

MATHEMATICS EDUCATION, DIFFERENTIAL INCLUSION AND THE BRAZILIAN LANDLESS MOVEMENT

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The paper discusses an event involving the Brazilian Landless Movement that happened recently in the southernmost state of Brazil. Specifically, it describes the closing of the itinerant schools of the Landless Movement and the language games that constitute school mathematics and peasant mathematics of that form of life. Based on this description and the discussion about Hardt and Negri's notion of differential inclusion it is argued that school mathematics can be seen as working as a gear in the production of differential inclusion.

DIFFERENT FORMS OF LIFE, DIFFERENT MATHEMATICS

Postmodern times have been characterized by the proliferation of multiple interpretations of the social world, at the same time there has begun a “sort of suspicion of the place from which these interpretations are constructed, i.e., of the idea of reason itself” (Condé 2004:16). According to this author, from the second half of the 19th century and the beginning of the 20th, with the crisis in mathematics, the theory of evolution, the rise of human sciences, relativity theory in Physics and other movements rejecting the idea of a universal scientific rationality based on ultimate and true foundations were triggered. Using the ideas of Wittgenstein, Condé (2004:29) will say that “[...] *we need friction. Back to the rough ground* (PI §107)[1] of the social practices, and there to establish the criteria of our rationality”. Returning to the rough ground drives us to regard the Modern Project and, consequently Modern Science with suspicion. In particular, it allows us to problematize the existence of a unique and totalizing mathematics language, sustained by a specific rationality with its marks of asepsis, order and abstraction.

In his later work, Wittgenstein repudiates the notion of an ontological foundation for language. Language takes on a contingent, particular character, acquiring meaning through its different *uses*. “The meaning of a work is its use in language”, explains the philosopher (PI §43). In this way, since the meaning of a word is generated by its use, the possibility of essences or fixed guarantees for language is problematized, leading us to also question the existence of a single mathematics language with fixed meanings.

Highlighting the generation of diversified languages which gain meanings by their uses, Wittgenstein (1995) introduces the notion of *language games* as being the “whole, consisting of language and the actions into which it is woven” (PI §7). Hence, processes such as describing objects, reporting events, building hypotheses and analyzing them, telling stories, solving calculations, and others, are exemplified by Wittgenstein as language games. In aphorism 23 Wittgenstein states that language

games are part of a form of life, which leads Glock (1996:124) to highlight that the notion of form of life emphasizes the “intertwining of culture, world-view and language” or, as Condé (1998:104) writes: “The form of life is the last mooring place of language”, i.e., the meaning of the language games that institute the different mathematics and the rationality criteria embedded in them are constituted in the materiality of the forms of life in culture. Thus, academic mathematics, school mathematics, peasant mathematics, indigenous mathematics, in brief, the mathematics generated by specific cultural groups, can be understood as networks of language games engendered in different forms of life. However, these different games do not have an invariable essence which maintains them completely incommunicado from each other, nor a property common to all of them, but some analogies or relationships – what Wittgenstein (1995) call *family resemblances*.

Later Wittgenstein’s ideas, briefly presented here, are the kernel of the discussion undertaken in this paper. Knijnik (2007a, 2007b) and Knijnik et al. (2005), taking support in empirical studies performed with the MST (the Landless Movement), have shown that the language games that shape Landless Peasant mathematics bear the marks of the orality of that peasant culture. Thus, for instance, to find how much could be made available monthly, during one year, with the 900 reais[2] obtained from the sale of thirty sacks of ecological rice, *Seu Otilio* – a 64-year old peasant who only had 4 years of schooling – explained:

Seu Otilio: We tried to know how much would be over to spend every month. For instance: nine hundred reais divided by twelve. Out of one thousand two hundred to get it to nine hundred reais, you had to take a quarter out of one hundred, which would become seventy-five reais. Because you take it out of ten, you have two and a half, making up the logic of ten. (...) So, as I reckon it, in this case there would be seventy-five reais a month to buy the other things. Any person who wants to use the machine or the pen will reach this value, I’m sure. (...) When I reckon it in my head I always have to look for the best path. I always have to round it out, to look for the large numbers. The closest, simplest way is to bring it to one thousand and two hundred reais. According to this logic it would be one hundred, but it could not be one thousand and two hundred because it is nine hundred. The twelve have numbers the same size as those that form nine. The nine can be formed by three times three, and twelve, four times three. So you have to take the total and see that twelve has a quarter more than the nine as a difference. This one quarter more is what I added, so I have to take it off the hundred (Knijnik and Wanderer 2008).

