

Ethnomathematics and the politics of mathematics education: reflections on a research-project developed with the Brazilian Landless Movement

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Abstract

The paper aims to problematize issues related to the politics of mathematics education and the role Ethnomathematics in research and pedagogical practices. The discussion is based on a three-year study whose main goal was to analyze “regimes of truth” on adult Brazilian peasant mathematics education. More specifically, it aims at discussing the conditions of possibility (the social, political and cultural context) for the emergence of statements about adult Brazilian peasant mathematics education, how such statements circulate in peasant pedagogical culture, and their effects of truth on school mathematics processes. From two different – but articulated – perspectives the study brought insights to our understanding about the politics of mathematics education. The theoretical framework of the study was an Ethnomathematics perspective based on Postmodern and Poststructuralist theories, specifically the work of Michel Foucault (1980, 2000) – as well as the work of Wittgenstein (2004) related to his book “Philosophical Investigations”.

Introduction

The well-known Brazilian educator Paulo Freire, in the language of his time, stated, in his book “Pedagogy of the Oppressed”, that education had a political dimension. Later, he himself reformulated that first statement he had made, saying that education is political. Freirian thinking, in particular its emphasis on the politicity of education and the central role given to culture in the constitution of educational processes, in its time had a major impact on the peripheral countries and also on the central ones, an impact that, possibly, gradually also reached the area of Mathematics Education.

Decades after Freire’s initial ideas, we are examining the politicity of mathematics education from other theoretical perspectives, opening the possibility of assigning new meanings to this key issue. Such theories were aligned with the new world economic, social and political designs that shape these times of Empire, marked by large numbers of the poor crossing borders, producing culturally plural and socially even more unequal scenarios. Today it seems that the aims of Enlightenment thinkers have failed. In fact, as pointed out by twentieth-century authors like Sarup (1996:94), the ideas of linear progress, absolute truths, the rational planning of ideal social orders

and the standardizations of knowledge and production embraced by Modernity, the extraordinary intellectual effort produced by its project in developing “objective science, universal morality and autonomous art” and its beliefs “in justice and possibility of happiness of human have been cruelly shattered”. More than ever, the majority of the world’s population is living in subhuman conditions, wars are being waged everywhere and nature is being destroyed all over the planet. Even so, or precisely because of this, our hopes of a more just and egalitarian world still remain. The “old” project of Modernity is gone but new ones are being built. It can be considered that at least punctually educators can contribute to their implementation. In fact, our curricular practices as well as our work as researchers are not neutral, since they have the potentialities to favor or not the inclusion of those who are “the other”, the “different”: unequally different, since their cultural differences – such as gender, social class, race/ethnicity, sexuality and a-geness – are those which have less value in our society.

There are many questions that we have to ask ourselves as mathematics educators committed to understanding – and resisting – the social injustice of the time we live in. This critical exercise cannot avoid problematizing the position assigned to mathematics as well as to mathematics education by Western society. Following Dunne and Johnston, our analytic exercise must consider

(and deconstruct) the privilege that a access to mathematics confers on its ‘chosen few’, to understand its ‘gate-keeping’ role in relation to further education and future careers and consider this in the production and reproduction of hierarchical gender (and class and race) relations. What constitutes mathematics, what counts as valued mathematical knowledge, how things came to be this way and how they are sustained are critical questions (Dunne and Johnston, 1994: 227).

This paper aims to problematize some of these issues more specifically those related to the politics of mathematics education. The discussion is based on a three-year study whose main goal was to analyze “regimes of truth” on adult Brazilian peasant mathematics education. More specifically, it aims at discussing the conditions of possibility (the social, political and cultural context) for the emergence of statements about adult Brazilian peasant mathematics education, how such statements circulate in peasant pedagogical culture, and their effects of truth on school mathematics processes. From two different – but articulated – perspectives the study brought insights to our understanding about the politics of mathematics education. First, it is important to

consider the political relevance of the Brazilian Landless Movement struggles in the Latin American context and the key role this social peasant movement assigned to education, which includes the mathematics education improved by them, inspired by Ethnomathematics thought¹. Second, it must be considered that to examining regimes of truth is mainly a political discussion, since they are shaped by power-knowledge relations.

