

# Ethical Responsibility and the “What” and “Why” of Mathematics Education in a Global Context<sup>1</sup>

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Discussions at international gatherings of mathematics educators such as ICME necessarily raise questions about the similarities and differences of issues as they apply to various countries and cultures. In this paper, I will discuss some implications for an increasingly globalised world of questions as to the *what* and *why* of Mathematics education raised in Discussion Group 3 during the most recent ICME gathering at Monterrey, Mexico. In particular, I will focus on the implications for curriculum development and cooperation between educators from different countries. While I acknowledge that mathematics education also occurs outside the realm of traditional formal schooling, for space considerations, I will focus on the latter. This paper commences by unpacking the concept of globalisation and illustrating some factors in the discipline that promotes its globalisation. The complexity of issues is then illustrated by presenting different voices from industrialised and less industrialised countries about a global curriculum. Finally, I will argue for increased collaboration between educators from around the world based on ethical responsibility, one towards the other.

## **What is globalisation?**

During the past few decades, mathematics educators have reflected an awareness of the trends of international activities in their discipline. For some, these trends are seen as great opportunities, while others regard them with great caution. Atweh and Clarkson (2001) note that the two terms *globalisation* and *internationalisation* are at times used by different authors to mean the same thing and also different authors have used the same term to mean different things. Perhaps the distinction made by Falk (1993 in Taylor, Rizvi, Lingard & Henry, 1997) which identifies two forms of globalisation processes is useful here. He calls them globalisation “from above and from below”. Globalisation from above is understood as

[t]he collaboration between leading states and the main agents of capital formation. This type of globalisation disseminates a consumerist ethos and draws into its domain transnational business and political elites. (p. 75)

On the other hand, globalisation from below

*[c]onsists of an array of transnational social forces animated by environmental concerns, human rights, hostility to patriarchy and a vision of human community based on the unity of diverse cultures seeking an end to poverty, oppression, humiliation and collective violence. (p. 75)*

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<sup>1</sup> Adapted from Atweh, Clarkson and Nebres (2003) and Atweh (2007).

Atweh, Clarkson and Nebres (2003) used the term "globalisation" to refer to the shrinking world and the increasing awareness of issues and practices that affect the whole globe. Globalisation is not used here, as often it is in public media and political discourse, solely to refer to neoliberal economics of free markets, privatisation, and transnational merger trends in the late modernity. Arguably, that use of the term is what Falk might have called globalisation *from above*. Globalisation also includes the increase of collaborations between grass root movements, increased awareness of the concerns of the least disadvantaged around the globe, and the rise of multiculturalism in most countries. These might fall under the globalisation "from below" as discussed by Falk.

Understood in this way, globalisation is different from *homogenisation* (Henry & Taylor, 1997) for, as we are becoming more aware of, and having more esteem for, our similarities, we are also becoming more aware of, and having more esteem for, our differences. Nor is it *inevitable* and out of control, for the nation state remains retains considerable power to direct and control the patterns of globalisation (Henry, Lingard, Rizvi & Taylor, 1999). Similarly, globalisation is not a *utopia* (Derluguian & Greer, 2000) for it can result in imperialism and exclusion, can lead to increased gaps between the rich and the poor, ecological degradation, not to mention global terrorism. Nor is it a dreadful evil to be opposed by any means, for it can lead to collaboration at the grassroots level to oppose injustice and promote human rights. In short, I do not understand globalisation as either good or evil by itself. This is not to say, however, that it is value-free and beyond ethical considerations. On the contrary, its processes and outcomes should be carefully scrutinised as to the benefits and losses that might arise from them. This aim can only be achieved through deliberate and targeted research, reflection, and debate. Further, as I will argue below, such actions need to be done in collaboration among stakeholders from around the world.

### **Globalisation Factors in Mathematics Education**

Arguably, mathematics education is the most globalised discipline in education. This situation is partly due to its perceived importance for economic and technological development and to the (wrongly) perceived objectivity of the discipline that transcends national and cultural boundaries (Kuku, 1995). This globalised status is reflected by the increasing number of international publications, conferences, research and professional development activities, and most importantly, the convergence of curricula around the world (Oldham, 1989 cited in Clements & Ellerton, 1996). Moreover, these similarities have proven to be rather stable across the years; changes in curriculum in one country or certain region (mainly Anglo-European) are often reflected in other countries within a few years. Note for example, the wide acceptance of the New Mathematics movement in the 1960s, and the more recent wide spread "assessment driven reforms" (Hargreaves, 1989) based on standards and profiles. Similarly, in the area of research in mathematics education, Bishop (1992) argues that similarity is a feature of many research traditions evolving in different countries around the globe. Although research in mathematics education is a relatively recent phenomenon in many countries, research questions, methods, practices and publications are becoming more standardized. Bishop concludes that these similarities have led to difficulties in identifying a national perspective of mathematics education research in any country.