As shown by the excerpt above, the language game played by *Seu Otilio* considers the orders that are most relevant to find the final value. When he was asked about the ways in which he performed such language games *Seu Otilio* said:

Seu Otilio: I always tried to get to know and practice the three kinds of ways to do mathematical sums. I always used my memory, which I place first. I have

also always used the pen. I use the pen a lot to contribute and check large sums, in which one becomes very tired and have to record it. And another thing I have also used is the little machine. What I learned today [one of the mathematics classes of the Course] was to operate those memories [of the calculator] that I had never managed to get explained, so I was treading water. One would buy the little machine and only use it to add and divide. And one has to know all of them, and realizes what does not fit (...). But, actually, I can reckon very well in my head, right. I can reckon very well in my head. And I even like to. But my logical reasoning about the numbers is always in my head. I always approach; I can't switch off the reasoning for reckoning the idea, with the machine sum or of the pen. I can reckon with a pen, but I always project so many bags will give, more or less so much. I have always practiced this and I think it is very good. Because one manages to see if the sum is wrong, one can realize that it is wrong. When you reckon it by pen, or even on the machine, I can see it immediately, OK. But this is not right. Because I have already projected it this way. So what I was trying to find out is how to theorize this (Ibidem).

In *Seu Otilio's* description, different language games can be identified: those of peasant mathematics – which use the “reasoning of sums through ideas”, the language games connected to school mathematics in which he had been socialized – in his words, “pen sums”, and the games involved in using the calculator – whose further learning had occurred during the pedagogical work that we were developing. However, despite the specificities of such games, *Seu Otilo* shows that he knows they bear a family resemblance, in the sense given to it by Wittgenstein.

In the next section, based on the above empirical data it will be discussed how school and, in particular, school mathematics works through what Hardt and Negri called *differential inclusion*.

DIFFERENTIAL INCLUSION AND LANDLESS MOVEMENT MATHEMATICS EDUCATION

In his class of March 17th in the year of 1976 at College de France, Foucault (2002) goes further in the discussions about biopower, showing its connections with the mechanisms of racism. He highlights first that it can be considered as a means to insert a cutoff in life, “the cutoff between the one who is to live and the one who is to die” (Ibidem:304). Secondly, racism allows maintaining a relationship of the kind “to make people live, you must massacre your enemy”, i.e, the “death[3] of the other, the death of the bad race, of the inferior race (or of the degenerate, or of the abnormal) is what will make life in general healthier; healthier and purer” (Ibidem:305). Thus, “taking life [...] tends not to victory over political adversaries, but to the elimination of the biological danger and to the strengthening, directly linked to this elimination, of the species or race itself” (Ibidem:306).

The arguments presented by Foucault converge with the analysis undertaken by Hardt and Negri (2003) on imperial racism. For these authors, even with the end of slavery and of the apartheid laws, it cannot be said that racist practices have diminished. On the contrary, they continue as intense as ever, but now present themselves under different forms in our society. Étienne Balibar (apud Hardt and Negri 2003:192) considers these new forms of racism as “a racism without race, or more precisely a racism that does not rest on a biological concept of race”. As discussed by Hardt and Negri (Ibidem: 213), based on Deleuze and Gattari’s theorizations, the imperial racist practice is not sustained by a theory of racial superiority in which there would be a binary division between races and exclusion processes, but by mechanisms that act as differentiated inclusion. Thus, for the authors, the point of departure is not a difference among races that can generate antagonistic blocks to separate those “inside” and “outside”, but processes that act by inclusion and subordination. In their words:

White supremacy functions rather through first engaging alterity and then subordinating differences according to degrees of deviance from whiteness. This has nothing to do with the hatred and fear of the strange, unknown Other. It is a hatred born in proximity and elaborated through the degrees of difference of the neighbor (Hardt and Negri 2003:194).

