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International Perspectives on Social Justice in Mathematics Education

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Book Review

Bharath Sriraman (ed): International perspectives on social justice in mathematics education. The Montana Mathematics Enthusiast 2007 Monograph 1

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Immaculate Kizito Namukasa

International perspectives on social justice in mathematics education (henceforth *the monograph*) is edited by Brarath Sriraman and comprises 14 essays about critical mathematics education. The foreword is by Ubiratan D'Ambrosio, whose work on ethnomathematics in particular and on democratic and critical mathematics education in general has re-conceptualized the mathematics education field. D'Ambrosio observes that ''social justice allows us not only to know what has been decided about ourselves and society (which is the objective of ''re-productory'' and imitative education), but calls us to participate in decisions about ourselves and society (which is the objective of creative critical education)'' (Foreword). D'Ambrosio considers this monograph to be an astonishing collection of scholarly articles from all over the world, offering perspectives of tremendous importance to mathematics educators with an interest in social justice. For this review, I read the monograph together with Michael Apple's work on critical mathematics pedagogies.

In his essay entitled *Mathematics reform through conservative modernization?* Apple (2000a, b) warns that ‘‘the analysis of ‘what is’ has led to a neglect of ‘what might be’’’. Describing the task of critical scholars to be ‘‘politically and conceptually complex’’, he encourages reformers to do both political and practical work that, (a) is local but generalizable; systematic but not Eurocentric nor masculinist, (b) is connected to larger educational, social and ideological movements, (c) differentiates between conspiracy and over determinism, and (d) goes beyond overly broad conclusions to distinguish extent of agency 40 and influence. My evaluation of the monograph bears these 41 criteria in mind to ascertain the extent to which it advances a more democratic and socially just education.

1 Essays about complexity and diversity

The monograph is about issues that arise with complexity and diversity: peace, social justice and democracy. It seeks social justice for marginalized students, including rural, inner-city, indigenous, immigrant, of low social-economic status and non-English-speaking learners. It encompasses topics about early childhood, teacher education, school programs, extra-curricular activities and community education. It puts forward crucial research and practice constructs including statistical empathy, students’ foregrounds and archeological digs of pedagogy.

Sriraman says the book is an effort at collective empowerment to facilitate social justice and equity. In this review I first describe the content of the essays before I evaluate the monograph’s contributions. I classify the articles as theoretical essays, research essays

about a specific region or a specific minority group, and general research essays. In the evaluation, I examine whether the theorists are aware of some of the pitfalls of critical theory and pedagogy: being overly political and too general without offering solutions, assuming conspiracy, ushering in the next oppressor, privileging direct causations and control over individual and collective agency, and being past-oriented.

In the introductory essay, *On the origins of social* 67 *justice: Darwin, Freire, Marx and Vivekananda*, Sriraman 68 examines the fundamental reasons for research and practice 69 in social justice. He gives a broad historical picture of the 70 relation of mathematics education to colonization, internationalization and globalization. Drawing from the work of various theorists, Sriraman calls for education that promotes greater social consciousness. He maintains that such education is appropriate for initiating major shifts in thinking that are needed to challenge inequities.

The second theoretical essay, *Peace, social justice and ethnomathematics*, is by D'Ambrosio, who identifies mathematicians and mathematics educators as a group concerned with two universals that are somewhat conflicting, though they could be seen to be complementary, conflicting, though they could be seen to be complementary, based on: (a) the advancement of the most universal mode of thought—mathematics; and, (b) the advancement of civilization with dignity for all—the most universal problem facing humankind. By elaborating on the program of ethnomathematics D'Ambrosio calls mathematicians and mathematics educators to take responsibility for restoring the dignity of those who have traditionally not performed well at academic mathematics. D'Ambrosio's essay offers a valuable reminder to educators who often forget the broader and global implications of their research and practice interests.

The third theoretical essay, *Undertaking an archeological dig in search of pedagogical relay*, is about methodology. Zevenbergen and Flavel maintain that in mathematics classrooms both mathematics and culture are taught. A classroom can thus be considered an archeological site reflecting the culture being taught. Zevenbergen and Flavel's archeological dig is a method for identifying ''those elements of practice that may contribute to the success (or not) of students, particularly those from back-grounds which are traditionally marginalized'' (p. 63).

