

Mathematics education and differential inclusion: a study about two Brazilian time–space forms of life

Gelsa Knijnik · Fernanda Wanderer

Accepted: 1 April 2010 / Published online: 23 April 2010
© FIZ Karlsruhe 2010

Abstract The study discusses mathematics education from a Foucaultian genealogical perspective. It considers two Brazilian time–space forms of life. Both are situated in the southernmost state of the country. One occurred during the mid-twentieth century, while the other connected to the *Movimento Sem Terra* (Landless Movement), a national social movement, emerged 25 years ago precisely in this part of the country. The study analyzes two events of those forms of life: imposing the Portuguese language on the German colonization schools during the time of the Nationalization Campaign (1939–1945) and the closing of the itinerant schools of the Landless Movement that happened recently. Using Later Wittgenstein ideas, some language games that constitute school mathematics and peasant mathematics in those two forms of life are described. Based on this description articulated with the discussion about Hardt and Negri’s notion of *differential inclusion*, it is argued that school mathematics in those two different time–space forms of life works as a gear in the production of differential inclusion.

Keywords Differential inclusion ·
MST mathematics education ·
German colonization school mathematics ·
Later Wittgenstein · Foucaultian genealogy

G. Knijnik (✉) · F. Wanderer
Programa de Pós-Graduação em Educação,
Universidade do Vale do Rio dos Sinos, UNISINOS,
Av. Unisinos, 950, São Leopoldo, RS CEP 93022-000, Brazil
e-mail: gelsak@unisinos.br; gelsak@uol.com.br

F. Wanderer
e-mail: wanderer@unisinos.br

1 Introduction

This study aims to discuss mathematics education in two rural contexts of southern Brazil from a Foucaultian genealogical perspective.¹ It considers that mathematics education must be understood in a broader sense, which does not restrict it to what happens at institutions of formal education. In particular, it goes beyond school mathematics.² For example, as discussed elsewhere (Knijnik 2007a), the educational process developed by the Brazilian Landless Movement³ [in Portuguese, *Movimento Sem Terra* (MST)] throughout its history must be seen beyond schooling, since each landless subject educates her/himself through her/his participation in the everyday life of the communities and also through a wide range of political activities developed by the movement. In this enculturation process to which the landless people are subjected, they learn how to use the language games that constitute their mathematics.

Based on Later Wittgenstein’s ideas, the paper assumes that there are many different mathematics, such as the Brazilian landless peasant mathematics described by Knijnik (2007a, b) and the *Costão* German-descendent

¹ In recent years, a Foucaultian genealogical approach has been increasingly used in the field of Education. Studies developed by Miller and Rose (2008), Popkewitz and Brennan (1998), Walshaw et al. (Miller and Rose 2004) and Bridge (2002) are examples of relevant works performed from such a theoretical perspective.

² This approach has strong connections with Valero’s conception of mathematics education (Valero 2009). The author considers it as a network of social practices operating in different sites and at different levels, not restricted to the classroom and the school context (Valero 2009).

³ The Landless Movement website (<http://www.mst.org.br/mst/index.html>) presents a complete overview of its history and current struggles for land reform and education.

settlers' mathematics studied by Wanderer (2007).⁴ The first section of the paper briefly clarifies the philosophical thinking, which supports that assumption. The section ends with empirical data from Knijnik and Wanderer's above-mentioned studies. It shows some family resemblances of the language games that constitute the mathematics of these two different time–space forms of life. It also makes explicit their specificities when compared with the school mathematics language games. The second section of the paper presents a genealogical analysis of mathematics education in two Brazilian time–space forms of life. Although both are situated in the southernmost state of Brazil, one occurred during the mid-twentieth century, while the other, connected to a national social movement which emerged 25 years ago precisely in this part of the country, is now considered the most important social movement in Latin America. The purpose of performing such a genealogical analysis is to make explicit how school mathematics in the two different time–space forms of life works as a gear in the production of what Hardt and Negri (2003) call *differential inclusion*.

To consider genealogy as an analytical approach means to follow Michel Foucault's understanding of this notion, assuming that *genealogy* "rejects the metahistorical deployment of ideal significations and indefinite teleologies. It opposes itself to the search for 'origins'" (1977, p. 140). Here, Nietzsche's influence on Foucault's work is very clear. The philosopher is explicit about it in his discussion about the need to "challenge the pursuit of the origins" (Foucault 1977, p. 142). He shows that, for Nietzsche, to pursue the origins would mean "an attempt to capture the exact essence of things, their purest possibilities" and to assume "the existence of immobile forms that precede the external world of accident and succession" (Foucault 1977, p. 142). It would mean considering the existence of a perfect moment of birth linked to God's metaphysical worlds. As opposed to this, Foucault says that "historical beginnings are lowly: not in the sense of modest or discreet like the steps of a dove, but derisive and ironic, capable of undoing all infatuation" (Foucault 1977, p. 143). Moreover, the origin would be the "site of truth", a notion that Foucault deconstructed throughout his intellectual life. He was interested in analyzing historical processes through which some statements were taken for

