

IN BETWEEN REALITY AND UTOPIA: A SOCIO-POLITICAL RESEARCH AGENDA FOR MATHEMATICS EDUCATION IN SITUATIONS OF CONFLICT AND POVERTY [1]

Paola Valero

Aalborg University, Denmark

As I walked up the hill, I started feeling the bad smells because in that shantytown there was no sewage system. Terrible. When I got there, four colleagues welcomed me and showed me my classroom. It didn't have a floor, just the bare ground. There were 45 children. They hadn't got a teacher. The children were in terrible conditions, dirty, extremely dirty. The room stank. I approached and started asking their names. At least I am going to make a list, I thought, and give them some recommendations about their personal care, their look, how we are going to organize the classroom, because all of them were like packed in a corner. Next day, when I came, they at least knew I was going to be their teacher. It was a first grade class. The children haven't had any previous school immersion experience. I had to start from scratch and give them some introduction, but fast because I also had to prepare them to read, write and calculate. There were older children with plenty of problems. That day I started noticing their reality when I called the list. I called for somebody. He is not here. Why didn't he come? Does somebody know why he didn't come? Yes. Last night his father came back home extremely drunk and beat the whole family, so they haven't slept. And I don't know how many similar situations were frequent. Harsh. Very harsh. That moved me deeply. I started to realize that life was not easy. I started to feel that I had to do something, that those children had been put in my hands and that I had to help them. And basically, the only thing I could give them was affection. I particularly remember Daniel, who was so good for doing calculations but could not read. He dropped school soon after I came but I saw him around in the neighbourhood. I always wondered about him. I still remember many of those kids. I have them here in my heart despite that it has been now twenty years since I first met them.

This is Mercedes, a Colombian teacher, describing her first teaching experience in a public school in a shantytown at the outskirts of Bogotá (Valero, 2002). Mercedes' words are not unique but represent the everyday experience of many teachers in Colombia and in many other parts of the world where similar life conditions characterize teachers' and students' contexts. Mercedes' words also represent the tension that many educators experience, between a belief in one's work making a difference and contributing towards a better world, and the realization of the crude and harsh reality in which one's efforts are embedded. Following Diana Jaramillo's words (Jaramillo, Torres, & Villamil, 2006), the work of teachers where the harshness of life is evident invites conceiving educational activity as a constant move

between reality and utopia. Utopias and realities can be of different kinds depending of the contexts from where they are experienced and dreamt. Here I am referring to what is possible to imagine about mathematics education practices (and their role in people's lives) from situations where severe conflict and poverty clearly permeate mathematics classrooms.

My intention in this paper is to contend that if mathematics education research is committed to the understanding and betterment of mathematics education practices and their contribution to equity in education, in society and in the world in general, then research has to address mathematics education in situations of conflict and poverty. To do so, I will shortly point to the lack of studies addressing mathematics education in such contexts and the need for them. I will then examine some of the notions involved in such an endeavour and I will end by pointing to some of the elements of a socio-political research agenda addressing the issue.

BEYOND “PROTOTYPICAL” CLASSROOMS

In the last two decades there has been a growth in research viewing mathematics education practices from cultural, social, and political perspectives. The “strong social turn” (Lerman, 2006) has brought more attention to how and why mathematics education practices operate as inclusion/exclusion mechanisms for particular groups of students. That body of research has been carried out mainly in developed countries and illuminates the problems of students at the margins in relation to the main dominant Western, white culture. Existing research has illuminated the experiences of students and teachers in mathematics classrooms for children who do not succeed in mathematics on the grounds of their ethnicity, gender, language, ability, and social class. Some understanding of how mathematics education practices can relate to processes of inclusion/exclusion in developed countries such as the USA, Australia and many European countries have been possible thanks to the growth of this type of research.

Few research studies in developing countries, however, address these issues in general, and very seldom do they study mathematics education in marginal situations. With few exceptions of studies in South Africa, Brazil, Guatemala, Malawi and Peru (Adler, 2001; Kitchen, 2001; Knijnik, 2007; Mwakapenda, 2002; Secada, Cueto, & Andrade, 2003; R Vithal, 2003), the international research community has little idea of what happens with the teaching and learning of mathematics for marginal students in the developing world, particularly for those living in cases of severe or extreme poverty, and accentuated conflict.

I assume that generating understandings about mathematics education in these situations is a desirable aim for a research field that, in its growth and consolidation has sought not only to comprehend the complexity of teaching and learning phenomena but also to contribute with educational alternatives for improving mathematics teaching and learning. It is desirable because there are large proportions

of children in this world who live in harsh conditions and for whom schooling and (mathematics) learning could/could not be a means of either making possible a betterment of material life conditions, or of bringing some kind of stabilizing, coming over and even reconstructing life possibilities when they have been literally crushed in and by political conflict.