The fourth theoretical essay, *How many deaths? Education for statistical empathy*, contains graphics that I found morbid and depressing. Mukhopadhyay and Greer are well aware of this morbidity, but argue that this is the lived experience of some students, even in countries that are not war torn. They maintain that mathematics educators may expand what they call *statistical empathy* ''through imaginative reframing of numerical data; through ingenuity in the design of statistical diagrams and schematics representations; and through simulations'' in ways similar to what Florence Nightingale did and to what some artists are doing (p. 133).

In addition to the four theoretical essays, there are ten research essays. Four of these are about specific minority groups, two are articles about a specific region and the remaining four are general research essays. Many of the essays are about indigenous people.

The first paper on indigenous people is *Some thoughts on passive resistance to learning*. Shockey and Gustafson hypothesize that passive resistance to learning evidenced among indigenous students in the United States might emerge from the fact

that new mathematical knowledge does not connect to indigenous ways of looking at quantity and measurement. In another essay, ‘‘*Before you divide you have to add’’ Interviewing Indian students’ foregrounds,* Skovsmose, Alro and Valero focus on Brazilian Indian students, specifically their perceived future possibilities in life—their foregrounds. The essay introduces a novel conceptualization of indigenous people as people who experience a position of conflicting priorities and possibilities in ways similar to the immigrant experiences of people at the borderline of more than one culture.

Home, school and community partnerships in numeracy education: an Australian perspective is by Goos, Lowrie and Jolly. It outlines partnerships that arise out of necessity in remote and disadvantaged areas. Two case studies are examined: distance education for young children and mobile pre-school in remote Northern Australian Territory. Goos et al maintain that there is a potential for these home and community partnerships to blur barriers between teachers, learners and parents, which they maintain is a positive effect.

In an essay regarding an integrative school program for indigenous students in Israel, Amit, Fried and Abu-Naja report that the gifted students’ club actually served social justice purposes for Bedouin indigenous minority students. Their report, *The mathematics club for excellent students as common ground for Bedouin and other Israeli youth,* illustrates how this program, which integrates gifted indigenous students with mainstream gifted students, pro motes mathematical thinking in students and social justice in the community.

The monograph contains two essays about Iceland. *Fundamental reasons for mathematics education in Iceland* by Bjarnadottir is a historical analysis on the presence and absence of mathematics education in Iceland through the centuries. *Iceland and rural/urban girls—PISA 2003 examined from an emancipatory viewpoint,* by Steinthorsdottir and Sriraman, is about the uniqueness of mathematics education in Iceland. Bjarnadottir illustrates how mathematics education in Iceland is historically related to commerce, religion, colonialism and multilateral organizations. Iceland is the only country in PISA 2003 that had statistically significant gender differences in achievement in favor of females. Steinthorsdottir and Sriraman raise central questions about this gender gap, some of which relate to reading comprehension as it correlates to school mathematics. They raise further questions about the disappearing or reversed differences between girls and boys.

In *Issues of status and values in the professional development of mathematics teachers,* Knott observes that in non-traditional, reform mathematics classes, exclusionary behavior becomes pronounced. Teachers therefore need to be equipped to recognize the existence of low-status students in their classrooms. The authors report on research with K-12 teachers in which they model, discuss and practice status-sensitive behaviors with teachers.

Like the paper by Goos et al., Gutstein's essay, Connecting community, critical and classical knowledge in teaching mathematics for social justice, is about community partnership and knowledge. Whereas Goos et al. study Australian indigenous students, Gutstein studies African– American students. He suggests that connecting community, critical and classical mathematics knowledge—he calls them the three Cs—is part of the

pedagogical content knowledge (PCK) teachers need. Gutstein views ‘‘mathematics as a vehicle for social change’’ (p. 110) and offers an example of how to engage students in projects that provide ‘‘them a chance in school to examine their own lived experience, deepen their socio-political awareness, and learn mathematics’’ (p. 115).

Christiansen’s work is comparative. It identifies some tensions in mathematics education for democracy, which become evident through comparative practice. She uses narratives from Denmark, South Africa and the United States to illustrate how democratic education is often ethnocentric, even if it has a critical intention.