In this context I will address two factors of globalisation in the discipline, the role of international organisations and regimes of international testing, and consider their implications for globalisation of the discipline.

### *Role of International Organisations*

To illustrate the possible and diverse effects of international organisations on the global status of mathematics education, I will discuss the role of ICME and the World Bank. The role of international organisations such as the World Bank in assisting less industrialised countries in the implementation of policies of universal primary education and later for the elimination of illiteracy is undoubtedly a great achievement. According to Jones (1992), the Bank started its educational programs in the early 1960s. In the early 1990s it supported about 90 education programs in 59 countries to the total of US\$8 billion with half from bank loans and half from participating local governments. However, often this assistance comes with strings attached. For example, the Bank has been the major promoter of ideas of connecting education to economic growth and the model of human development as a priority of economic development. Likewise the Bank has been the major promoter of an emphasis on primary education at the expense of secondary and higher education. Structural reforms in the recipient countries based on decentralisation, "user pays" schemes, credit system, and support to private education have often become conditions of its loans. The work of the Bank has not been without its critics both at government and public levels. In 1996, the fiftieth anniversary of the Bank, world-wide petitions and demonstrations were mixed with the celebrations of its accomplishments. The formation of international protest movements such as 50 Years Is Enough have called for more international debate about the Bank's policies and procedures and a change in its funding into more participatory and sustainable projects. Similarly, the Bank has often been criticised for its insistence on the universal adoption of these policies irrespective of the local context (Nebres, in Atweh, Clarkson & Nebres, 2003).

While the World Bank and similar organisations may illustrate globalisation from above, professional organisations such as the International Commission of Mathematics Instruction may illustrate forces of globalisation from below. Undoubtedly the ICME conferences are the largest gatherings of mathematics educators around the world. For many educators from developing countries, they are the primary, and, in some instances, the sole contact that they have with the international scene in mathematics education. Such contact could possibly lead to further collaboration between educators outside the boundaries of the organisation itself. In this role ICME has played a crucial role in grass root globalisation. However, in spite of attempts to facilitate the participation by educators from developing countries, the congress remains dominated by educators and issues from Anglo-European countries. For many educators from developing countries, which are mainly from the Southern Hemisphere, the cost of travel, not to mention the language barriers, prohibits participation. Arguably a major limitation to communication available within the existing forums of international conferences is the limited possibility of deep dialogue due to the conferences' format. Conferences are restricted in space and/or time. Concern has been raised as to their ability to provide for deep analysis of the contexts behind the research reported in them (Silver & Kilpatrick, 1994). Some participants find international conferences too busy, large and hectic to establish meaningful contacts (Johnston, 1992) or to keep sight of the big picture on problems of mathematics education (Usiskin, 1992).

### *Role of International Comparisons*

Perhaps there are only a few issues in mathematics education that attract more public debate from the media, politicians, and even parents, than international comparisons such as TIMSS and PISA. Several such studies have identified huge gaps in achievement between students from different countries with gaps in achievement estimated to be up to 3 years of schooling (Glewwe & Kremer, 1995). Undoubtedly, these differences reflect, among other things, the different resources available to different education systems around the world; however they do raise serious social justice issues. (REF)

This type of study has generated a considerable amount of controversy within the mathematics education literature. Kaiser, Luna and Huntley (1999) have edited a book that deals with the topic from a wide range of perspectives. The book contains discussion from both sides of the debate as well as illustration of the findings from some of these studies. The book consists of sixteen chapters with contributions from the USA, Australia, UK, Germany, Japan and the Philippines. Advocates of international comparisons have argued that such studies offer a better understanding of one's own educational system, identifying its strengths and weaknesses, in their attempts to identify approaches to reform mathematics education. For some educators these studies provide unique opportunities for a massive amount of investigation of factors that may be hard to control in a single country, such as class size, single-gender classes, and out-of-class tutoring.

