EMP Educação Matemática Pesquisa
ISSN 1983-3156
Qualis A1

http://dx.doi.org/10.23925/1983-3156.2024v26i1p499-522

The philosophy of difference through mathematics education: The cartography of works presented at ANPEd GT-19

La filosofía de la diferencia a través de la educación matemática: cartografía de los discursos presentados en el GT-19 de la ANPEd

La philosophie de la différence par l'enseignement des mathématiques : cartographie des discours présentés à l'ANPEd GT-19

A filosofia da diferença atravessando a educação matemática: cartografia dos discursos apresentados na ANPEd GT-19

Jaqueline Magalhães Brum[1]
Universidade Federal do Espírito Santo (Ufes)
Doctor in Education
https://orcid.org/0000-0001-5528-1098

Janete Magalhães Carvalho[2]
Universidade Federal do Espírito Santo (Ufes)
Doctor in Education
https://orcid.org/0000-0001-9906-2911

Sandra Kretli da Silva[3]
Universidade Federal do Espírito Santo (Ufes)
Doctor in Education
https://orcid.org/0000-0001-9800-6192

Abstract

This article sought to map the compositions woven between mathematics and the philosophy of difference over the last ten years in the works published in the annals of the Mathematics Education working group (WG-19) carried out by the National Association of Postgraduate Studies and Research in Education (ANPEd). During this period, five meetings took place, totaling 87 works presented, nine of which were designed and drawn based on the philosophy of difference, more precisely on the thoughts of Giles Deleuze and Felix Guattari. The "Travessia" group from the University of Juiz de Fora predominates. Of the nine works presented, five problematize teaching and learning in the classroom, three were created after the training meetings, and one was an invitation to discuss possibilities for building bridges and

[1] E-mail: jackiemagalhaesbrum@gmail.com
[2] E-mail: janetemc@terra.com.br
[3] E-mail: sandra.kretli@hotmail.com

resisting the necrophilic policies that have devastated Brazilian education, a conversation between the participants of the 40th ANPEd WG-19 Meeting. We conclude that there is a type of mathematics less concerned with the movement of forces that resist and re(exist) under a less prescriptive and more inventive mathematics perspective.

Keywords: Mathematics education, Philosophy of difference, Teacher training, Teaching and learning.

Resumen

Este artículo buscó mapear las composiciones tejidas, durante los últimos 10 años, entre las matemáticas y la filosofía de la diferencia, en los trabajos publicados en los anales del grupo de trabajo de Educación Matemática (GT-19) realizado por la Asociación Nacional de Estudios de Posgrado e Investigación en Educación (ANPEd). Durante este período se realizaron cinco encuentros, totalizando 87 obras presentadas, nueve de las cuales fueron diseñadas y tejidas a partir de la filosofía de la diferencia, más precisamente del pensamiento de Giles Deleuze y Félix Guattari. Se destaca el predominio de obras del Grupo de la Universidad de Juiz de Fora, denominado "Travessia". De los nueve trabajos presentados, cinco problematizan la enseñanza y el aprendizaje en el aula, tres fueron creados después de las reuniones de capacitación y uno fue una invitación a discutir posibilidades de tender puentes y resistir las políticas necrofílicas que devastaron la educación brasileña en el marco de una conversación entre los participantes de la 40° Reunión ANPEd GT-19. Se concluye que existe una matemática menor preocupada por el movimiento de fuerzas que resisten y re(existen) desde la perspectiva de una matemática menos prescriptiva y más inventiva.

Palabras clave: Educación matemática, Filosofía de la diferencia, Formación de profesores, Enseñando y aprendiendo.

Résumé

Cet article cherchait à cartographier les compositions tissées, au cours des 10 dernières années, entre les mathématiques et la philosophie de la différence, dans les travaux publiés dans les annales du groupe de travail sur l'enseignement mathématique (GT-19) réalisé par l'Association nationale des études supérieures. et recherche en éducation (ANPEd). Durant cette période, cinq rencontres ont eu lieu, totalisant 87 œuvres présentées, dont neuf ont été conçues et tissées à partir de la philosophie de la différence, plus précisément des pensées de Giles Deleuze et de Félix Guattari. On remarque la prédominance des travaux du Groupe de l'Université de Juiz de Fora, appelé « Travessia ». Parmi les neuf œuvres présentées, cinq problématisent

l'enseignement et l'apprentissage en classe, trois ont été créées après les réunions de formation et une était une invitation à discuter des possibilités de construire des ponts et de résister aux politiques nécrophiles qui ont dévasté l'éducation brésilienne dans le cadre d'une conversation entre les participants à la 40ème réunion de l'ANPEd GT-19. On conclut qu'il existe une mathématique mineure concernée par le mouvement des forces qui résistent et ré(existent) dans la perspective d'une mathématique moins prescriptive et plus inventive.

Mots-clés: enseignement des mathématiques, Philosophie de la différence, Formation des enseignants, Enseigner et apprendre.

Resumo

Este artigo procurou cartografar as composições tecidas, nos últimos 10 anos, entre a matemática e a filosofia da diferença, nos trabalhos publicados nos anais do grupo de trabalho de Educação Matemática (GT-19) realizado pela Associação Nacional de Pós-Graduação e Pesquisa em Educação (ANPEd). Nesse período, ocorreram cinco encontros, totalizando 87 trabalhos apresentados, dos quais nove pensados e tecidos com base na filosofia da diferença, mais precisamente no pensamento de Giles Deleuze e Felix Guattari. Percebe-se o predomínio de trabalhos do Grupo da Universidade de Juiz de Fora, chamado “Travessia”. Dos nove trabalhos apresentados, cinco problematizam o ensino e a aprendizagem na sala de aula, três foram tecidos depois dos encontros de formação e um foi um convite para a discussão de possibilidades de construir pontes e resistir às políticas necrófilas que assolaram a educação brasileira em forma de uma roda de conversa entre os participantes da 40.ª Reunião do GT-19 da ANPEd. Conclui-se que existe uma matemática menos preocupada com o movimento de forças que resistem e re(existem) na perspectiva de uma matemática menos prescritiva e mais inventiva.

Palavras-chave: Educação matemática, Filosofia da diferença, Formação de professores, Ensino e aprendizagem.

> We risk saying that, in Deleuze, the primordial role of thought is creation; thinking is, above all, producing something new, fabricating ideas that escape the philosophical tradition, claiming the thought outside representation, an imageless thought for a thought of difference (Brum & Rodrigues, 2020, p. 293).

