

Ethnomathematics
Part 2: Debates and Controversies
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There is considerable debate within the ethnomathematical field itself, and between ethnomathematicians and mathematicians and mathematics educators. Two of the issues were raised in Part 1, namely, the inherent problems of meaning in defining “mathematics” and “culture,” and the question of whether, or to what extent, what is being done or observed in diverse cultures is a mathematisation or a re-mathematisation. Another concern is that “ethnomathematics is frequently treated as pedagogical revisionism.” Critics ask, “*What would an ethnomathematics curriculum look like and where would formal academic mathematics fit in such a curriculum?*” and conclude that “ethnomathematics runs the risk of attempting to equalize everything down to the poverty of the ‘builders and well-diggers and shack-raisers in the slums,’” and that “formal, academic mathematics would not exist in a curriculum informed by ethnomathematics.”

This is refuted by EM’s proponents who state emphatically that EM’s goal is **not** the displacement of traditional formalised mathematics. However, what EM does do is challenge us to reflect on our practices as mathematics educators, to reflect on our discipline, and to be aware of how it has contributed and continues to contribute to cultures of “intolerance, discrimination, inequity, bigotry, and hatred.” The pedagogical possibility of an ethnomathematically informed curriculum is one in which the correspondences between mathematical concepts and practices that originate in the learner’s culture or are already familiar to the learner, and those of formal, symbolic, academic mathematics are rendered more visible and robust. In this way the power, beauty, and utility of mathematical thought in both traditions might be better understood and appreciated. Given that education, in general, and mathematics and science education, in particular, are steeped in socio-political struggles, this debate on the pedagogical position that EM can and should take will probably not be resolved soon and is one each society must confront.

There is also a concern that, despite the noble aim of EM in attempting to provide equity for all students, it cannot guarantee any fundamental change in terms of equity and thus the status quo remains the same. However, we might ask: To what extent does traditional mathematics “guarantee” changes in terms of equity? The main point of many in the ethnomathematical field seems to be that traditional mathematics, as it is practised, ignores important and essential human needs and indeed continues to serve as a de-historicising, de-humanising, colonising agent. Arguments about guarantees of equity in this form serve as a red herring to deeper structural issues in education and society. Neither EM nor formal academic mathematics can *guarantee* changes in equity. What can be achieved by EM is an appreciation of what is mathematical about other people’s (and one’s own) practices.

Another fundamental issue in the debate is whether EM empowers or disempowers students. Evidence suggests that students who have been taught using an ethnomathematical curriculum perform better on traditional mathematics achievement tests, and that mathematics becomes more meaningful to learners when familiar contexts and practices are included. The deeper question is whether or not EM denies students access to the “cultures of power” that they will

need to compete with their peers who experience induction into the more traditional and formalised cultural reward systems. This position belittles the EM project and is rendered less tenable by studies such as that of the kolam tradition referred to previously. Additional studies are needed to strengthen (or refute) the claim that EM does allow students to gain access to the cultures of power needed for success in a global society.

The question, “To what extent does formal academic mathematics and its pedagogy disempower students?” should also be asked. Many persons who study mathematics in school seldom use branches of mathematics such as trigonometry and calculus professionally, and very often experience failure, disappointment, and disabling negative affect during their school years. However, this learning is traditionally regarded as a benefit in and of itself, much like exposure to art. However this is not sufficient grounds to claim a privileged position for formal academic mathematics, and it is certainly not a defensible ethical position on which to construct a curriculum.

The final issue is one of presentation. There is a concern that some EM projects, by singling out minority students, may increase their alienation or sense of “otherness” from formal mathematics, or may present aspects of a culture in a trivialised or romantic fashion. There is also a concern that an ethnomathematical curriculum might be merely an “excursion into geometrical aesthetics.” However, given the diversity of EM projects this seems unlikely.

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