⁴ The study aimed to analyze the discourses about school and school mathematics of a group of German-descendant, Evangelic-Lutheran settlers who attended the school of *Costão* (a rural community situated in the southernmost state of Brazil) during the Nationalization Campaign: one of the actions taken by the *Estado Novo* (1937–1945) and implemented by the dictator *Getúlio Vargas*. This historical period is considered a discursive space from which emerge statements about national conscience, protection of the family, work and country, seeking a national identity in favor of a modern state that is united, unique and strong.

granted and considered as truths in each specific epoch. Foucault also argues in favor of Nietzsche's notion of effective history, which "deals with events in terms of their most unique characteristics, their most acute manifestations. [...] The forces operating in history are not controlled by destiny or regulative mechanisms, but respond to haphazard conflicts" (Foucault 1977, p. 154). Foucault considers that "it is necessary to master history so as to turn it to genealogical uses, that is, strictly anti-Platonic purposes. Only then will the historical sense free itself from the demands of a suprahistorical history" (Foucault 1977, p. 160).

Finally, the paper ends with a summary of the discursive strategy developed to build its main rationale: school mathematics can work as a gear in the production of differential inclusion, which becomes explicit through Foucault's genealogy and the Later Wittgenstein ideas used to analyze empirical studies developed in two specific time–space Brazilian forms of life. To examine school mathematics from this perspective allowed us to further understand the complexities of school inclusion processes that take place in our globalized world, such as those involving immigrant children. It allowed us to ponder over different forms of racism and discrimination and how curricular subjects operate in their (re)production.

2 Different forms of life and different mathematics

Postmodern times have been characterized by the proliferation of multiple interpretations of the social world. At the same time, there is the beginning of a "sort of suspicion of the place from which these interpretations are constructed, i.e., of the idea of reason itself" (Condé 2004, p. 16). According to this author, from the second half of the nineteenth century and the beginning of the twentieth, with the crisis in mathematics, the theory of evolution, the rise of human sciences, the 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, p. 29) says that "*we need friction. Back to the rough ground* (PI §107)⁵ of the social practices, and there to establish the criteria of our rationality". Returning to the rough ground drives us to regard modern project and, consequently modern science with suspicion. In particular, it allows us to problematize the existence of a unique and

⁵ 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.

totalizing mathematical 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 that 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.

According to Wittgenstein’s interpreters such as Moreno (2000, p. 56), with the expression *language game* the philosopher points to the relevance of the *praxis of language*, emphasizing that understanding the meaning is not a matter of seeking a logical and definitive determination, which could apprehend it “once and for all”, but the purpose is to analyze the criteria “supplied by the use we make of language in many different games, i.e., in the different forms of life”.

In aphorism 23, Wittgenstein states that language games are part of a form of life, which leads Glock (1996, p. 124) to highlight that the notion of form of life emphasizes the “intertwining of culture, world-view and language” or, as Condé (1998, p. 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 keeps them completely incomunicado from each other, or a property common to all of them, but only some analogies or relationships: what Wittgenstein (1995) calls *family resemblances*. According to the philosopher, language games have “a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail” (PI §66). He explains: “I can think of no better expression to characterize these similarities than ‘family resemblances’; for the various resemblances between members of a family: build, features, color of eyes, gait,

temperament, etc. etc. overlap and criss-cross in the same way – And I shall say: ‘games’ form a family” (PI §67).

These Wittgensteinian formulations allow us to consider the mathematics produced in different forms of life as networks of language games that have family resemblances between them. In Condé’s words: “What exists are the different aspects of language that are expressed through language games which are multiple, varied and, mainly, particular” (1998, p. 124).⁶ Hence, it can be said that there are no universal superconcepts, which can serve as a parameter for others. Distinct mathematics language games have analogies, similarities that permeate them and allow engendering different criteria of rationality. Later Wittgenstein’s ideas briefly presented here are in the kernel of the discussion undertaken in this paper. Knijnik (2007a, b) and Knijnik et al. (2005), taking support from empirical studies performed with the MST, have shown that the language games that shape the 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 1 year, with the 900 reais⁷ obtained from the sale of 30 sacks of ecological rice, *Seu Otílio*, a 64-year-old peasant who only had 4 years of schooling, explained:

(...) 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

⁶ Glock (1996, pp. 120–121) says that one can understand the notion of family resemblances not as a single line that permeates all the language games, but as threads that are interwoven as in a rope, constituting these games. According to him, “when we ‘look and see’ whether all games have something in common, we notice that they are united not by a single common defining feature, but by a complex network of overlapping and criss-crossing similarities, just as the different members of a family resemble each other in different respects (build, features, color of eyes, etc.)”.

⁷ In December 2009, 1 real is the equivalent to approximately 0.3 euro.