Theoretical and methodological framework

The theoretical framework of the study was an Ethnomathematics perspective based on Postmodern and Poststructuralist theories, specifically the work of Michel Foucault (1980, 2000) – as well as the work of Wittgenstein (2004) related to his book “Philosophical Investigations”. Post-modern perspective – which “rejects a totalized thinking, the illuminist meta-narratives, the universal referentials, the transcendencies and essences, that, imploding modern Reason, leave it in the shards of regional rationalities, of particular reasons” (Veiga-Neto, 1998:145); Post structuralist theorizations – which “aim to expose structures of dominations by diagnosing “power/knowledge” relations and their manifestations in our classifications, examinations, practices and institutions; and to produce an “incredulity towards meta-narratives, to disassemble the structures, the “moves” and strategies of official discourse” (Peters & Burbules, 2004:5); Wittgenstein’s late work – whose non-essentialist notions of forms of life and language games give us the possibility of assuming the existence of different mathematics – shaped the ethnomatematics perspective adopted in this paper. It consists of a toolbox which allows analyzing: a) the Eurocentric discourses that institute academic mathematics and school mathematics; b) the effects of truth produced by the discourses of academic mathematics and school mathematics; c) issues of difference in mathematics education, considering the centrality of culture and the power relations that institute it; d) the language games that shape each of the different mathematics, discussing their family resemblances.

¹ Landless Movement – in Portuguese, Movimento Sem Terra (MST) – is a social peasant movement involving about 250,000 families around the country. Struggling for land reform, it puts education as a central issue in order to achieve their goals. In Knijnik (1998, 2006), Knijnik et alii (2005) and Chassot & Knijnik (2007) issues about the Landless Movement and its work on education, especially in the field of mathematics are discussed.

Using these theoretical tools the research project attempted to analyzing the “regimes of truth” on Brazilian peasant adult mathematics education, taking into account that

Truth isn't outside power... it is produced only by virtue of multiple forms of constraint. ... Each society has its regime of truth, its 'general politics' of truth; that is, the types of discourse which it accepts and makes function as true, the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned... the status of those who are charged with saying what counts as true (Foucault, 1980:131).

The empirical data of the study consisted of narratives about adult mathematics education produced in a number of activities – class discussions regarding adult mathematics education, debates about issues concerning interview methodology, student's testimonies, interviews done by the teacher-students with peasants living in their communities and students' individual reports about those interviews – which shaped pedagogical work developed at the Teacher Training Course *Pedagogia da Terra*. The Course was organized in a joint effort by a public state university and the Landless Movement Educational Sector and it was one among many that are held at the Landless Movement National School in Veranópolis (a village one hundred miles from the capital of the southernmost state of the country). The Teacher Training Course students belonged to the “*Articulação por uma educação do campo* Movement”, which congregates five Brazilian peasant social movements². The pedagogical activities that originated the data were developed in two different time-space settings, each of them of about two months: the so-called “Tempo-escola” (when the students stayed at the boarding school) and “Tempo- comunidade” (when the students returned to their communities to continue the work they were doing as members of the social movements). The data collected during the school term were tape-recorded and later transcribed. The students did the interviews in their communities taking notes of what was said by their comrades, being aware of the need to reproduce the narratives accurately. The written report included the research data produced by the interviews, their comments on the peasant's narratives and a text in which they reflected on their experience as beginners in research practices. In summary, the narratives were produced

² The students are members of the movement “*Articulação por uma Educação do Campo*”, which brings together organizations and social movements interested in debating on public policies of education in the country: Landless Movement (MST), Small Farmers' Movement (MPA), Movement of People Affected by Dam-Building (MAB), Movement of Peasant Women (MMC), and the Pastoral of Rural Youth (PJR).

by teacher-students and adult peasants who lived in their communities, most of them interested in becoming involved in adult education projects.

These narratives were examined from the perspective of Foucaultian analysis of discourse. This means that the analytic process attempted to “establish[ing] series, distinguish[ing] between what is relevant and what is not, discover[ing] elements, defin[ing] unities, describ[ing] relations”(Foucault, 2000:7) about peasant adult mathematics education. These statements pointed out *truths* concerning this field of knowledge, part of a “regime of truth” about mathematics education.