In Mathematical marginalization and meritocracy: inequity in an English classroom, Noyes explores how school mathematics contributes to social stratification in English classrooms in the UK. He calls for reconsideration of the social construction of ability and cautions about the potential inequity of ability grouping between schools, between groups and within groups.

2 Evaluation: old and emerging marginalization

Too often researchers get caught up in their research programs without stopping to reflect on the implications of their research and reform recommendations. D’Ambrosio critiques that ‘‘once they move into their practice, as mathematicians and mathematics educators, something like a barrier appears and obfuscates their concern. They continue to do what they ever did. For mathematicians, priority is to publish their research in the best journals and for math educators, to propose, theorize and publish methods’’ (p. 26). This monograph challenges researchers and educators to think about the role and responsibility of research and practice work in the inequities that pervade our society. It

is indeed a challenge for mainstream mathematics education researchers to continuously examine the connections between their own areas of study and the larger relations of unequal power (Apple 2000a, b), especially when their focus is on the details of mathematics and mathematics learning. For Gates (2000), the ‘‘root cause of failure in mathematics classrooms is not fundamentally the teaching sequence, misconception… and other constructivist concerns [although these are key to learning], but it is poverty, social disadvantage, low wages, poor housing, social exclusion, limited opportunities’’ (brackets added) (p. 9). In my view, researchers—whether mainstream or critical theorists—ought to have multiple foci, global and local, creative yet critical, theoretical yet applicable. In a global context, we who focus on basic classroom research ought to further enlarge the scope of our research to investigate the implications of our efforts in the face of forces such as the internationalization, decentralization, privatization, marketization and globalization of education.

The monograph is about evoking major shifts in thinking needed to challenge inequities not only in the minds of teachers, but also for students at the classroom—inner—level and for mathematicians and educators at the university and colleges level. It is about collective and individual sensitivities that are needed in education and in society in general. Apple (2000b) asserts that ‘‘the discourse of critical pedagogy in its Freirean and feminist forms has increasingly been influenced by postmodern theories. … [This] has opened up the discourse to the criticism that it has become too theoretical, abstract, esoteric, and out of touch with the conflicts and struggles that teachers, students, and activists act on’’ (p. 253). I see no reason why a *psychoanalytic* research report about the responses to mathematics of students from families of low socio-

economic standing, for example, should be devoid of any immediate recommendations for an affected teacher or student to act on.

Many articles in the monograph give practical examples of how mathematics practioners and educators can take on their ethical responsibility towards social justice. In this way the monograph is not just political or critical. Gutstein's essay, for instance, reports on a school project for African–American students who were facing exclusion from a predominantly Latina/o public high school located in a community challenged by ambivalent relationships.

Reform mathematics education raises new social justice issues. Unfortunately, such issues most often lie in the blind spots of researchers and educators who propose and promote reform. Critical mathematics pedagogies such as small group work, investigation projects, use of shared materials and incorporating computer technology require different classroom routines and competences, different home settings, as well as different study skills from those required in traditional mathematics pedagogies. Doerr and Chandler-Olcott (2005) note that reform based curricula place new reading and writing demands on both teachers and students. These demands affect marginalized students adversely because of their lack of cultural capital.

Christiansen's work illustrates instances where routines and competences needed for socially just mathematics have been conceptualized, but they are ethnocentric and so raise other critical minority issues. Knott's essay is an interesting example of educators working with teachers on skills and competences required to deal with issues of status and values that arise with small group classroom activities With many of the current

educational policies and educational reforms, such as that of grouping by ability, some marginalized groups such as non-English speaking and low socio-economic status students are becoming even more disadvantaged or, should we say, more visible. It is crucial to have research that addresses new, emerging issues before they become debilitating lived experiences of marginalized students.

Unequal economic, political and cultural power has meant that in addition to the traditional minority groups, new minority groups are emerging. It is social Darwinism at its worst. The monograph addresses some emerging minority issues: minority students such as children of transient workers (Sriraman); and special abilities and needs such as those of resistant mathematics learners (Shockey & Gustafson). The understanding of indigenous students in relation to another marginalized group of students is interesting in regard to finding out what is similar and what is different between marginalized groups. It is a step in ‘‘teasing out what the balance of forces [that affect marginalized students is] … and what is necessary to change it’’ (Apple 2000b).