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 from the excerpt above, the language game played by *Seu Otilio* considers the orders that are most relevant to finding the final value. Knijnik (2007a, b) shows that this method of operating is used recurrently by the landless peasants who consider themselves “good at reckoning in their head”. Differently from the addition algorithm taught at school, the language games practiced by these peasants consider above all the values of each parcel, and how different it is to deal with hundreds, tens or units, i.e., the peasant practices prioritizing the values that contribute most significantly to the end result. Here is an example of a peasant language game, which has its specificity and also a family resemblance to the school mathematics language game.

When *Seu Otilio* was asked about the relationships between school mathematics practices and their “native” ones, he explained:

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 (Knijnik and Wanderer 2008).

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

Wanderer's study (2007) about the *Costão* settlers' form of life at the time of the Nationalization Campaign also shows how such a rural form of life was marked by orality. One of her interviewees, *Seu Ivo*, on telling some of his experiences in selling meat, pointed out: “in those days when I had a slaughterhouse the meats cost one twenty, one thirty. So I bought two kilos or three kilos and two hundred grams. I did this all in my head”. To explain how he reckoned out the amount to be paid by the customers when purchasing meat, he mentioned a situation in which a kilogram cost R\$ 4.20 and the purchaser wanted 2.2 kg:

Two kilos makes eight reais and forty centavos of a real. I first round out the amount, eh, the four reais. I do two times four, because it is four reais and twenty centavos of a real. Then, another two times two, that's four, eh. This all had to be done in one's head [...]. And two hundred grams then, is two time forty-two, eh. (...) That is I the way I always think to reckon it out. First reckon the full amount, leave out the centavos.

As exemplified in the excerpt, the language games of the rural culture studied by Wanderer converge with the empirical findings of Knijnik, since they involve rules such as decomposition, estimating and rounding. These rules were different from those that engendered the language games of school mathematics produced in that time-space, marked by writing, formalism and abstraction. When the participants of the Wanderer's study were asked about their oral mathematics practices, they said that they did not learn them at school. In *Seu Ivo's* words: “This I got in my everyday practices. In class, I learned nothing, in class only the multiplication tables we learned, only the multiplication tables”. Another participant, *Seu Seno*, told that, at the time he attended school, the mathematical calculations “had to be done on the blackboard. Then, in the last years, in the third and fourth grades, one already had to write in the copybook”. Besides positioning school mathematics as a knowledge marked by writing, *Seu Seno* also highlighted the requirement to “show how one does it”: “One had to reckon it out. If you knew it in your head, you couldn't just

write only the value there, you had to do the calculation, he [the teacher] wanted to see it”.

In summary, Knijnik and Wanderer’s empirical data (coming from two distinct Brazilian time–spaces) brought evidence of different mathematics language games practiced in rural forms of life in the south of Brazil: the school mathematics and the peasant mathematics. So, based on empirical studies and using Later Wittgenstein’s theoretical tools, it can be argued that there are different mathematics, each of them shapes and shaped inside a form of life by a network of language games, which have specificities and also family resemblances. This argument leads us to the statement that there are more than a single and unique rationality, a single and unique mathematics, and a single and unique set of rules by which individuals and cultures deal with space, time and quantification processes, which in the western civilization is associated with the notion of mathematics. As shown elsewhere (Knijnik 2007b), it is important to understand how a single rationality among other rationalities, with its Eurocentric bias and its rules marked by abstraction and formalism, enters into the order of the pedagogical discourse, or in Foucault’s words, positioning the others as “wild exteriorities” (Foucault 2001, p. 35).

Here, it is important to mention Foucault’s contribution (2002) to the discussions on the rise of modern science. According to the philosopher, instead of considering enlightenment as “the path of the Day dissipating the Night”, or as the struggle of “correct and worthy” knowledge against the ignorance or the “truth” against error, it is necessary to understand this historical period as “an immense, multiple struggle of knowledges against each other – of the knowledges that oppose each other by their own morphology, by their holders who are each other’s enemies, and their intrinsic power effects” (Foucault 2002, p. 214). Disciplining knowledges enabled the university to be constituted as an institution that is able to operate in order to select, classify and distribute knowledge in society, and also to engender control mechanisms on “regularity of enunciations”, i.e., “the problem will be to know who spoke and who was qualified to speak, at what level this statement is situated, in what set it can be placed, and to what extent it is like other forms and other typologies of knowledge”. (Foucault 2002, p. 220). These processes, according to the philosopher, created new relations between power and knowledge, allowing the organization of modern science. Further, according to the philosopher’s arguments, it can be understood that in the enlightenment, through processes of elimination, normalization, classification and centralization, which begin to operate among the knowledges, conditions are created for the rise of disciplines. These disciplines delimit what counts as “true” or “false” in their respective fields of knowledge, and who takes on the position of enunciating these “truths”.

The analysis performed by Foucault, which we presented here synthetically, is connected to what we discussed previously about Later Wittgenstein’s work. Indeed Condé (2004), one of the commentators of the Austrian philosopher’s later work points out that if the modern project was sustained by the belief that by reason (unique, universal and a priori) it would be possible to dominate nature and lead men through the path of truth and progress, already in the nineteenth century the bases of such a project were placed under suspicion, leading to the search for other models of rationality. New possibilities for knowledge were created, rejecting the idea of a universal scientific rationality based on ultimate and true fundamentals. Referring to what Wittgenstein writes in Aphorism 107 of *Philosophical Investigations*, Condé (2004, p. 29) emphasizes that “it is necessary to return to the friction of the rough soil of social practices, and there establish the criteria of our rationality.”