In constructing their argument, Hardt and Negri also emphasize the impossibility of saying that there are no racial exclusions, but that it must be understood that this type of exclusion “arises generally as a result of differential inclusion” (Ibidem:194). For them, it would be a mistake to consider even the apartheid laws as “the paradigm of racial hierarchy” (Ibidem:194), since the racial differences would not be absolute or of nature, but differences in degree. “Imperial racism, or differential racism, integrates others with its order and then orchestrates those differences in a system of control” (Ibidem:195).

The theoretical tools briefly presented here will be useful to analyze how closing the itinerant schools of the Brazilian Landless Movement and incorporation of the children into the urban public schools – which we will discuss below – constitute a differential inclusion process in which school mathematics will be a gear in its production.

The schooling processes performed by the Landless Movement comprise specificities that have been studied by scholars of important international research centers (Kane 2000). Among these specificities it should be emphasized that their schools of Infant Education, Primary Education, Secondary School and, more recently, Higher Education, belong to the public system of education (at municipal, state or federal levels), i.e., they are subject to official guidelines and regulations. However, due to the relative autonomy given by the Brazilian Educational System to its institutions, the MST has organized the curriculum of its schools based on pedagogical and philosophical principles (Knijnik, Alekseev & Barton 2006) which fulfill purposes of a schooling that will serve the interests of their struggle for land reform.

As explicitly stated by Caldart (2003:62), “under pressure from the mobilization of families and teachers, the movement decided to take on the task of *organizing and articulating, inside its organicity, this mobilization [for the schooling of its members], to produce a specific pedagogical proposal for the schools achieved and to educate people who are capable of working from this perspective*”. Thus, the MST considers it a key issue that their schools should not only be located in the camps and settlements, but, mainly, that they should develop pedagogical work closely connected with the Landless peasant culture (Knijnik 2007a), with its marks of the Brazilian rural culture in its interactions with the specificities of the practices of struggle developed by the movement.

This educational perspective is followed by the work developed by MST schools and its teacher training courses (Knijnik 2007a, Lucas de Oliveira 2004) in the sphere of teaching and learning mathematics. The pedagogical practice described below (Knijnik and Wanderer, 2008) very clearly exemplifies this approach.

It was centered on a report written by a woman student who belonged to the Landless Movement National Committee (the group of elected peasants who coordinate the movement at the national level). Her report was about a march that the Landless Movement was doing at the time in a specific region of the state of Rio Grande do Sul. The march involved hundreds of peasant families who were walking along the main roads of that region in order to press the state authorities to expropriate an unproductive large-holding whose owner had been in debt to the State for a long time, to the tune of about 32 million Reais. When the discussion about her report started, she interrupted what was going on in the class, stood up and, moving from a student subject-position to a leader subject-position, in a stentorian voice, as if she was in front of thousands of her comrades, explained:

Student: This is what is going on. We have eleven thousand and six hundred families settled in [the state of] Rio Grande do Sul. Following the data given by our Production Sector, the total amount of the State debts is seventy million reais, its total, counting everybody's debts. What is the point? The point is that Senhor Sotal, the landowner himself, has a debt of thirty-two million reais. In fact, it is not thirty-two, it is thirty-seven, but let's assume thirty-two million. Then, he alone has a debt of thirty-two million. And then I have a question because it is hard to debate about this in the schools, in the communities we are visiting during our march, in the media: What is the percentage that a single farmer took of public government money compared to our debts, to the “claims” that we are making? This question was asked on the first day of the march, already on the first day, when we sat down to prepare the people who were going to talk at the schools. This question came up and we looked at each other and couldn't [answer]. Then someone said: it can't [the answer to the question] be more or less (...) we become insecure and afraid to speak. I never managed to explain this part, then (...) reckon what is the percentage that a single landowner took from the

government. (...) To give you an idea we [in the report] only took economic data. So [if we were to take] the question, what is the social result [of this situation] certainly it would call much more attention even. But [what we wrote in the report] is an economic result. (...) Let us get into the economic issue, because if we get into the social issue, it can't even be compared (Knijnik and Wanderer 2008).

