school aspirations. All through the project T_2 expressed great concerns about introducing questions of values into his teaching, in fear of leading into student indoctrination. He felt comfortable developing activities that incorporated the physical world with some implication for the social world, as long as he did not feel he had to deal with questions of values.

T_2 developed a well conceived activity for dealing with the concept of trigonometric functions using data from cyclones that had hit his town a few years previously. Through these data, students were able to use the spreadsheets to draw and add and subtract trigonometric functions in ways that made sense to them. As a result of the project, the students were able to make a presentation to the local council chief engineer about the dangers to their town from future cyclones. In spite of the great learning that had undoubtedly arisen in this project for both the teacher and his students, social justice was not an issue that was raised. In contrast, T_1 developed activities with very strong social justice links, such as comparing the food that different countries around the world consumed, and raised significant questions about fairness and the relationship between amount of consumption and happiness. Two notable features of the three activities that he developed were the use of very traditional teaching methods of completing worksheets and what can be described as low order thinking demands. Using the categories developed by Dowling and Burke, while the activities developed by T_2 privileged the “esoteric” action, those developed by T_1 privileged the “descriptive” domain.

The questions that this chapter has left me with stem from the very last sentence in which the authors conclude that “we can be both mathematics educators and political activists, just not at the same time”. The two teachers T_1 and T_2 have dealt with the potential tension between esoteric and descriptive actions in different ways; each has sacrificed one for the sake of the other based on their own personal beliefs about useful mathematics and their commitment to social justice. It is not clear, however, that it is inherently impossible to be involved in action that develops both esoteric and descriptive mathematics. It is true that teachers face different demands on their time and action. T_1 may have seen his primary role as a mathematics teacher, albeit in the traditional understanding. T_2 may have constructed his primary role as a political activist. Perhaps T_3 may see his/her primary role as nurturer of attitude towards mathematics. T_4 may focus on the understanding of mathematics using everyday language. T_5 may be concerned with maintaining the peace in his/her disruptive and violent class. T_6 may aim for students to achieve the highest scores on national examinations because school funding depends on it. Can a teacher’s identity be seen as the sum of a series, while from time to time focusing on one aspect more than others, rather than serial identities to meet different demands? The challenge to mathematics education is to investigate what conditions can support teachers to be productive agents in mathematics education to enable them to meet the demands of their students. Under the right conditions, I would still like to hope that one can be a good mathematics teacher and a political activist at the same time.

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