The meaning attributed by Deleuze and Guattari (1995) to cartography differs from the usual understanding of a territorial geographical map. Though proposing to map territories, these can be subjective, affective, aesthetic, political, existential, desirous, social, historical, and ethical (Costa, 2014).

Thus, we use cartography as a methodological perspective aiming more to follow processes than to represent the state of things. Cartography here means connecting with a network of power relations that comprise a specific field of experiences and knowledge—in this case, the mathematical science and its connection with the philosophy of difference approach.

> We do not assume representation (Vorstellung) as reality, as a given and regardless of the subject, but as the mathematical expression of what is seen (noesis) about what is being aimed (noema) for those questioning the (problematic) situations that make them restless (Klübe et al., 2022, p. 318).

Therefore, as researchers-cartographers, we seek to broaden our sensibility beyond what is representable, opening up encounters to chart which flows of this research field connect with the enlarged territory of mathematical powers and knowledge.

We consider cartographies a means of following processes. As Barros and Kastrup (2015, p. 57) state, “[...] as ways to draw the power net in which the object or the phenomenon is connected, considering its modulations and permanent movement."

So, in the sense given by Kastrup (2007a, 2007b), the research sought to map the cartography method not from pre-established hypotheses but going for the unpredictable and the unexpected, "[...] seeking to find subjectivities that produce singularities not visible under the light of reflections and representations produced by modern science discourse (Brum, 2010, p. 152).

Maps are like a rhizome that, grounded in Deleuze and Guattari's (1995) work, allow us multiple moving entries and establish relationships between the subjects and the environment. Kastrup (2007a, 2007b) focuses on four cartographic movements: tracing, touching, landing, and attentive recognition. As we will see, these movements guide this research process.

The reader might ask: What has led us to research the philosophy of difference crossed by mathematics education? Why is this important for mathematics researchers, teachers, and students? Can this crossing make any difference in the teaching-learning process?

Problematizing the philosophy of difference crossed by mathematics education is thinking about education from another perspective. This perspective refuses unicity and relies on the concept of "nomadism," something multiple and constantly moving—not inactivity, in which the forms are eternal, as Socrates and Plato thought. The thinking grounded in the philosophy of difference relies on constantly moving mathematics, open to other possibilities and questions.

> Deleuze problematizes thought as representation and affirms a thought taken by creation. For the author, thinking extrapolates recognition, common sense, good sense, natural and universal thought, and the linearity of a straight thought (Santos et al., 2022, p. 609).

Attempting to find answers to our questions, we sought to map the compositions woven in the past ten years between mathematics and the philosophy of difference in the works published in the annals of the Work Group Mathematics Education (WG-19), by *Associação Nacional de Pós-Graduação e Pesquisa em Educação* (ANPEd-National Association of Post-Graduation and Research in Education) and Brazilian researchers. There were five meetings in this period; 87 works were presented, nine of which were thought and constructed based on the philosophy of difference, more precisely on the ideas of Giles Deleuze and Felix Guattari.

Based on the abstracts and references, we selected the following works:

> At the 40th National Meeting, held between September and October 2021 in Belém, Pará, with the theme "Education as freedom practice: letters from the Amazon to the world, "among the 20 studies presented in the WG, we highlight the work "Roda de conversa o que acontece? Educação (matemática) no enfrentamento de uma política fascista" [Conversation circle: what is happening? Education (mathematics) when facing fascist politics], by Sônia Maria Clareto from Universidade Federal de Juiz de Fora (UFJF) and Filipe Santos Fernandes from Universidade Federal de Minas Gerais (UFMG).
> At the 39th National Meeting, held October 2019 in Niterói-RJ, with the theme "Educação pública e pesquisa: ataques, lutas e resistências" [Public education and research: attacks, battles, and resistances], out of the nine works presented, we shed light on "Experiência, aprendizagem e formação: metamorfoses em movimento" [Experiences, learning, and formation: metamorphoses in movement], by Marta Elaine de Oliveira, from Universidade Federal de Juiz de Fora (UFJF).
> At the 38th National Meeting, held October 2017 in São Luís do Maranhão, with the theme "Democracia em risco: a pesquisa e a pós-graduação em contexto de resistência" [Democracy at risk: research and post-graduation in a resistance context], among the 11 works presented we call the attention to, "Ensinar e aprender em outros verbos: uma

formação de professores que ensinarão matemática enquanto travessia" [Teaching and learning in other verbs: the education of teachers who will teach mathematics as passage] , from Marta Elaine de Oliveira from Universidade Federal de Juiz de Fora (UFJF), and "Fabulação concreto-abstrato: no entre das políticas cognitivas"[Fabulations concrete-abstract; in the between of public policies], from Margareth Aparecida Sacramento Rotondo and Giovani Cammarota Gomes, also from Universidade Federal de Juiz de Fora (UFJF).

At the 37th National Meeting, held October 2015, in Florianópolis-SC, with the theme "PNE: tensões e perspectivas para a educação brasileira" [PNE: tensions and perspectives for Brazilian education] we point out two works under the perspective of the Philosophy of Difference:"Matemática: tensão entre pensamento e formação"[Mathematics: tension between thought and formation], from Margareth Aparecida Sacramento Rotondo from Universidade Federal de Juiz de Fora (UFJF) and "Sala de aula de Matemática: pesquisa e enfrentamento do fora"[Mathematics classroom: research and challenges from outside], from Sônia Maria Clareto from Universidade Federal de Juiz de Fora (UFJF).

At the 36th National Meeting, held October 2013 in Goiânia, with the theme "Sistema Nacional de Educação e participação popular: desafios para as políticas educacionais"[National Education System and popular participation:challenges for the educational policies], among the 20 works presented, we highlight "Matemática como acontecimento na sala de aula"[Mathematics as a classroom event], from Sônia Maria Clareto from Universidade Federal de Juiz de Fora (UFJF), and "O Nunca em educação matemática: por uma política cognitiva inventiva" [The Never in mathematics education: for an inventive cognitive policy], from Margareth Aparecida Sacramento Rotondo from Universidade Federal de Juiz de Fora (UFJF).

At the 35th National Meeting, held October 2012 in Porto de Galinhas-PE, with the theme "Educação, Cultura, Pesquisa e Projetos de desenvolvimento: o Brasil do século XXI"[Education, Culture, Research and development projects: the 21st century Brazil], among the 12 works presented, we point out the work "A maçã e o número: políticas cognitivas, invenção e educação matemática"[The apple and the number:cognitive policies, invenetion, and mathematics education] , from Sônia Maria Clareto from Universidade Federal de Juiz de Fora (UFJF).