On the other side of the debate, critics of international comparisons (eg. Keitel & Kilpatrick, 1999) have raised questions about the benefit of these studies to provide useful findings towards the improvement of education systems in any country. These studies have limited pedagogical benefit, since a pedagogy that might work in one country may not work in another context. Concerns were raised on whether the outcomes of these studies are perceived as biased towards the host country; that is, of those who do the data collection, the analysis and the funding. They claim that the mathematical tasks do not represent the curricula taught in many schools, teachers' questionnaires do not represent the whole range of teaching practices, and the results do not offer valid comparisons between the various countries' curricula with their divergent cultural and social contexts. Finally, Clarke (2003) identifies a major abuse of international comparative study as the imposition on participating countries of a global curriculum.

### **A Global Curriculum?**

There is a great unease expressed by many English-speaking researchers about the dominance of Anglo-European thinking about mathematics education for countries around the world. Commenting on the 7th ICME conference in Canada, Usiskin (1992), perhaps summarising the feeling of many participants, notes "the extent to which countries have become close in how they think about their problems and, as a consequence, what they are doing in mathematics education" (p. 19). Yet he goes on to hope "that the new world order does not result in a common world-wide curriculum; our differences provide the best situation for curriculum development and implementation" (p. 20). This concern about uncritical globalisation of issues is shared by Rogers (1992) who, commenting on the same conference, laments that "all our theories about learning are founded in a model of the European Rational Man, and that this starting point might well be inappropriate when applied to other cultures" (p. 22). He goes further to assert that "the assumptions that mathematics is a universal language, and is therefore universally the same in all cultures cannot be justified. Likewise,

the assumptions that our solutions to local problems ... will have universal applications is even further from the truth” (p. 23).

This unease about the dominance of Western mathematics is quite strongly expressed in a keynote address to the ICME Regional Collaboration conference held in Melbourne, Australia, where Clements (1995), a leading Australian mathematics educator with extensive international experience, outlined his concerns in the following manner.

Over the past 20 years I have often had cause to reflect that it is Western educators who were responsible not only for getting their own mathematics teacher education equation wrong, but also for passing on their errors to education systems around the world. (p. 3)

However, often these concerns do not match some voices from developing countries. At the same ICME regional conference, the president of the African Mathematical Union (Kuku, 1995) warned against the over-emphasis on culturally oriented curricula for developing countries that act against their ability to progress and compete in an increasingly globalised world. He called for “a global minimum curriculum below which no continent should be allowed to drift, however under-developed” (p. 407). Some of the reasons he presented are very relevant to the discussion here. The phenomenon of dropping out of mathematics is not restricted to developing countries. Hence, he argued, cultural relevance of the mathematics content to the culture of the student is not the only consideration in determining participation and success. Kuku expressed concern that the over-emphasis on ethnomathematics may be at the expense of “actual progress in the mathematics education of the students” (p. 406). Presumably this mathematics education is the mathematics education that is needed for economic and technological progress within their countries. Further, within each third world country there are many different cultural groups. There are no resources for implementing an appropriate ethnomathematics program for every student group. He concluded by citing examples of Asian countries that were able to achieve huge leaps in economic development through their use of “imported curricula” (p. 408).

Also at the same conference, a similar call was given by Sawiran (1995), a mathematics educator from Malaysia. Sawiran based his comments on the belief that “our experience shows that mathematics is an important ingredient of technology and therefore is a key element to ‘progress’” (p. 603) (quotes in original). He concluded his address by saying that “[t]he main thrust in enhancing better quality of education is through “globalisation” of education. In this respect, it is proper to consider globalisation in mathematics education” (p. 608) (quotes in original). He added that the most important step in globalisation is through “collaborative efforts” (p. 608). In the following section I will argue that such collaboration should be based on mathematics educators taking more responsibility, one to the other. The concept of responsibility leads us into the heart of ethics.

It would be wrong to conclude that the views expressed above are a true representation of the difference of opinions and interests between all educators in the industrialised and the less industrialised countries. However, the reasons behind such calls from some educators from countries with less developed research and theories in the discipline cannot and should not be overlooked. Jacobsen (1996) discusses the increasing gap between the rich and poor countries and the curtailing of funds from these international agencies that makes it “more difficult to look for governments for improved international co-operation in mathematics education” (p. 1253). He joins Miguel de Guzman, the past President of ICMI, in calling for an increasing

role of co-operation between professional mathematics educators and their associations to work to improve mathematics education worldwide.