In summary, in this section we presented the theoretical tools of the Later Wittgenstein work, which allow us to analyze the mathematical language games from two different rural time–space forms of life. We showed their family resemblances and also their specificities in relation to school mathematics. By doing so, we intend to make explicit how such forms of life are characterized by rationalities, which do not coincide with the rationality of modern science produced by the enlightenment. Here, Foucault’s ideas were useful to understanding the hierarchical processes, which place the modern science rationality in a privileged position. Wittgenstein and Foucault’s ideas were relevant to providing theoretical support to think about school mathematics rationality and the “others”, not considering them from an exacerbated relativistic perspective. The discussion of those two different rural time–space forms of life in southern Brazil guided us to conceive that school and, in particular, school mathematics works through what Hardt and Negri called *differential inclusion*. This statement will be developed in the next section.

3 Differential inclusion and mathematics education in two Brazilian time–space forms of life

In his class of 17 March 1976 at College de France, Foucault (2002) goes further into the discussions about biopower, showing its connections with the mechanisms of racism. He highlights first that racism can be considered as a means of inserting a cutoff in life, “the cutoff between the one who is to live and the one who is to die” (Foucault 2002, p. 304). Secondly, racism allows maintaining a relationship of the kind “to make people live, you must massacre your enemy”, i.e., the “death 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” (Foucault 2002, p. 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” (Foucault 2002, p. 306).

The arguments presented by Foucault converge with the analysis undertaken by Hardt and Negri (2003) on imperial racism. For the authors, even with the end of slavery and of the apartheid laws, it cannot be said that racist practices have diminished in the world. On the contrary, they continue as intensely as ever, but now present themselves under different forms in our society. Étienne Balibar (cited in Hardt and Negri 2003, p. 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 (2003, p. 213), based on Deleuze and Gattari 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, there is not as a point of departure a difference among races that can generate antagonistic blocks, which separate those “inside” and “outside”, but processes that effect 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, p. 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” (Hardt and Negri 2003, p. 194). For them, it would be a mistake to consider even the apartheid laws as “the paradigm of racial hierarchy” (Hardt and Negri 2003, p. 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” (Hardt and Negri 2003, p. 195).

The theoretical tools briefly presented here will be useful to perform the genealogical analysis about how mathematics education of two Brazilian time–space forms of life works as a gear in the mechanisms of differential inclusion.

3.1 Costão rural community during the Nationalization Campaign and mathematics education

The settlers of Costão, the rural community studied by Wanderer, were descendents of German immigrants from Rheinland, Saxony and Westphalia, who came to the south of Brazil in 1824.⁸ According to Dreher (1994), this wave of immigration, similar to others happened in Europe, was triggered by the need for: populating the Brazilian territory, constantly threatened by invasions from the Platine countries; stimulating economic development, especially with agriculture, as well as of enacting a “population whitening” policy. The strong connection between this “population whitening” policy and encouraging European immigration was sustained by the Brazilian State with the argument that “assumed the superiority of whites and the inferiority of other races, especially the black one, and sought its scientific legitimacy in the racial theories in vogue in Europe and the United States” (Seyferth 1990, p. 18). When this colonization policy began, the Germans, among others, were given the right to own land (previously allowed only for Portuguese or Luso-Brazilians), which was considered to be the starting point of the European immigration to Brazil (Mauro 2005, p. 26).

The worldwide geopolitical reconfigurations during the first half of the twentieth century not only interrupted these immigration movements to Brazil, but also positioned the Germans who had immigrated and their descendants as “foreigners” to be effectively integrated into the country. In fact, as mentioned by Py (1942) in an official state document, in 1937 the Nazi campaign in Brazil appears to have entered a phase of intense activity. Brazil was considered one of the “most sought-after catches in the German plan to conquer the world” (Py 1942, p. 11); the Germans were described as invaders and their descendants as followers of the Nazi politics, and consequently considered a threat to the country (Wanderer 2007).

Thus, as the *Estado Novo* (1937–1945) began, the Nationalization Campaign was implemented, constituting a mechanism that engendered power technologies to manage the population, in particular the south Brazilian population descending from the Germans. As shown by Wanderer (2007), the analysis of official documents of that historical period indicated that the implementation of the Nationalization Campaign was considered necessary for the

⁸ The immigrants were not a homogeneous group. Many were peasants, marginalized urban people and people excluded from the industrialization process, besides those who could be considered politically exiled intellectuals. Some came to serve the Brazilian Imperial Army, others to work in the coffee plantations in the southeast, and most of them came to the south because of the land occupancy policy for the development of family agriculture on small properties (Meyer 1999, p. 34).

well-being of Brazilians and, specifically, of those who lived in the south of the country. This was because it would ensure “an atmosphere of order and peace” for life in the society, as the population appeared to be intimidated by Nazism, which was seen as a great threat to the population of the state of Rio Grande do Sul and placed at risk citizenship and nationality, as well as the freedom of living in certain places, marrying, having children and even eating according to personal tastes (Py 1942).