In this pathway, we perceived the predominance of the group from Universidade de Juiz de Fora (MG) in the WG-19 of ANPEd (100%). However, other work groups hybridize mathematics education and the philosophy of difference at UFRGS (Rio Grande do Sul) and UFMS (Mato Grosso do Sul) with Research and Study Groups in Mathematics Education.

Before diving into these works, we sought to know more about the history of this group from Universidade Federal de Juiz de Fora, called *Travessia* [Passage].

The research group *Travessia*

Below is the full text from the group's website in the category "Who are we?"

The *Travessia* Research Group is located at the *Núcleo de Educação em Ciência, Matemática e Tecnologia* (NEC- Education Nuclei in Science, Mathematics, and Technology) from *Faculdade de Educação* (FACED- School of Education) from

Universidade Federal de Juiz de Fora (UFJF). It meets every Monday since 2007, from 2 to 5 pm.

During this path, many people crossed our passage concerned with education and its many threads. Experimentations with art, mathematics, knowledge production, writing, philosophy, schizoanalysis, school, teacher education, gender, sexuality, and race issues…creating studies of de-subjectivation processes.

The group follows this passage with some mediators that inspire more, such as Achille Mbembe, Félix Guattari, Paul B. Preciado, Ailton Krenak, Friedrich Nietzsche, Virgínia Kastrup, Djamila Ribeiro, Paulo Freire, Gilles Deleuze, Tiago Adão Lara, Suely Rolnik, Clarissa Alcântara, Michel Foucault, Peter Paul Pélbart and…

A passage, in the tissue of life, composed by studies held with the Education Graduate Program in (PPGE/FACED), Undergraduate Research Project (BIC/PROGRAD), and Outreach programs (PROEX) from UFJF. These productions focus on the flow of lives in education and its many territories and deterritorialization movements: school, academic, non-schooled, everyday, political, economic, social, culture….to account for the processuality presented in studies that exercise narrative policies, mapping lifelines that appear when researching (https:// www2.ufjf.br/travessia/entrenos.).

Thus, our gaze on the production presented in the ANPEd National Meetings by the *Travessia* group sought to navigate through the middle and not the margins of the texts, as the middle is indecipherable, the multiplicity and the margins suggest a dualism, the binary quality, seeking, at first, to raise problems brought by the authors and …the concepts discussed to move the thought and….

Happening in Deleuze

Deleuze and Guattari (1995) succeeded in creating and supporting an interval space, producing a conceptual creation that, in turn, materialized the experimentation of the thought work they experienced. In other words, it is the rhizomatic condition of this singular meeting of vital forces. Deleuze and Guattari (1995) engendered conceptual creations such as rhizome, multiplicity, agency, event, (de) territorialization, among other concepts that permeate the works selected.

Generally, all the works presented at ANPEd National Meetings by the group *Travessia* consider the research method a happening. Such an approach potentializes the random, fortuitous, and casual nature of the experimentation works—thus, they would be an event.

Happening as a meaning of time contrary to the principle of chronological succession (*chronos*) because Deleuze evokes the stoic notion of *aión* to refer to something like a "between-time" that would break out like "[...] a *caesura*, a *cut*, so that time halts to resume over another plan" (Zourabichvili, 2016, p. 26). Therefore, there would be an extra-temporality of happening that would be paradoxically immanent. Happening, as an element of temporal

disjunction, would then mark a difference/differentiation within the chronologic time itself, introducing “the outside” in the research time (Zourabichvili, 2016).

When reading the text *“Matemática como acontecimento na sala de aula*," we start problematizing this issue. In fact, in all texts, what was planned escaped or was deconstructed, and other meanings were taken. After all, no matter if we refer to a class, a workshop, or a conversation among teachers, nothing has a closed and hermetic frame; mathematics is a flow and a movement. So, some questions emerge: Can everything in mathematics become a happening? To what extent does the idea of happening allow the creation of a teaching and learning process? What is the relation between happening and experimentation?

> Deleuze introduces the concept of 'happening' in The Logic of Sense to describe instantaneous productions intrinsic to the interactions among various forces. Happenings are immanent changes to a mixture of parts or elements, existing as pure virtualities (i.e., inherent real possibilities) and distinguishing themselves only when updating in a body or state. Happening as incorporeal transformations that exist beyond time-space but that are expressed in language. As a product of the force synthesis, the happenings mean the internal dynamic of interactions. Therefore, in Deleuze's interpretation, an event is not a particular state or happening in itself but something that became real in the state or is taking place. In other words, a happening is the immanent potential within a particular confluence of forces (Dicionário de Deleuze, 2005, pp. 89-90).

Therefore, the happening is an effect of surface, something that happens in the plan of immanence and can only be apprehended when it happens. This means that the happening is incorporeal, belongs to the dimension of meaning, and can only be understood through thought. "Deleuze's idea of happening implies the assertion of heterogeneous connection, the need for change, the surprise of becomings…" (Zourabichvili, 2016, p. 11).

The time of the event is not the clock time of *Chronos* but the *Aiôn* time. "In every happening there is the present moment of accomplishment, the one in which event materializes in a state of things, an individual, a person” (Deleuze, 2015, p. 154), and we can call this accomplishment a becoming – escape lines, unpredictability, and deviation.

For Deleuze, experimentation is the search for meaning that happens when encountering signs that force us to think. The sign is not represented by the object from which it emerges, nor the idea uttered or the answer demanded, thus, escaping from the representational logic, as there is no predictability in the becoming that the event takes.

> There is always the violence of a sign that forces us into the search, that robs us of peace.... truth is never the product of a prior disposition but the result of a violence of thought... Truth depends on meeting something that gives us the power to think and to seek truth…It is the chance of meeting that guarantees the need of what is thought...

> And what does the man who says ‘I want the truth’ mean? He only wants it when coerced and forced. He only wants it under the rule of a meeting connected to such a sign (Deleuze, 2006, pp. 24-25).

Thinking about mathematical learning enabled by a happening is a type of passage that does not aim for certainty, for an end, as in the canon of modern science and the curricula that force us to recite; it is to seek, in the wandering and distrust, other possibilities to think, to teach, to learn, and to “art” in the adventure of knowledge. We agree with Santos et al. (2022, p. 609) when saying: “We live under the threat of a ' teaching lobotomy, a type of teacher and student lobotomy' (Deleuze, 2002, p. 226), against which we can oppose some resistance". We know this is not easy because we are used to a representation with manuals and didactic books, in which the concept comes first, then the example, and, later, the "determination" that relies on the form and the model to be followed, reproducing and perpetuating the “ideology of certainty” (Borba & Skovsmose, 2001).