Her talk was interrupted by demonstrations from the other students, applauding her. The continuity of pedagogical work had as its center the analysis of her report. This analysis was performed using some of the Landless mathematics language games, which were briefly mentioned in the previous section. Initially the group was interested in discussing mainly the economic dimension of the situation, even if its social and political dimensions were always present. As one of the peasants justified: "With very concrete data, [one] strengthens our debate, our militancy". Another student completed this saying: "It is important to take this to the march". The group consensus was that it would be important to write a text with the results of the analysis of the situation we had carried out in our mathematics class. Thus, the next stage of pedagogical work involved writing a text, which not only showed the analysis results but also highlighted the reasoning developed by the group, marked by Landless mathematics language games associated to their form of life. From the following week onwards, the text was distributed in the communities through which the march moved.

As happens in all other marches, the Landless children who participated in that specific march with other member of their families did not stop their schooling thanks to the itinerant school[4] to which they belonged.

In her major research, Camini (2009) highlights that approximately four thousand six hundred students had already attended the itinerant schools of the MST camps in the State of Rio Grande do Sul, from the time they were instituted in 1996, to the end of 2008. Even following principles and guidelines that regulate the public schools in the state, such as the requirement of 200 days of school a year, the itinerant schools, ever since they were made official, had some unique characteristics: the students and teachers were Landless people living in the movement camps; teacher training was performed in Secondary School courses and courses of Higher Education belonging to the Movement; the students entered at any time during the school year; the general organization of the schools and of pedagogical work was implemented by the teachers and by the camp community; the school curriculum was structured by stages that were the equivalent of the initial grades of Basic Education and supported by the principles of the Landless Movement Pedagogy. Additionally, the teaching materials used by students were prepared by members of the MST Sector of Education, comprising researchers and educators connected to the Movement, according to their interests, needs and purposes (Camini 2009).

Although Rio Grande do Sul was a pioneer in the organization and implementation of the itinerant schools in Brazil, it is in this state that, since March 2009, decrees of the State Government together with the State Attorney's Office have been issued for the purpose of interrupting this educational process. Closing the itinerant schools was preceded (during 2008) by the implementation of measures pointing to this, such as delays in paying the teachers' salaries and suspension of the delivery of teaching materials to students, as happens in all MST itinerant schools around the country. Thus, in March 2009, in the State of Rio Grande do Sul, the government agencies ordered that the children be transferred from the itinerant schools to the urban public schools of the municipalities where the camps are located. It was threatened that if this transfer were not made, the students would not receive their certificates at the end of the year and their parents would be held legally responsible for their "negligence". The debate about this issue has been widely disseminated by the national (and also international) media. In one of the most important newspapers, the State Attorney said:

The [Itinerant] schools perform brainwashing. We have to guide the children about the possibility of becoming part of the world that is there, of the productive world. [...] In a civil enquiry during which several things connected to MST were investigated, one of the proposals was an *Agreement on Conduct Adjustment* with the State Department of Education, for the public school system to absorb the students from these schools. This should be done so that they will have access to the knowledge imparted to all people[5].

Statements like the one above indicate that the *Agreement on Conduct Adjustment* involves sending the Landless children to urban public schools of the Brazilian educational system, enabling a more effective control of their presence and attendance at school. Thus, the members of the Landless Movement become a target of the technology of power Foucault called biopolitics. Such technology, exercised through biopower, "takes the population as its object, as a large living body, so as to manage to govern this population in the best way possible" (Veiga-Neto 2006:35). This government puts into action control mechanisms also on the knowledges that will be taught to the Landless children. As a government authority emphasized, "Mandatory public teaching must be the same everywhere. It simply aims at ensuring that these children will have a right which is to be in an equal situation to the others"[6].