The result of the analytic exercise

The result of the analytic exercise can be summed up as follows:

- Different from what is considered “natural” in educational processes, the narratives enunciated that the adult student who participates in education projects is led to occupy the position of the one “who knows”, i.e. the adult student is considered to be fully knowledgeable about what is referred to as “mathematics”. Peasants interviewed and teacher-students recurrently expressed this idea. It could be thought that this ‘truth’ positions the school subjects – here understood as students and teachers who participate in peasant adult educational projects – in a very specific way. Working from Foucault’s terms it could be said that such statement produces a subject-position that places adult students who participate in educational projects not as those who were there in order to learn: they were considered capable of transmitting what they know –“their mathematics”. In other words, they are positioned as teachers who can teach a specific mathematics: the peasant mathematics (Knijnik, 2006a). However, data analysis showed that not only the learners were positioned as teachers. The narrative tellers also assigned to the teachers themselves that position. They identified the specific rules which constitute the grammar that marks the *language game* of school mathematics, different from the peasant mathematics’ language game (Knijnik, 2006b), saying that only those who had access to what they called “book mathematics” – the mathematical knowledge legitimated as scientific – would be able of teaching it.

- It was suggested that teaching ‘the mathematics of life’ at school addresses the ideas developed by Ethnomathematics. We could identify the provenance of this statement in the work developed by the Sector of Education of the Landless Movement in its 22-years of existence. Ethnomathematics ideas were disseminated by this sector throughout the country in seminars, meetings and booklets (Knijnik, 1996, 2003). But the narratives highlighted a key issue: the need to be very careful about the risks of considering only the “mathematics of (their) life” in adult mathematics education projects. It was said that it may narrow down the possibilities of access to hegemonic knowledge, which is considered relevant for the purposes of their economic and political struggles. At the same time, the narratives showed the difficulties in trying to incorporate these different mathematics in schooling processes. This agrees with the recent discussions that have been held in the field of Ethnomathematics as regards the existence of different mathematics (which, in Wittgenstein’s words, would have *family resemblances*) and the curricular challenges it provokes (Knijnik, 2006a, Knijnik &Wanderer, 2006a) .
- One of the truths about peasant mathematics education which emerged from data analysis refers to the importance of using concrete materials in school mathematics. There was a recurrent reference to the central focus that “must” be given to concrete material, “*since this makes learning easier*”, “*the results are better*” when working with children. It was said that concrete materials can “*solve adults’ learning difficulties*”. This is a truth about teaching and learning mathematics that has circulated in contemporary Brazilian educational thinking, in the order of Mathematics Education discourse, based on the pedagogical constructivism inspired by Piaget’s theorizations (Knijnik &Wanderer, 2006b).
- The narrative tellers indicated that teacher training in the field of mathematics has not been up to the demands of the profession. They expressed their worries of not having enough proficiency in managing with the complexity of formalism and abstraction that marks school mathematics. In Wittgenstein’s words, one can say that it seems that they did not feel confident in playing such a language game, associated to a form of life to which historically they do not belong.

- The narratives brought evidence that for the peasants interviewed and teacher-students there are close ties between adult mathematics education and ‘reality’, suggesting that one of the uses of the expression ‘reality’ was addressed to their struggle regarding the need to create the conditions that will render life in the country socially, economically and politically feasible, helping build a more egalitarian society. This struggle, in its multiple dimensions, would be ‘the reality’, a reality in which mathematics education would play a special role. It can be said that they were subjected by the discourse of their social movement, which has as one of its statements the relevance of contributing to construct public policies which enable children, youths and adults to access schooling that not only must occur in their living contexts but also must be marked by the peasant culture (Knijnik & Wanderer, 2006b).

Ending words

The analysis performed in the research project led to the emergence of truths about peasant adult mathematics education, which are part of a “general politics of truth” that ultimately positions the teacher-students and the peasants interviewed as participants in the struggles of their movement. When considering what was narrated by them, the subject of the enunciation was not taken as “cause, origin or initial point” of what was said (Foucault, 2002:109). On the contrary, seeking to follow the philosopher, there was an attempt to examine the narratives ‘almost in their materiality’ (Foucault, 2005:146). The analytic strategy applied thus considered the discursive practice as

a set of anonymous, historical rules, always determined in time and space, which in a given era and for a given social, economic, geographic or linguistic area, defined the conditions to exercise the enunciative function. (Foucault, 2000: 136).

The ‘regimes of truth’ presented in this paper – as well as the narratives that enabled their production – must be considered from this perspective.

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