As Bergson would say, “[...] we can distinguish [...] two types of recognition, the one of the cow in front of grass and the one of man evoking his memories; neither the latter nor the first can be a model of what thinking means" (Deleuze, 2006, p. 197). Habit and routine are part of our learning, but we cannot stop there; we must go beyond…

About the texts...

First, we will briefly describe the four movements defended by Rolnik (2006) and Kastrup (2207a, 2007b), which will compose the cartography and walk with it. As we did not know if we would find any work related to the philosophy of difference in mathematics teaching-learning, the first movement was "tracing." After identifying the nine works, we moved to "touching." We printed all the texts found and superficially read them to know if they actually worked with the intersection we expected; then, we read and reread all the texts, at least three times, and only later we described what each article approached, analyzed under the light of concepts connected to the philosophy of difference, doing our “attentive recognition” with our comments. Thus, we believe we did a cartographic work to map the studies of the WG-19 from ANPEd, linked to our early questions.

We have seen that five of the nine texts questioned teaching and learning in the classroom, three of which were weaved in formation meetings, and one was an invitation to debate the possibilities to build bridges and resist the necrophilous policies that currently plague Brazilian education. All nine works use cartography as a research methodology and think about cognition as a creation power. They believe and defend that this is possible. So do we.

Our argument in this text is that the meeting of mathematics education with the philosophy of difference allows for experiences that can increase the power of action (joyful affections), dismantle our disciplined bodies, and perform compositions about knowledge, curriculum, classroom, teaching and learning, among the possibilities of mathematics. When we talk about bodies, it is interesting to think about the power of the bodies in Deleuze and Guattari (1995). To Brum (2016, p. 153):

> [...] Deleuze and Guattari (1995) bring out the existence of a 'body with no organs' as a form of resistance. That is, a power able to affect and be affected, individually and collectively, in favor of another existence, which is not confinement.

The authors of the presented articles see the body as resistance to homogenizing and Eurocentric mathematics. They seek a good meeting between school mathematics and the students; for their learning to be accomplished by promoting meaning, and not as a punishment for the students; a mathematics not imprisoned by confining forms and structures. Without following a chronological order, we bring the nine articles mentioned to illustrate that other worlds are possible.

In the article *"A maçã e o número: políticas cognitivas, invenção e educação matemática"*, knowledge is seen as a happening crossed by the forces of taste. Would it be possible to compare apples and numbers? Can we think about sweet, bitter, ripe, green, smelly, rotten, colored numbers?

This article investigated cognitive policies and practices in the mathematics education classroom, questioning the notions of cognition and mathematics learning under the perspective of invention. To do so, the text presented a dialogue between a teacher and her students about number comparison. Having no answer, the teacher tries to find a way to compare the apples and says... "How do I compare 8 and 5?". Then, the unexpected happens in children's voices "8 is even and 5 is odd", "Dividing"- taking her away from her comfort zone.

We can say that the students "arted" mathematics when making the comparisons not expected by the teacher: "[...] two movements of rupture, resistance, that seem to squeeze the apple of the common cognitive flow, extracting some juice from it" (Clareto, 2012, n/p). Thus, these students twist the ways of understanding and practicing mathematics, bringing to the debate of mathematics education the understanding of learning as the co-engendering of self and the world, because,

> [...] thinking mathematics as an invention of problems, we get closer to Kastrup (2007) when talking about the creation of worlds, of new realities. At this point, the author

> refers to a type of learning that starts as an experience of questioning, in which students and teachers leave transformed (Brum, 2022, p. 165).

The text seeks to show knowledge as a field of forces composed of two facets, the established and the moving, in which the first tends to stability and the second is pure power in movement, making the teacher dislocate and force thought. However, for the article's author, this did not occur because the teacher could not think outside the usual format nor glimpse other ways of comparing numbers.

In the article *"Matemática como acontecimento na sala de aula*," the theme revolves around two questions: "What is mathematics?" which seeks its essence, and "What mathematics?" which operates in the immanence, moved by the event. Therefore, starting from the relation between essence and immanence, the text questions a royal, theoretical, axiomatic, "grander" mathematics, defended by the teacher, who conceptualizes barycenter as: "The place in which one can balance the triangle over the tip of the pencil" and a "smaller" mathematics, open to impulses, heterogeneous, turbulent, problematic, provoked by the student's experience, when trying to balance, with no success, the triangle in the tip of the pencil and, after some attempts and excuses, such as " *Oh, the fan is on, that's why it doesn't work!"*, defending an inadequate idea based on a cause and effect relationship.

After all, mathematics is infallible! An assumption that is deconstructed and ends with the teacher's line – "*Ah! Whatever! This won't work!*" –assuming the idea of royal mathematics in a contradicting fashion: neither grander nor smaller.

> When does the mathematics class take place? A smaller attempt to escape the royal mathematics and, with it, in tension with it, produces didactic books, notebooks, exercises, lists, tasks, tests, papers, triangles, definitions…What is small mathematics? A small mathematics insinuates itself in experimentation (Clareto, 2013, p. 7).

This opening created fissures in the "mathematics-classroom-form" because it is a mathematics less concerned with movements, emerged with flows, and not only with definitions and propositions. A non-territorialized mathematics emerged in the classroom, a geometry of movement, creating tension between the mathematics of forms in balance and a mathematics of the becoming.

In the text *"Experiência, aprendizagem e formação: metamorfoses em movimento*," the author problematizes the notions of experience and learning that occurred in teacher training classrooms.

The topic discussed was how to work with addition and subtraction of fractions with different denominators. The teacher used equivalence and the known process to reach the lowest

common multiple (LMC). Some students (teachers) questioned because school teachers use mechanized practices, considering that, by equivalence, the processes are much more meaningful and understandable and not simply memorizing the algorithm. However, at the same time, they doubted and questioned if operating fractions by equivalence would be valid for any fraction.

From then on, the text continues to compare the situation with the story “The three metamorphoses of the spirit” from the work “Thus Spoke Zarathustra”. Thereby, the author compared the experience of universals taught in schools, in which the weight of knowledge and time that many teachers carry is represented, as the comparison of mathematical operations with a camel – "you have to". She compared the metamorphosis of the camel into a lion to the process of equivalence. In this case, the lion represents the power of freedom. It is the claim that there is no single way of working, though supporting the same values of cause and effect – "I want."

Finally, approaching the metamorphosis of the lion into a child and, consequently, the emergence of an opening to happening, to life. "Learning is living. We live while we learn and experience, and then, the child deals with what occurs while happening. [...] A formation that coexists in its camel, lion, and child spirit. There is no uniqueness but several transmutations while being affected by an experience” (Oliveira, 2019, p.5). Therefore, this article approached happening as a learning experience, as a moment to affirm life, in which difficulties and frailties metamorphosed these teachers into camels, lions, and children. In this process, the becoming child should prevail.