By saying this I am not adhering to a narrative that attributes (mathematics) education and mathematics education researchers a redemptive role of the marginal, poor, displaced, and prosecuted children of the world. I agree with Popkewitz's (2002) critique of the construction of an educational narrative that gives (mathematics) education the role of saving the minds, souls and lives of children through attributing mathematics education some kind of saving grace associated with an assumption on the power of mathematical knowledge. Rather, I build on an interest in advancing an understanding of mathematics education from a perspective that views them as social and political practices, and for which researching such situation can bring important insights about the constitutive relation between the social and political context and the practices of mathematics teaching and learning in those contexts (see Christensen, Stenoft, & Valero, 2007; Valero, 2007).

Mathematics education research based on the "prototypical classrooms" where less than the 10% of school children in the world experience mathematics education (Skovsmose, 2006) has provided important insights into the nature of school mathematics learning and teaching. For me it is time to go beyond and challenge those insights by enlarging the focus of interest and the sites of research of the field. It could be that in this way we are able to generate new imaginaries that allow us seeing mathematics education and its role in society in ways that we have not seen before.

SITUATIONS OF POVERTY AND CONFLICT

Poverty, defined in terms of a lack of access to material, social and cultural resources, is a difficult concept pointing to a hard reality. So is conflict, which can at least be understood as an open clash of values and world-views held by different groups of people. A meticulous examination of these notions and the realities where they appear is not possible here. Suffice to say that there exists extensive literature addressing the connection between the two and education. When reviewing the literature, associated terms—which I have already used—feature also evidently: exclusion, marginalization, segregation, violence, all of these of different kind and intensity. All these are intricately connected and are necessary to understand what it means to live in such situation.

Situations where poverty and conflict exist are not the exclusivity of the developing world where poverty and conflict—with all the associated concepts—are endemic and extensive. They also exist in the midst of the developed world. As stated previously, most research published on issues of equity and (mathematics) education

focuses on marginal groups of girls or boys, ethnic and linguistic minorities, working class students, etc. However, notice that being at the margins in the developed world can mean something quite different from being at the margins in the developing world. The experience of severe or abject poverty and of open violent conflict in (civil) war situations is materially and symbolically different, and impact individuals in different ways. While for some it may still be possible to dream a future, for some others it is even difficult to imagine a life. Such differences may also have concrete consequences for learning and teaching, and for how the researcher conceptualizes them.

ELEMENTS OF A RESEARCH AGENDA

It seems to me that a central point at stake for researching mathematics education in situations of poverty and conflict is the way in which we theorize—and empirically document and analyze—the connection between mathematics learning and its context. In “prototypical” classrooms, the context is assumed to play no role. Teaching and learning processes in mathematics, children’s mathematical thinking or teachers’ instructional practice can easily be researched independently of what “surrounds” them. When the focus moves to situations of learning evidently affected by its context, the same neutrality cannot be assumed (Renuka Vithal & Valero, 2003). Here I present three points, which I see as fundamental in advancing research in situations of poverty and conflict.

The theories that have been used to study mathematics learning build on a fundamental assumption of continuity and of progression in the flow of interactions and thinking leading to learning: the material world of the learner, the stimuli and interactions, and the conditions for thinking are assumed to exist and to be available for the learner. Definitions of learning as a *process* reflect these assumptions. When “learning” is studied in a situation characterized by drastic change, sudden destruction or intermittent and disruptive provision of material and human resources, the concepts and language that we have available for naming learning seem not to be adequate. When they are simply applied without further examination the result has often been the creation of deficit discourses on the learners or the teachers. Following that, students in poverty and in conflict will all be extremely cognitive deficient. However, such view has been empirically challenged and therefore is far from acceptable (Ginsburg, 1997). The question then becomes how can (mathematics) “learning” be redefined as to provide a better language to grasp the conditions and characteristics of thinking in situations where continuity and progression cannot be assumed. Children and human beings continue to think and to cognize even school mathematics, but probably in ways that we have not carefully considered before.

Socio-cultural theories of learning resolve the problem of the role of the macro-social world in individual thinking by formulating the thesis that cultural tools and artefacts mediate the relationship between the individual, his/her thinking and his/her cultural environment. Neo-piagetian theories focusing on the role of the social world and the

social interaction and individual learning formulate the thesis that, in social interactions where learning takes place, the macro-social world enters individual thinking through social marking, and the evoking of social representations (Abreu, 2000). In other words, it is assumed that the macro-social world enters the micro-social world of mathematics learning interactions in some kind of symbolic, fuzzy way. However, it seems to me that the missing teacher, the leaking roof, the bare dusty floor, the blue beaten arms of a child, or the lack of food are more materially present in situations of poverty and conflict than the “symbolic, mediational presence” that these theories assume. The macro-context and all its harshness are vividly present —sometimes almost physically present— in many classrooms. If this is the case, research that re-conceptualizes the impact of the macro-social world in the micro-social world is necessary.