Today’s students’ lived experiences are diverse. To reflect on the implications of our practice and research efforts we may need to pay attention to students’ lived experiences that are far from imaginable for us and far removed from our own lived experiences. Unfortunately, more students now experience war, gun violence and death on a daily basis. Mukhopadhyay and Greer’s essay, though morbid and depressing, is therefore timely.

During the early days, research on marginalized students focused on one aspect of marginalization, usually gender (Namukasa 2004). For many of today's marginalized students, inopportunity it is a matrix of disadvantages: English dents, inopportunity it is a matrix of disadvantages: English learner, indigenous, of low socio-economic status, in an inner city school or in an isolated reserve school. These disadvantages correlate and interact in minority students and mathematics classrooms in varying and complex ways some of the essays in the monograph deal with individual disadvantages, whereas others deal with multiple disadvantages in intersecting ways. For example, Goos et al. deal with indigenous, non-English speaking and low-status students who are low achievers and live in geographically isolated locations and who are thus inevitably at risk of failing to meet state standards. We also see articles such as Noyes', which attempts to examine the extent of influence by asking which is a stronger correlate of mathematics attainment—social class or gender and ethnicity? Apple(2000a) encourages educators to weigh the relative efficacy of these influences, judging which ones are overly deter mining. It has been problematic to focus on only one form of marginalization, such as class, as is usually the case with Marxist traditions, while other forms, such as race and gender, have been neglected. This has been the case in countries like Brazil (Apple 2000b). In addition to being rich in terms of representing different continents, the monograph could have included more comparative articles and articles that deal with diversity.

Gutstein raises the need to ensure that ''mathematics does not get lost when developing critical knowledge and supporting students' social political consciousness'' in mathematics classrooms (p. 112). In my view this caution is applicable to projects

about critical mathematics education. Essays on critical mathematics education that are devoid of mathematics and its teaching and learning are not helpful. I encourage the reader to keep wondering where the mathematics is as you read critical mathematics education essays in this monograph and elsewhere. Many essays, such as the one by Mukhopadhyay and Greer, contribute to new mathematics, in this case by proposing new statistical diagrams that encourage statistical empathy. Such work offers an alternative to mathematics that perpetuates unequal distribution of power (Namukasa 2004). It demonstrates ‘‘actual successes of critical models of curriculum, teaching, and evaluation in solving real problems in schools and communities’’ (Apple 2000b, p. 252).

As I read the monograph I considered whether it brings new theoretical voices and analyses to the field of critical mathematics and mathematics education. Does the mono graph involve multiple critical pedagogies? Sriraman and D’Ambrosio, in addition to *Darwin, Freire and Marx*, draw from Vivekanda and Pugwash. Skovsmose et al. bring a novel conceptualization of indigenous students in relation to immigrant students. And Zevenbergen and Flavel offer a new methodological analysis—the archeological classroom dig. There could have been more of this, including voices of environmental sustainability. Voices about Africa and China appear to be missing in the international critical mathematics education conversation. Apple (2000b) encourages that discourses of critical pedagogies be ‘‘grounded in the concrete struggles of multiple and identifiable groups’’ (p. 253).

What is missing in the monograph is compensated for by the fact that the monograph offers practical solutions, based on both empirical and theoretical study. It does not just dwell on the past, and it is neither overly theoretical nor esoteric. Its major

strength is that it is in touch with the ever-changing conflicts and struggles faced by teachers and students.

References

Apple, M. W. (2000a). Mathematics reform through conservative modernization? Standards, markets, and inequality in education. In: J. Boaler (Eds.), *Multiple perspectives on mathematics teaching and learning* (pp. 171–200). London: Ablex.

Apple, M. (2000b). Can critical pedagogies interrupt rightist policies? *Educ Theory*, *50*(2), 229–254

Doerr, H. & Chandler-Olcott, K. (2005). *Mathematics and literacy: an interdisciplinary perspective on teaching with reform-based curricula in urban middle schools.* Paper presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Roanoke, 20–23 October 2005

Gates, P. (2000). *Markets, marx, modernity and mathematics education: a response to Michael apple.* Paper presented at the second international mathematics education and society conference, Montechoro, 26–31 March 2000

Namukasa, I. (2004). Globalization and school mathematics. *Interchange*, *35*(2), 209–227