Other two articles focus on questioning the possibilities of mathematics teaching and learning as happenings.

The first article, *“Matemática: tensão entre pensamento e formação”*, seeks to problematize the compositions created by the effects produced in a workshop in an outreach course with mathematics teachers. The workshop described focuses on three activities. The first was a game of four-edge Dominoes that caused some strangeness, such as non-recognition and new forms of playing, although some participants were familiar with traditional dominoes. For example, disregarding the previous edges that would no longer be edges with the following play. All this demands thinking that is not characterized by a single way of being in the game.

The second activity was the game Fan-Tan, in which the property that the remainder of the division should always be lower than the divisor was not perceived initially because the group was formed by four components in which three were positioned at the corners 0, 1, and 2. One person (the secretary) counted the number of beans/corn, separating them into groups of

two grains each. As there will only be a 1 or a 0 left, because it is divided by 2, whoever chooses corner two will never score a point. When realizing this, the playfulness is lost because the students do not want to lose while playing.

The third activity was the Four-Corner problem[1] in which some mathematical signs are presented (+, -, x, /), as well as some results that might emerge when combining the four corners with mathematical signs, for instance: How could I write the number 2? (4/4 + 4/4) = (1 + 1) = 2, at a given moment the teacher asked: "*Why do I teach the numerical expression? I see no sense in this"*, strengthening the need of multiplicities and weakening the truth of one.

> When conceiving the way of operating as the one, the correct, and the true, there is an acceptance, a submission to this way. Up until a formation screams. A cry that has the tone of usefulness for that mathematical object: 'Why do I teach this?' (Rotondo, 2015, p. 13).

The second article, "*Ensinar e aprender em outros verbos: uma formação de professores que ensinarão matemática enquanto travessia"* is part of a Ph.D. research and questions how teaching and learning tend to maintain, regulate, and control learning when faced by substantivation (essence) and adjectivation (representation of identity, based on an ideal) processes. The study sought to escape the belief that there is a specific qualification for learning that creates "better" teaching, quoting some theories, such as meaningful learning, active learning, situated learning, inventive learning, and collaborative learning, among others.

The author presents a moment when Pedagogy undergraduates are invited to create a workshop. The students start describing to the teacher the activity they conceived. First, they would make three boxes. After that, the undergrads would separate the students into two queues. The students would then throw a small ball in one of the three boxes.

Another student interrupted the description of the future workshop by saying that the boxes would be numbered 3, 8, and 5. The first student resumed the explanation, and the discussion with the teacher began revolving around how to teach Year 2 students something they would learn only in Year 6. How would one remove 3- 8 if the operation was subtraction and not addition?

Faced with the students' answers – "*Let's do another activity. Cancel this one.*" – fears, resistances, and insecurities emerged. After much discussion, they decided to carry on with the activity, with no strategy to hide the possible difficulties. They implemented the activity in the class, and in the first round, there was operation 6 – 37. *Then, some reactions emerged: "It's not possible"; "Why isn't it possible?; They are little children"; "If this was the Year 6, we could".*

So, the teacher questioned the class about what they would do if facing this situation in the classroom… the undergraduates made some records, always favoring the form.

Finally, the article shows that one needs to break away from these established forms and provoke forces that rupture with how we teach and learn mathematics. "Therefore, it is related to thinking the formation passage from the claims made by teaching and learning in other verbs, as a process of self-invention and invention of the world, disconnecting learning from teaching" (Oliveira, 2017, p. 6).

To illustrate the mathematics curriculum as happening, we selected two articles. The first, entitled *"O Nunca em educação matemática: por uma política cognitiva inventiva,"* was part of a research that sought the creation of subjectivities and other worlds when producing mathematics. The researchers worked with the base of changes: counting, representation, comparison of amounts, and addition with bases differently from ten, through the game "Never," using varied elements to compose the school mathematical knowledge (success and failure), as the students were considered mathematical failures. Social, cultural, and material vectors made these students feel excluded from the education game centered in the prescribed curriculum. Throughout the text, we notice that by repeating.... repeating.... and repeating..., the students started to inhabit these worlds in a "manolian[2] way of producing mathematics" (Rotondo, 2013, p. 5). Cognition was assumed as a practice (the middle and not the margins), a hybrid (an invention that causes vertigo to the thought and the thinker), and the creation of cognitive power.

The second, "*Roda de conversa o que acontece? Educação (matemática) no enfrentamento de uma política fascista*", read in the 40th Annual Meeting held in 2021, is transcribed here as an active, ethical, political, and aesthetic power to think a mathematics

education and its war machine in favor of a 'smaller' education, moving and unstable. When reading the abstract, we can perceive that the text did not exist but was built by many voices in the workshop proposal.

> In the middle of the greatest sanitary, political, environmental, and humanitarian crisis in Brazil, a (mathematics) education that questions: what do we have to do with this? In a world – and, particularly, in Brazil – that witnesses the increase of fascism and the neoliberal and neocolonial agendas, a (mathematics) education that questions: what do we have to do with this? Faced with the disassembly of democratic institutions, the destruction of education, and the undermining of science in favor of life, a (mathematics) education that questions: what do we have to do with this? Faced with the fear of death, biopolitics, and necropolitics that reach the bodies in all their possibilities, colors, races, genders, sexualities, territories, ethnicities, or generations, a (mathematics) education that questions: what do we have to do with this? The short course proposes thinking about the problems we have, the practices and policies that allow us, during this time, to move alliances in resistance and dissidence. It proposes thinking (mathematics) education as a way to resist conservative times and a crisis in democracy. It proposes to engender battles in broad projects of life and community, in the radical nature of a (mathematics) education committed with values, such as freedom, justice, equality, solidarity, cooperation, tolerance, and peace. It proposes a space to tense prejudices and violences guided not by the acceptance of diversity, (af)firming itself in the difference. It proposes a circle in which conversation circulates between the participants, showing their concerns, movements, and accomplishments. It mainly proposes a conversation that continues open to the possibilities of a collective production that points toward the strengthening of the works of WG-19, in creating a (mathematics) education that faces the fascist politics that ravage the country and its inhabitants, with devastating effects for education and science. A conversation that, in our experience, wants to be action: 'It is not up to us to fear or wait, but to create new weapons' (Deleuze, 1992. p. 220). A (mathematics) education that, in honor of our dear Ubiratan D'Ambrósio, questions: What do we have (and will have) to do with this? (Clareto & Fernandes, 2021, p. 1).