In summary, during the *Estado Novo*, forms of racism were gradually implemented to ensure the supposed integrity and “purity” of the Brazilian race compared to those groups that meant a kind of “danger” to the biological and political order of the nation, such as the Germans and their descendents. However, it was not a racism marked by complete repulsion or expulsion of such groups from the country, but a kind of racism that acted through differential inclusion (Hardt & Negri 2003), which allowed approach and, at the same time, subordination. This differential inclusion was produced by the implementation of the Nationalization Campaign decrees, which began to disseminate technologies of population control by the following: imposing the use of the Portuguese language in church, school and other spaces of society; incorporating civics lessons into the pedagogical processes; allowing only teachers appointed by the state education offices to teach Portuguese, Brazilian history and geography by establishing public schools in the regions colonized by Germans and Italians; and using only teaching materials published in Portuguese, among other decrees.

Hence, it was not the exclusion of Germans and their descendents from society, but a differential inclusion, since these groups continued to participate in the activities of church, school and other public spaces. However, they were constantly positioned as men and women who did not communicate in the “right” language, understand church services (which began to be held only in Portuguese), know historical and geographical aspects of Brazil or use the “appropriate” teaching materials. In summary, it was a process that produced an approach and, at the same time, a subordination.

In the *Costão* school, the imposition of Portuguese as the only form of communication produced breaks also in the way of dealing with their own mathematical knowledge, especially concerning the difficulty of doing mathematical calculations in Portuguese and the need to “change the way of thinking” to perform the calculations. An analysis of Wanderer’s interviews shows that there was evidence of a regulation process in school subjects’ thinking when the Portuguese language was imposed on mathematics classes, especially with regard to the difficulty of performing mathematical operations in the Portuguese language and the need “to change the way of thinking” to

carry out school calculations. On the other hand, even in those who enunciated that the process of imposing the Portuguese language at school did not modify their forms of thinking and reasoning mathematically, in their narratives, regulation mechanisms produced by school mathematics could be identified, mainly those associated with the use of written algorithms. On explaining their ways of “reckoning in their head”, the interviewees followed the rationality of the written algorithms. Thus, in addition, they began calculating with the units, then operating with the tens, etc., following a similar order to that in which the numbers are expressed in German, in which the units are said before the tens. Thus, if the process of imposing the Portuguese language at school was not signified (understood) by some participants in Wanderer’s research (2007) as a generator of ruptures in their way of thinking, it was possibly because the logic of the written algorithm was similar to the one that ruled the enunciation of the numbers in the German language (at least for units and tens). They would be regulated by the rationality that sustains the written algorithms in such a way that the production of other forms of thinking (in particular, other forms of producing mathematics) would become unfeasible and keep “everything the same”.

It is important to highlight that the imposition of the Portuguese language at school produced a cultural reconfiguration. Before that time, the few black people who lived in the community did not attend school, which was private and charged monthly fees that could not be paid by the children of families that did not own land to farm and also did not have any other paid work. However, during the implementation of the decrees of the campaign, the black children were allowed to attend school.

The presence of black children in school at that time shows an approach between the two cultural groups, but, at the same time, also a subordination of the new arrivals, since racist practices could be identified operating in the curriculum and, particularly, in school mathematics. Thus, blacks began to be positioned not only as a group that “survives from small thefts”, but as those who were responsible for their “own death”, as in the “Story of the 10 little niggers” in the textbook used for mathematics lessons:

The Story of the 10 Little Niggers

Once there were 10 little niggers. They were brothers.

1, 2, 3 – 4, 5, 6 – 7, 8, 9 – and 1 more are 10.

That is great. Now hear ye!

One day they went for a walk. Do you know what the oldest did?

He hanged himself from a head of cabbage – and only nine were left.

Then there were 9 little niggers. They were brothers

1, 2, 3 – 4, 5, 6 – 7, 8, 9 – 3 are missing for them to be twelve.

continued

One day they went for a another walk
 Do you know what the thinnest did?
 He ate a corn cob – and died from a tummy ache.
 Then there were 8 little black boys. They were brothers.
 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8.
 Do you know what they did?
 They went to play skittles – the fattest – his heart stopped.
 Then there were 7 little niggers. They were brothers.
 Do you know where they went?
 They went to the witch’s house – she was evil, she stuck one in the
 cauldron.
 Then there were 6 little niggers. They were brothers.
 1 – 2 – 3 – 4 – 5 – 6
 Do you know what they did?
 They went swimming in the lake – one died of lack of breath.
 Then there were 5 little niggers. They were brothers.
 1 – 2 – 3 – 4 – 5
 Do you know what they did?
 They drank a lot of beer.
 For the smallest – beer was poison.
 But he was not convinced – he drank too much and died.
 Then there were 4 little niggers. They were brothers.
 1 – 2 – 3 – 4
 Do you know what they did?
 They played cops and robbers – and one fell dead to the ground.
 Then there were 3 little niggers. They were brothers.
 1 and 2 and 3.
 Do you know what they did?
 They wanted to make porridge
 The greediest went to see – and oops! He fell into the pot.
 Then there were 2 little niggers. They were brothers.
 1 and 1 makes 2
 Do you know what they drank?
 They drank wine and more wine – one died, and one remained
 alone.
 The last little nigger, did not want to remain alone, poor thing.
 He married a little black girl, her hair was very curly.
 They had ten little children. See how they have already grown.