Finally and as a consequence of the previous two points, it is important to develop theoretical tools and corresponding analysis strategies that allow grasping the complexity of the way in which mathematics education practices occur and gain meaning in both micro-contexts and macro-contexts, and where poverty and conflict are constitutive elements of those practices. Viewing mathematics education as a network of socio-political practices (Valero, 2007) could be a way of providing a broader landscape for understanding the multiplicity of forces involved in forging “mathematics learning” in contexts fraught with violent disruption and abject resourcelessness.

It is my hope that concerted research efforts in different parts of the world, between researchers and teachers, could in the future offer conceptualizations of mathematics education that address the realities that teachers like Mercedes experience.

NOTES

1. This paper is a modified version from the paper prepared for presentation at the Symposium on the Occasion of the 100th Anniversary of ICMI, to be held in Rome in March 2008. It is based on the work I am initiating together with Gloria García and Francisco Camelo from the Universidad Pedagógica Nacional of Colombia.

REFERENCES

- Abreu, G. d. (2000). Relationships between macro and micro socio-cultural contexts: Implications for the study of interactions in the mathematics classroom. *Educational Studies in Mathematics*, 41, 1-29.
- Adler, J. (2001). Resourcing practice and equity: A dual challenge for mathematics education. In B. Atweh, H. Forgasz & B. Nebres (Eds.), *Sociocultural research on mathematics education. An international perspective*. (pp. 185-200). Mahwah, NJ: Erlbaum.
- Christensen, O. R., Stentoft, D., & Valero, P. (2007). Power Distribution in the Network of Mathematics Education Practices. In K. Nolan & E. De Freitas (Eds.), *Opening the Research Text: Critical Insights and In(ter)ventions into Mathematics Education* (pp. 131-146). New York: Springer.

- Ginsburg, H. (1997). The myth of the deprived child: New thoughts on poor children. In A. B. Powell & M. Frankenstein (Eds.), *Ethnomathematics : challenging eurocentrism in mathematics education* (pp. 129-154). Albany: State University of New York Press.
- Jaramillo, D., Torres, B., & Villamil, M. (2006). *Interacciones en clase de matemáticas: una mirada desde la etnomatemática*. Paper presented at the Foro Educativo Nacional de Competencias Matemáticas.
- Kitchen, R. (2001). The sociopolitical context of mathematics education in Guatemala through the words and practices of two teachers. In B. Atweh, H. Forgasz & B. Nebres (Eds.), *Sociocultural research on mathematics education. An international perspective*. (pp. 151-165). Mahwah, NJ: Erlbaum.
- Knijnik, G. (2007). Mathematics education and the Brazilian landless movement: Three different mathematics in the context of the struggle for social justice. *Philosophy of Mathematics Education Journal (Online)*, 21.
- Lerman, S. (2006). Cultural psychology, anthropology and sociology: the developing 'strong' social turn. In J. Maasz & W. Schloeglmann (Eds.), *New mathematics education research and practice* (pp. 171-188). Rotterdam: Sense.
- Mwakapenda, W. (2002). The status and context of change in mathematics education in Malawi. *Educational Studies in Mathematics*, 49, 251-281.
- Popkewitz, T. S. (2002). Whose heaven and whose redemption? The alchemy of the mathematics curriculum to save(please check one or all of the following: (a) the economy, (b) democracy, (c) the nation, (d) human rights, (d) the welfare state, (e) the individual). In P. Valero & O. Skovsmose (Eds.), *Proceedings of the Third International Conference on Mathematics Education and Society* (pp. 29-45). Copenhagen: Center for research in learning mathematics.
- Secada, W., Cueto, S., & Andrade, F. (2003). Opportunity to learn mathematics among Aymara-, Quechua-, and Spanish-speaking rural and urban fourth- and fifth-graders in Puno, Peru. In L. Burton (Ed.), *Which way social justice in mathematics education?* (pp. 103-132). Westport, Conn.: Praeger.
- Skovsmose, O. (2006). Research, practice, uncertainty and responsibility. *The Journal of mathematical behavior*, 25(4), 267-284.
- Valero, P. (2002). *Reform, democracy and matahematics education. Towards a socio-political frame for understanding change in the organization of secondary school mathematics*. Unpublished PhD Thesis, Danish University of Education, Copenhagen.
- Valero, P. (2007). A socio-political look at equity in the school organization of mathematics education. *Zentralblatt für Didaktik der Mathematik. The Intentional Journal on Mathematics Education*, 39(3), 225-233.
- Vithal, R. (2003). Teachers and 'street children': On becoming a teacher of mathematics. *Journal of Mathematics Teacher Education*, 6, 165-183.
- Vithal, R., & Valero, P. (2003). Researching mathematics education in situations of social and political conflict. In A. Bishop, M. A. Clements, C. Keitel, J.

Kilpatrick & F. K. S. Leung (Eds.), *Second International Handbook of Mathematics Education* (Vol. 2, pp. 545-592). Dordrecht: Kluwer.