Deleuze (2006) tells us to create problems. Can we, from daily and common "mistakes" in our mathematics classroom, create an investigative problem in mathematics education and turn them into happenings? To exemplify, we chose the text *"Sala de aula de Matemática: pesquisa e enfrentamento do fora".* This article presents some problematizations: "How does an investigative field in mathematics education emerge and continue? How do common situations in a mathematics classroom, trivialized or naturalized, become an investigative problem? How does a banality become a concern, and how does a concern become a problem?" (Clareto, 2015, p. 2).

What can one do, then, with a verdict? Mistake, what mistake? Silliness, what silliness? Student body, teacher body, school body, family body, agencies, teaching body, mathematics body, world body. A mix of the effects of these bodies produces a meaning. What order is this meaning? **The order of a happening?** What happens next? There are actions-passions that affect the bodies (wandering body, bestial body, school body). Crime - the accusation of not seeing through the teacher's perspective, producing the right gaze, obeying predetermined pathways, and a language that fits and adapts to what was thought. From the crime to the sentence, it transforms the wrong student body into a correct one, and transforms silliness into adequate thought. A bestial body is an adequate body.

Faced with the author's question on an algebra problem: "*17x - x = ...?",* the student answered: "*17, teacher".* From then on, the author no longer considered the classroom a place of sameness, where everything is the same, and nothing happens. The author seeks another perspective, questioning the event, not through the known path of many mathematical scholars as a "mistake analysis," starting to question: what mistake? The answer was not expected, as the mistake in modern thought is a false representation, as Deleuze (2006, p. 244) states:

> What is a mistake if not false recognition? Where does mistake come from if not from a false sharing of representation elements, a false evaluation of opposition, of analogy, of similarity, and of identity? The mistake is only the reverse of a rational orthodoxy and witness in favor of what deviates from it, in favor of straightness, of good nature, and goodwill from those who are said to deceive themselves.

From reparation to mistake: productions of methodological pathways that seek to align the mistaken student body. From reparation to silliness: becoming aware of inadequate thought, "[...] the incorporeal transformation is recognized by its instantaneity, the simultaneity of the statement that expresses it and the effect it produces" (Deleuze & Guattari, 2011, p. 20).

That is, Deleuze (2006) shows us the mistake as only a representation so that we can perceive the identity of concept, the analogy in judgment, the opposition in the determination of concept, and the similarity in the object. How can we keep different thinking as difference and not as a mistake, according to modern thought, and turn it into part of the **happening** as a moving thinking?

The discussion gained shape in the education of mathematics teachers, and the discomfort set in. If one takes the sentence as truth, how would the other operations be? "The mistake is resignified, relying on the possibility of thinking not in mistakes, but in deviations" (Clareto, 2015, p. 8). Deviation is not representational, it acts in micro politics, escaping and making itself escape.

In mathematics, mistakes and failures are issues that deserve our attention. At school and in the media, the "Ideology of Certainty" is quite present and always points out the forms and forces that operate only aiming for results. However, we need another gaze.... “Only when the mistake becomes observable for the teacher and the students can cognitive conflicts be created, which can destabilize the truths that students/teachers incorporate into their minds” (Brum & Santos-Wagner, 2015, p. 123).

Destabilizing truths means opening for different experimentation faced by the process of mathematics fabulation as **happening**.

In this sense, the mistake is already part of the territory believed to be coherently thought and is "presented as the only 'negative' of thought" (Deleuze, 1988, p. 214). Producing a deterritorialization of the notion of mistake and suspecting the pathways of correction for the possible discovery of the truth could be seen as a possibility of relating the mistake "with a deviation" of thought "an escape from the reproduction of a model that shows itself as a pathway that leads to the correct result. The creation of a way to work that unrests a thought, engendering a thinking that breaks away from an already standardized form and inaugurating deviation as production” (Clareto, 2015). The author mistrusts the methods that seek to guarantee a way to turn the mistake into a return to the deviated axis. It shows that the mistake, in the perspective of error analysis, "[…] happens through an expectation given by the school mathematical content, organized for that year or grade in which the student is. Mistake as the non-fulfillment of a teacher's teaching expectation" (Clareto, 2015, p. 5).

In the article “*Fabulação concreto-abstrato: no entre das políticas cognitivas*," based on the words of the teachers and pedagogical coordinators, there is a process of fabulating: What concrete? What abstract? We seek the fabulation process in theoretical mathematicians.

From this, we start to fabulate cognitive and inventive policies, posing the following questions: What discourses does the concrete-abstract fabulation feed? What fictions do they produce?

So that the students could learn multiplication, the teacher started to work with straws, colorful bands, and two plastic bottles, asking students to go to her table and make as many bundles of ten straws as they could. In this process, they exchanged the bundles of bottles and concluded that they had 1,326 straws. In the end, she asked a student to go to the blackboard and calculate the operation 24 x 9, in her way. The student said she could only do it by drawing sticks on the board. The student thought about the whole exchange process previously done and, in the end, answered correctly. "What happens in the classroom are triggers to create strangeness, to trigger other ways of acting, produced in the process, turning invention into a cognition engine" (Rotondo, 2017, p. 15).

The texts above question teaching, learning, curriculum, classroom, experience, knowledge, fabulation, and the possibility of creating an investigation problem in mathematics education and turning it into a happening. Therefore, they are intertwined in a becoming that seeks a smaller mathematics, nomadic, a way machine in favor of an ethic and aesthetic education to all, and not the creator of exclusion, as it has been territorizalized by the surrounding politics and eurocentrism.

About concepts and references...

As previously stated, all texts work with mathematical knowledge based on the philosophy of difference, its main mediators are Deleuze and Deleuze and Guattari. They question the Dogmatic Image of Thought, the naturalization of mathematics learning, considered as predictable, modeled, royal, and molar, and create a fold in how we understand the world, given the representation of a world as the effect of cognitive practices beyond recognition.

When weaving this study, we bring excerpts from some of our discursive productions and then, at the end, we would like to revive some concepts beyond those already mentioned. We believe bringing the concept and the power of 'fold' is important.

> Folds are like a third party that hinders binarism. They are sometimes inside, other times outside, producing a deterritorialization and a re-territorialization. The fold is like an escape line because it is in the middle of other lines (molars and moleculars) (Brum, 2010, p. 27).

We constantly live varying these three lines in our daily work as mathematics teachers. However, we have to increasingly problematize our ways of teaching and potentializing forces that raise our students' interest in mathematics. We will not be able to do that the longer we stay in the molar lines, instead of the other two ways of making us think.