However, as Hargreaves (1994) reminds us, the concept of collaboration should not be taken unproblematically. The remaining task in this paper is to establish a basis of such collaboration in what I will call ethical responsibility.

## **Ethical Responsibility**

In another context (Atweh, 2007) I noted that the discourse of ethics is not often discussed in mathematics education. Arguably, this absence in mathematics education is paralleled by its absence from general discourses in education and humanities in Western culture. With the rise of scientific rationality, ethics was often associated with questions of morality, dogma, codes of behaviour and legal imperatives and often seen as belonging to the domain of metaphysics rather than philosophy proper. However, this avoidance to deal with ethical discourse is slowly dissolving. As Critchley (2002) indicates, it was only in the 1980s that the word ethics came back to intellectual discourse after the “antihumanism of the 1970s” (p. 2). Further, the post-ontological philosophical writings of Levinas (1969, 1997) have been accredited by the re-introduction of ethics within philosophy by establishing ethics as the First Philosophy.

As Levinas argues, philosophy is mainly concerned with question of being (ontology) and knowledge (epistemology). The discussion of being and knowledge are achieved by reducing the other to the same (Critchley, 1992) and by dealing with consciousness (Bergo, 1999). For Levinas, ethics is before any philosophy and is the basis of all philosophical exchanges. It precedes ontology “which is a relation to otherness that is reducible to comprehension or understanding” (Critchley, 2002, p.11). This relation to the other that precedes understanding he calls “original relation”. Critchley goes on to point out that the original contribution of Levinas is that he “does not posit, *a priori*, a conception of ethics that then instantiates itself (or does not) in certain concrete experiences. Rather, the ethical is an adjective that describes, *a posteriori*, as it were, a certain event of being in a relation to the other irreducible to comprehension. It is the relation which is ethical, not an ethics that is instantiated in relations” (p. 12, italics in original). Using a phenomenological approach, Levinas argues that to be human is to be in a relationship to the other, or more accurately, in a relation *for the other*. This relation is even prior to mutual obligation or reciprocity. Roth (2007) argues that this original ethical relationship discussed by Levinas consists of an “unlimited, measureless responsibility toward each other that is in continuous excess over any formalization of responsibility in the law and stated ethical principles”.

What do we gain by adopting this ethical responsibility as a basis for international collaboration?

First, an ethical responsibility stance requires awareness that collaboration between mathematics educators from around the world particularly problematic when it occurs between players with different needs and differing access to resources. The limited resources in some countries imply that they are more likely to copy or import ideas from the more developed regions or countries rather than to critically and empirically reflect on their appropriateness to their local context. Collaboration without such an awareness might run into the danger of becoming neo-colonialist with further draining of resources from the poor towards the rich.

Second, in late-modern and globalised times with the lack of certainty and an awareness of the complexity of the issues (Skovsmose, 2006), it may be neither desirable nor possible to establish a set of guidelines for ethical international contacts that apply to all situations. International collaborations based on ethical responsibility are necessarily transparent, reflective and accountable in examining their own rationale, aims, processes and outcomes. Questions of voice and power should always be up front. Ethically responsible collaboration should be constructed to empower individual countries to be self-reliant rather than to increase their dependency on ideas from more developed nations.

Third, collaborations that are simply based on "helping" developed countries (to become like us?) are often based on paternal colonial assumptions and do not contribute to ethical collaboration. Further collaborations based on ethical responsibility are based on mutual respect and trust in the ability of the different partners to contribute different types of learning to the collaborative enterprise.

### **Final comment**

Perhaps these disparate views are not completely incongruent in that most mathematics educators share a commitment for the development of mathematics education for empowerment of *all* students everywhere and to increasing the participation of *all* mathematics educators in international dialogue and debates. The concern is not about whether a standardised or an ethnomathematical curriculum is the solution to inequality, but about the resources and expertise that are necessary to increase the participation of students and academics both at local and global levels. This can be achieved through genuine and critical collaboration between academics internationally. Such collaboration aims to contextualise the curricula (and research findings) to local contexts without falling into a void where mutual learning is not possible. From this perspective contextualisation and decontextualisation are two interactive and complementary rather than contradictory endeavours.

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