(Nast and Tochtrop 1933, pp. 20–21)

When discussing the above text with the participants in her investigation, Wanderer (2007) observed the multiple meanings assigned by them, which allowed her to analyze how integration of the black children occurred in that school during the Nationalization Campaign. One of the interviewees told that at the *Costão* school during that time, the students memorized all the verses of “The Story of the 10 little niggers” to be sung and recited, including the black children, who at the time were “employed” by the

teacher to speak with those who did not know Portuguese during the school break (because in class only the teacher spoke). However, during the implementation of the Nationalization Campaign decrees “the teacher let the *caboclos* [attend school] without paying, because they taught us Portuguese”. Another participant of Wanderer’s study explained:

These students were *caboclos*, descendents from slaves. They generally lived on the river banks, because they had no land to live on. *They survived from small thefts, and sometimes helping a neighbor on his farm.* But we did not mix much with them. Because, in those days, we were German, superior, we felt superior. *So, a black, a little black boy in class [...] that we didn’t like, nobody liked these people, and they also did not like it.*

The interviewee made explicit that he, as well as his classmates, did not like the African-descended children: “these people” “survived from small thefts and sometimes helping a neighbor on his farm”. They were landless “little thieves” and, consequently, should not be attending the *Costão* School. But the Nationalization Campaign was implemented and then precisely those who were previously excluded from the school were identified as a group that had one of the most relevant knowledges for the school institution at that time, the Portuguese language. So, they were allowed to attend school even “without paying”, since others could learn the “language of the country” from them, the way the German-descended communities of the south of Brazil referred to Portuguese (Bredemeier 2010). But even so, discrimination against black children persevered. In brief, we may consider that at the *Costão* school, during the Nationalization Campaign period, racial discrimination in the village prevented the African-descended children from attending school. This racism also operated through school mathematics, where the “little niggers” themselves were considered responsible for “their death”, as shown in the “Story of the 10 little niggers”. Furthermore, the school mathematics practiced there was directly implicated in the processes of racism, which created “racial hierarchies that are nonetheless stable and brutal” in school and in society (Hardt and Negri 2003, p. 194).

Hence, as during the period of the Nationalization Campaign, possibly nowadays, the closing of the itinerant schools of MST and the incorporation of the children into the urban public schools (which we will discuss below) also constitute a differential inclusion process in which school mathematics will be a gear in its production.

3.2 Brazilian Landless Movement and mathematics education

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 (on the 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 et al. 2006), which fulfill the purposes of a schooling that will serve the interests of their struggle for land reform.

As explicitly stated by Caldart (2003, p. 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 crossings with the specificities of the struggle practices developed by the movement.

This educational perspective is followed by the work developed by MST schools and its teacher training courses (Knijnik 2007a; Monteiro 2004; 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 discussed a march participated by the Landless Movement at that time in a specific region of the state of Rio Grande do Sul. The march involved hundreds of peasant families, who walked along the main roads of that region to press the state authorities to expropriate an unproductive large holding. The owner had been in debt to the tune of about 32 million reais to the state for a long time. 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:

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 applause from the other students. 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. 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 with their form of life. From the following week onward, the

text was distributed among the communities through which the march moved. As happens in all other marches, the landless children who participated in that specific march with other members of their families did not stop their schooling, thanks to the itinerant school⁹ to which they belonged.

In her major research, Camini (2009) highlights that approximately 4,600 students have 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 specificities: 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 camped 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. Besides, the teaching materials used by the 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 has been 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 were issued for the purpose of interrupting this educational process. Closing the itinerant schools in 2009 was preceded in 2008 by the implementation of measures, which allowed to foresee the intentions of the authorities: delays in paying the teachers' salaries and suspension of the delivery of teaching materials to students, as happens in all of 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 were located. The authorities threatened that if the transfer was 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.¹⁰

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 became a target of the technology of power that 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, p. 35). The government employs control mechanisms also on the knowledges that are 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".¹¹

In brief, the elements of pedagogical work presented here highlight how the landless schooling processes are strongly connected to the Landless Movement struggles for land reform, which mark their forms of life. As discussed elsewhere (Knijnik and Wanderer 2008), such a pedagogical process did not exclude the oral mathematical language games of the landless peasant culture. They were taken into account in the mathematics classes of that course, as happens usually in the landless schools mathematics curriculum and, in particular, in the *itinerant schools*.

⁹ According to Camini (2009, p. 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."