Regarding the concept of experience, Larrosa's texts are part of the readings from the "*Travessia*" group and bring the concept of experience in education. "Larrosa (2004) will metaphorically say that education, as a city, should not be looked at from above but through a gaze that lives within, crosses, and entangles, venturing into the experience" (Brum, 2010, p. 130).

As previously said, all texts use cartography as a research methodology. Kastrup defines the levels considered necessary for cartography research:

> The first level would be asking what the weaving of knowledge in school creates in us. The second level would be questioning which transformation we suffer during this process. The third level is the perception that everything is so interconnected that even the nature of the problem can change. Finally, the fourth level is research, which can even transform the field where it is. Open and non-selective attention is needed for all this to happen (Brum, 2010, p. 158).

To refer to the body, "body-that-knows", "body-that-thinks", and affection, the authors seek to quote texts based on the works of Spinoza, such as André Martins (ed.), "*O mais potente dos afetos: Spinoza e Nietzche*" (2010). Thus, we present what are affections for Spinoza: "For Spinoza, the state of a body when suffering the actin of another body are the affections, forces that permeate the bodies, promoting good and bad meetings, which we call affections" (Brum, 2022, p. 3). These can be positive or negative, increasing or decreasing our action power. Therefore, we need to expand our power to act and that of our students so that mathematics can be this encounter.

The most cited mediators that composed this discursiveness

We considered the mediators cited at least twice in the bibliographic references of the texts, among the 106 works referenced in these nine articles, related to the philosophy of difference, art and science, mathematics, inventive learning, affection, experience as re(existence), and the cartography method. During these last ten years, in the research reports presented in the annual meetings of ANPEd, we found five references to the text *A Thousand Plateaus*, from Deleuze and Guattari, and the book *A invenção de si e do mundo*, totalizing 4.71% each one or 9.42% in total; four References to the work *Difference and Repetition*, from Deleuze, a total of 3.77%; three references to *Anti-Oedipus,* from Deleuze and Guattari, and to the book *Pistas do método da cartografia: pesquisa-intervenção e produção de subjetividades*, from Passos, Kastrup, and Escóssia, 2.83% each, making a total of 8.49%; and, with two citations, the works *Proust and Signs,* from Deleuze, *Dialogues,* from Deleuze and Parnet, *Thus Spoke Zarathustra* and *The Gay Science*, from Nietzsche, each with 1.88%, a total of 7,52%. We could also perceive that many works were cited only once, adding up to 100%.

Inconclusive remarks

> Deleuze allows us to understand that affirming the difference is relying on life, on possibilities, and on escape lines that can break away from the systems of standardization, classification, hierarchicalization, compartmentalization, mediation, and, above all, which escapes from representation systems that believe in the possibility of a fixed and exact mathematics as defended by the hegemonic discourse of mathematical science (Brum, 2010, pp. 266-267).

As this work pointed out, in the articles of WG-19 of ANPED and the folds we sought in these productions, we perceived that the smaller mathematics is earning space in mathematics education. We are few defending other worlds, but many on the idea of a mathematics concerned with re (existence) and the transformation. We have no intention to be bigger, as the majority presupposes a power and domination state. We are not here to be models and, so, we always continue with a prescriptive idea of teaching…but to split the tongue and make it "stutter" (Deleuze & Guattari, 2014).

We perceived another gaze towards mistake. What is right? Or wrong? In our classes, we could not think about deviations, in which the question could cause problematizations? Have

you ever considered a class in which the questions could raise curiosity and not fear, as those proposed in the book *A Vizinha Antipática que Sabia Matemática* [The obnoxious neighbor who knew mathematics]? For instance:

> Do you know what are monosyllables, disyllables, trisyllables, and polysyllables words? If I told you you used mathematics to answer this question, what would you say? (Be completely honest.)
>
> a) You're kidding me.
> b) This is Portuguese, it's unrelated to Maths.
> c) Well...when you think about it...I don't know.
> d) Ok! I used numbers to count the syllables.
>
> or
>
> Miloca's flower shop is quite busy! She sells many flowers, vases, bouquets, and plant arrangements. Every morning, 360 flowers arrive at her shop. Tomorrow, the 360 flowers will be used to make bouquets, with 8 roses in each one. How many bouquets can she make?
>
> What would you answer if you were asked to solve this problem?
>
> a) Miloca will do it; let her calculate it.
> b) It's the end of the world having to think about it, I'll just guess an answer.
> c) I'll try...
> e) Does anyone know the correct answer? I'm in doubt between 32, 41, and 45 (Martins, 2014, p. 21).

Though we dislike the term "obnoxious" used by the author, as it strengthens a discourse that reinforces the form, the questions above seem to have the potential to move thought, allowing social, cultural, and economic differences to be (re)thought and, thus, creating fissures in a knowledge taken as universal and homogeneous.

Our concern and vigilance in favor of other ethical and aesthetical values, so needed nowadays, are our objective with this article. We must think about an inventive mathematics, mathematics as an event, in which the possibilities multiply in the daily routine of schools and universities. Only then can the 'ideology of certainty' be questioned.

Notes

[1] Activity based on the work "*O homem que calculava*" (1998) from Malba Tahan.

[2] We refer to Manoel de Barros (2020) in "*Poesia Completa*" when he says: "Repeat, repeat, repeat until it is different. Repeat is a gift of style".

References

Barros, L. P. & Kastrup, V. Cartografar é acompanhar processos. In: PASSOS, et al. (org.). *Pistas do método da cartografia: pesquisa, intervenção e produção de subjetividade*. Porto Alegre: Sulina, 2015. pp. 52-75.

Borba, M. & Skovsmose, O. A ideologia da certeza em educação matemática. In: SKOVSMOSE, Ole. *Educação Matemática Crítica*. SP, Campinas: Papirus, 2001. pp. 127-148.

Brum, J. M. *Redes cotidianas de saberes e fazeres matemáticos: sobre possíveis potências e experiências de vida.* (2010). [Thesis Doctorate in Education da Universidade Federal do Espírito Santo]. https://sappg.ufes.br/tese_drupal/nometese_5_JAQUELINE%20MAGALH%C3ES%20BRUM20131011-150802.pdf.

Brum, J. M. ... e amizades. In: Ferraço, C. E. (Ed.) ...*currículos em redes.* Curitiba: CRV, 2016, pp. 149-156.

Brum, J. M **.** A noção de problema em Deleuze e a matemática e... In: BELLO, S. E. L.; AURICH, G da R. & SANTOS, G. S. dos (Eds.). *Deleuze E Educação E Matemática E... rachar as coisas, rachar as palavras.* São Leopoldo: Oikos, 2022, pp. 156-168.