In brief, the elements of pedagogical work presented here and the discussion performed in the previous section about different mathematics, in particular about language games that constitute the peasant mathematics and its family resemblances to school mathematics, point to the specificities of teaching and learning mathematics at the MST schools and in its teacher training courses. This is a schooling process that is strongly linked to the Landless form of peasant life.

The closing of the itinerant schools in Brazil's southernmost state was an event with unique characteristics. Hundreds of children were forced to move to regular schools,

most of them situated in towns linked by precarious roads to the camps in which they live. The access to those towns is by using school buses in a state of disrepair. In these schools, they will be guided “*about the possibility of becoming part of the world that is there, of the productive world*” so that *they will have access to the knowledge imparted to all people*”: a teaching that “*will ensure that the children will be in an equal situation with the others*”. In other words, closing the itinerant schools would favor school inclusion and, consequently, social inclusion.

However, with the support of Hardt and Negri’s theorizations, we are led to state that this inclusion will be above all a differential inclusion: when the Landless children are obliged to attend urban schools, they will in fact not be excluded from the official educational processes. However, this inclusion will be permanently marked by a differentiation that will produce hierarchies and subordination. The MST struggles, its history, the Landless peasant culture, the language games that constitute what we have called Landless peasant mathematics, all this will be distant (not only geographically) from the urban school. The teaching materials used at urban public schools, as well as the training of their teachers, is also very distant from the Landless peasant form of life. The State Attorney said that the school curriculum would also enable the Landless children “*to have access to the knowledge imparted to all people*”. It can easily be deduced that this knowledge is not the one from the Landless peasant form of life.

In particular, it does not include the language games that constitute Landless peasant mathematics, that are possibly unknown by the teachers of urban public schools. Thus, the language games of their mathematics will be considered spurious and, therefore, absent from the school curriculum, “*repel[ed], out of its borders*” (Foucault 2001:33). So, school mathematics will work as a gear in the mechanism of differential inclusion: the Landless children will be in the official school, they will learn “*the knowledge offered to everybody*” and, at the same time, they will position their own mathematical knowledge at a lower level. This is how differential inclusion functions: it attracts alterity, but subordinates and hierarchizes the differences. This is how the post-modern racism discussed by Hardt and Negri functions.

NOTES

1. The author refers to aphorism 107 of Wittgenstein’s book *Philosophical Investigations*. Following him, throughout the paper similar notation will be used to mention Wittgenstein’s aphorisms in that book.
2. In August, 2009, 1 Real was the equivalent to approximately 0.3 Euro.
3. According to Foucault (2002:306), when using the word death he is not considering “*simply direct murder, but also everything that may be indirect murder: the fact of exposing to death, of multiplying the risk of death for some, or, pure and simply, political death, expulsion, rejection, etc.*”

4. According to Camini (2009:135), official MST documents indicate that the *Itinerant School* received this name because it means “a school that follows the camp itinerary until the time when the families have achieved land ownership, the settlement. Then comes another stage of the process, obviously connected to the previous one. It is the time to take the legal measures to establish the Peasant School for the sons/daughters of those who, returning to the rural area wish to continue studying, working, living. The name Itinerant also means a pedagogical position of walking with the Landless, which is a great advance in the sense of affinity between the formal schooling processes and the educational experiences and practices of an organized social movement, such as MST.”

5. Source:

www.unisinos.br/ihu/index.php?option=com_noticias&Itemid=18&task=detalhe&id=20077.

Accessed 5 April 2009.

6. Source: www.jusbrasil.com.br/noticias/884592/mp-manda-fechar-escolas-itinerantes-do-mst-nors-decisao-provoca-protestos. Accessed 5 April 2009.

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