¹⁰ Source: (http://www.unisinos.br/ihu/index.php?option=com_noticias&Itemid=18&task=detalhe&id=20077) Accessed 5 April 2009.

¹¹ Source: (<http://www.jusbrasil.com.br/noticias/884592/mp-manda-fechar-escolas-itinerantes-do-mst-no-rs-decisao-provoca-protestos>). Accessed 5 April 2009.

The discussion in the previous section about different mathematics, in particular about language games that constitute peasant mathematics and their 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 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 was by school buses that were 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 be favoring 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 and the language games that constitute what we have called landless peasant mathematics, will all be distant (not only geographically) from the urban school. The teaching materials used in urban public schools, as well as the training of their teachers, are 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, p. 33). As a consequence, school mathematics will work as a gear in the mechanism of differential inclusion: landless children will be in the official school, learn "*the knowledge offered to everybody*" and, at the same time, 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 postmodern racism discussed by Hardt and Negri functions.

4 Final remarks

In this paper, we discussed two Brazilian peasant forms of life and their relationships to mathematics education, taking a Foucaultian genealogical perspective as a theoretical framework. We took as empirical data two events that happened in different time–space schooling processes in the south of the country. They were analyzed in "terms of their singularity, the interrelations that define them and the conditions that make them possible" (Veyne, cited in Miller and Rose 2008, p. 6). Following Johannesson (1998, p. 304), we considered the productivity of doing this type of history proposed by Foucault since genealogy traces how discursive themes, such as the educational issues presented here, generate ruptures and breaks in social practices and identify the formation of new historical complex events. The two events, imposing the Portuguese language on the German colonization schools during the time of the Nationalization Campaign and the closing of the itinerant schools of the Landless Movement that recently occurred, generated ruptures and breaks in the established order with regard to life in society and particularly in the sphere of school. Specifically, we examined the school mathematics of those two time–space forms of life and concluded that it can work as a gear in the production of differential inclusion.

The argument was built based on Foucault, Later Wittgenstein and Hardt and Negri's theorizations, which were articulated throughout the paper. Based on Later Wittgenstein ideas, we argued about the existence of more than a single mathematics. We are assuming that there *are* other mathematics and not only that produced by a specific form of life: the academic form of life, in which those who are legitimized in western society as scientists develop their professional activities. We consider that there are different mathematics: different networks of language games associated with different forms of life, which have family resemblances. In the paper, when analyzing two distinct rural forms of life, we showed how the language games that constitute peasant mathematics have family resemblances, such as the rules which shape the grammar of their oral mathematics practices. It is important that what allows us to identify such practices as mathematics is that they maintain family resemblances with the language games of academic mathematics in which we were schooled.

As highlighted by data produced in the two time–space forms of life, the everyday mathematics language games outside school of the Costão community had ruptures with those which shaped their school context. On the other hand, in the Landless Movement schooling processes, language games (as those marked by orality) are, at least in part, in the mathematics curriculum. Reaching this conclusion, we articulated it with Foucault's positions about modern

science and state racism and also with Hardt and Negri's notion of differential inclusion. This discussion leads us to the main point of the rationale: the inclusion process of the black children in Costão school at that time and, nowadays, the inclusion process of landless children in public urban schools can be considered as differential inclusion. Both processes, in their specific ways, included children in school, but at the same time subordinated them. In particular, we showed how school mathematics in those two time-space forms of life acted as a gear in the production of such differential inclusion. So, we can say that in the past and also in the present differences are established, hierarchies are built and identities are produced in the interior of school mathematics practices.

Acknowledgments We would like to thank Professor Paola Valero for her generosity in using her intellectual sharpness to give us important comments on the first version of this paper. Her thoughts were very inspiring and allowed us to go further in our work.