Brum, J. M. & Santos-Wagner, V. M. P. dos. Estratégias de resolução de problemas de divisão não rotineiros. In: *Revista Teoria e Prática da Educação*, v. 18, n. 2, 2015, pp. 121-132.

Brum, J. M. & Moreira, N. E. R. Força, forma e pintura: movimentos na formação continuada de professores a distância. In: CARVALHO, Janete Magalhães (Eds.). *Currículo e estética: da arte de educar*. Curitiba: CRV, 2020, pp. 291-318.

Clareto, S. M. (2012). A maçã e o número: políticas cognitivas, invenção e educação matemática. In: *Anais da 35ª. Reunião da Anped*, p. 1-13. http://35reuniao.anped.org.br/?_ga=2.158291132.709644407.1694716591-1563683288.1663380299.

Clareto, S. M. (2013). Matemática como acontecimento na sala de aula. In: *Anais da 36ª. Reunião da Anped*, p. 1-15. http://36reuniao.anped.org.br/?_ga=2.226507675.709644407.1694716591-1563683288.1663380299. Accessed Sept. 28, 2022.

Clareto, S. M.. (2015). Sala de aula de Matemática: pesquisa e enfrentamento do fora. In: *Anais da 37ª. Reunião da Anped*, p 1-14. http://37reuniao.anped.org.br/?_ga=2.195983274.709644407.1694716591-1563683288.1663380299.

Clareto, S. M. & Fernandes, F. S. (2021). Roda de conversa o que acontece? Educação (matemática) no enfrentamento de uma política fascista. In: *Anais da 40ª. Reunião da Anped.* p. 1-1. https://40reuniao.anped.org.br/?_ga=2.167776423.709644407.1694716591-1563683288.1663380299.

Costa, L. Cartografia: uma outra forma de pesquisar. In: *Revista Digital do LAV*. Santa Maria, v. 7, n. 2, p. 66-77, maio/ago. 2014.

Deleuze, G. *Lógica dos sentidos.* Translation Luiz Roberto Salinas Fortes. São Paulo: Perspectiva, 2015.

Deleuze, G. *Diferença e repetição*. Translation Luiz Orlandi. Rio de Janeiro: Graal, 2006.

Deleuze, G. *Proust e os signos.* 2. ed. Translation A. C. Piquet e R. Machado. Rio de Janeiro: Forense Universitária, 2006.

Deleuze, G., Parnet, C. *Diálogos.* Translation Eloísa Araújo Ribeiro. São Paulo: Escuta, 1998.

Deleuze, G & Guattari, F. *Mil platôs: capitalismo e esquizofrenia*. Rio de Janeiro: Ed. 34, 1995, v. 1.

Deleuze, G., Guattari, F. *O Anti-Édipo: capitalismo e esquizofrenia*. Translation Luiz B. L. Orlandi. São Paulo: Edições 34, 2010.

Deleuze, G & Guattari, F. *Kafka: por uma literatura menor*. Translation Cíntia Vieira da Silva; revisão da tradução Luiz B. L. Orlandi. 1. ed.; 1.ª reimpr. Belo Horizonte: Autêntica, 2014.

Foucault, M. *Microfísica do poder*. Rio de Janeiro: Graal, 2001.

Kastrup, V. *A invenção de si e do mundo*. Belo Horizonte. Autêntica, 2007a.

Kastrup, V. O funcionamento da atenção no trabalho do cartógrafo. In: *Revista Psicologia & Sociedade.* 2007b. https://doi.org/10.1590/S0102-71822007000100003.

Klüber, T. E, Tambarussi, C. M. & Mutti, G. de S. L. O problema filosófico da representação e desdobramentos para a modelagem matemática na educação matemática. In: *Revista Educação Matemática Pesquisa*, São Paulo, v. 24, n. 2, pp. 289-324, 2022.

Larrosa, J. *Linguagem e educação depois de Babel.* Belo Horizonte. Autêntica, 2004.

Martins, E. *A vizinha antipática que sabia matemática*. São Paulo: Editora Melhoramentos, 2014.

Nietzsche, F. *Assim falou Zaratrusta* (1884). Translation Heloísa da Graça. São Paulo: Rideel, 2005.

_____. *A Gaia Ciência*. São Paulo: Companhia das Letras. 2001

Oliveira, M. E. de. (2017). Ensinar e aprender em outros verbos: uma formação de professores que ensinarão matemática enquanto travessia. In: *Anais da 38ª. Reunião da Anped*, p. 1-18. http://38reuniao.anped.org.br/?_ga=2.155066174.709644407.1694716591-1563683288.1663380299.

Oliveira, M. E. de. Experiência, aprendizagem e formação: metamorfoses em movimento. In: *Anais da 39ª. Reunião da Anped.* p 1-7. http://39.reuniao.anped.org.br/?_ga=2.221724446.709644407.1694716591-1563683288.1663380299.

Rolnik, S. *Esferas da insurreição: notas para uma vida não cafetinada*. São Paulo: n-1 Edições, 2018.

Rolnik, S.. *Cartografia sentimental: Transformações contemporâneas do desejo*. Porto Alegre: Sulina, 2006.

Rotondo, M. A. S. (2013) O Nunca em educação matemática: por uma política cognitiva inventiva. In: *Anais da 36.ª Reunião da Anped.* p. 1-16. http://36reuniao.anped.org.br/?_ga=2.226507675.709644407.1694716591-1563683288.1663380299.

Rotondo, M. A. S. (2015). Matemática: tensão entre pensamento e formação. In: *Anais da 37ª. Reunião da Anped,* p. 1-14. http://37reuniao.anped.org.br/?_ga=2.195983274.709644407.1694716591-1563683288.1663380299.

Rotondo, M A. S. & Gomes, G. C. (2017). Fabulação concreto-abstrato: no entre das políticas cognitivas. In: *Anais da 38.ª Reunião da Anped.* p. 1-16. Avhttp://38reuniao.anped.org.br/?_ga=2.155066174.709644407.1694716591-1563683288.1663380299.

Santos, G. S. Dos, Sanchodene, V. C. & Bello, S. E. L. Filosofias da diferença e educação Matemática: conversas possíveis e inventadas. In*: Revista Educação Matemática Pesquisa,* São Paulo, v. 24, n. 2, p. 600-678, 2022.

Zourabichvili, F. *Deleuze: uma filosofia do acontecimento.* Translation Luiz B. L. Orlandi. São Paulo: Editora 34, 2016.

Viviane Coelho Caldeira Ramos vivianeramos@gmail.com