References

- Bredemeier, M. L. (2010). *O português como segunda língua nas escolas da imigração alemã: um estudo do jornal da Associação de Professores teuto-brasileiros católicos do Rio Grande do Sul (1900–1939)*. Ph.D. Dissertation. São Leopoldo: Universidade do Vale do Rio dos Sinos.
- Bridge, D. J. (2002). *Developing understandings of 'inclusion' and 'inclusive schooling'*. Ph.D. Dissertation. Perth: Curtin University of Technology, Science and Mathematics Education Centre.
- Caldart, R. S. (2003). A escola do campo em movimento. *Currículo Sem Fronteiras*, 3(1), 60–81.
- Camini, I. (2009). *Escola Itinerante dos acampamentos do MST—Um contraponto à escola capitalista?* Ph.D. Dissertation. Porto Alegre: Universidade Federal do Rio Grande do Sul.
- Condé, M. L. L. (1998). *Wittgenstein Linguagem e Mundo*. São Paulo: Annablume.
- Condé, M. L. L. (2004). *As Teias da Razão. Wittgenstein e a crise da racionalidade moderna*. Belo Horizonte: Argvmentvm Editora.
- Dreher, M. (1994). O Estado Novo e a Igreja Evangélica Luterana. In T. Muller (Ed.), *Nacionalização e imigração alemã* (pp. 87–110). São Leopoldo: Editora UNISINOS.
- Foucault, M. (1977). *Language, counter-memory, practice: selected essays and interviews*. Ithaca: Cornell University Press.
- Foucault, M. (2001). *A ordem do discurso*. São Paulo: Loyola.
- Foucault, M. (2002). *Em defesa da sociedade: curso no Collège de France (1975-1976)*. São Paulo: Martins Fontes.
- Glock, J. H. (1996). *A Wittgenstein dictionary*. Oxford: Blackwell.
- Hardt, M., & Negri, A. (2003). *Empire*. Cambridge, MA: Harvard University Press.
- Johannesson, I. Á. (1998). Genealogy and progressive politics: reflections on the notion of usefulness. In T. S. Popkewitz & M. Brennan (Eds.), *Foucault's challenge: discourse, knowledge, and power in education* (pp. 297–315). New York: Teachers College Press.
- Kane, L. (2000). Popular education and the Landless People's Movement in Brazil (MST). *Studies in the Education of Adults*, 32(1), 36–50.
- Knijnik, G. (2006). Other conventions in mathematics and mathematics education. In F. Leung, K. Graf, F. Lopez-Real, et al. (Eds.), *Mathematics education in different cultural traditions: a comparative study of East Asia and the West* (pp. 567–580). New York: Springer Science + Business Media Inc.
- Knijnik, G. (2007a). Mathematics education and the Brazilian Landless Movement: three different mathematics in the context of the struggle for social justice. *Philosophy of Mathematics Education Journal*, 21(1), 1–18.
- Knijnik, G. (2007b). Brazilian peasant mathematics, school mathematics and adult education. *Adult Learning Mathematics—An International Research Forum*, 2(1), 54–62.
- Knijnik, G., & Wanderer, F. (2008). *Adult education and ethnomathematics: an analysis of a pedagogical experience with Brazilian Landless Movement leaders*. In Paper presented at TSG8/11th International Congress on Mathematics Education. Monterrey, Mexico.
- Knijnik, G., et al. (2005). Cultural differences, oral mathematics and calculators in a teacher training course of the Brazilian Landless Movement. *Zentralblatt für Didaktik der Mathematik*, 37(2), 101–108.
- Lucas de Oliveira, H. D. (2004). Atividades produtivas do campo no currículo: reflexões a partir da Etnomatemática. In G. Knijnik, et al. (Eds.), *Etnomatemática, currículo e formação de professores* (pp. 305–322). Santa Cruz do Sul: EDUNISC.
- Mauro, S. (2005). *Uma História da Matemática Escolar desenvolvida por comunidades de origem alemã no Rio Grande do Sul no final do século XIX e início do século XX*. Ph.D. Dissertation. Rio Claro: Universidade Estadual Paulista.
- Meyer, D. (1999). *Identidades traduzidas. Cultura e docência teuto-brasileiro-evangélica no Rio Grande do Sul*. Ph.D. Dissertation. Porto Alegre: Universidade Federal do Rio Grande do Sul.
- Miller, P., & Rose, N. (2008). *Governing the present: administering economic, social and personal life*. Cambridge, UK: Polity Press.
- Monteiro, A. (2004). A etnomatemática em cenários de escolarização: alguns elementos de reflexão. In G. Knijnik, et al. (Eds.), *Etnomatemática, currículo e formação de professores* (pp. 432–446). Santa Cruz do Sul: EDUNISC.
- Moreno, A. R. (2000). *Wittgenstein: os Labirintos da Linguagem. Ensaio Introdutório*. São Paulo: Moderna.
- Nast, W., & Tochtrop, L. (1933). *Meu livro de contas (1)*. São Leopoldo: Editora Rotermund.
- Popkewitz, T. S., & Brennan, M. (1998). *Foucault's challenge: discourse, knowledge, and power in education*. New York: Teachers College Press.
- Py, A. S. (1942). *A 5ª Coluna no Brasil. A conspiração Nazi no Rio Grande do Sul*. Porto Alegre: Livraria do Globo.
- Seyferth, G. (1990). *Imigração e cultura no Brasil*. Brasília: Editora Universidade de Brasília.
- Valero, P. (2009). *Mathematics education as a network of social practices*. Paper presented at VI Congress of the European Society for Research in Mathematics Education (pp. 1–20). Lyon, France, January 28th–February 1.
- Veiga-Neto, A. (2006). Biopolítica, Estado Moderno e a Inclusão na Escola. *IHU On-line*, 144(5), 34–37.
- Walshaw, M., et al. (Eds.). (2004). *Mathematics education within the postmodern*. Greenwich: Information Age Publishing.
- Wanderer, F. (2007). *Escola e matemática escolar: mecanismos de regulação sobre sujeitos escolares de uma localidade rural de colonização alemã do Rio Grande do Sul*. Ph.D. Dissertation. São Leopoldo: Universidade do Vale do Rio dos Sinos.
- Wittgenstein, L. (1995). *Philosophical investigations*. Oxford: Blackwell.