

1-2022

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Recommended Citation

Santos Fernandes, Filipe; Giraldo, Victor; and Matos, Diego (2022) "The Decolonial Stance in Mathematics Education: pointing out actions for the construction of a political agenda," *The Mathematics Enthusiast*. Vol. 19 : No. 1 , Article 3.

DOI: <https://doi.org/10.54870/1551-3440.1543>

Available at: <https://scholarworks.umt.edu/tme/vol19/iss1/3>

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The Decolonial Stance in Mathematics Education: pointing out actions for the construction of a political agenda

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Abstract

In this article, we present a decolonial stance in Mathematics Education, which is not understood as a qualification attributed to particular actions or practices as opposed to others, nor as a tendency that theoretically or methodologically constrains research production, but as a political and epistemic position of permanent transgression and insurgency concerning the patterns of world power established by the myth of Western modernity. From this understanding and towards a political agenda in Mathematics Education, we propose, with no pretensions of totality, a set of situated actions: in Mathematics, in its ontological, epistemological and methodological perspectives, problematizing the naturalization of practices and conceptions on the discipline and its teaching, and setting it in a movement of political-epistemic disobedience; in collective memories linked to Mathematics and Mathematics Education, deconstructing Eurocentric narratives which invibilize bodies, knowledges, and ways of being in the world; in Mathematics teachers' education processes, incorporating and acknowledging the protagonism of other subjects, territories, and their knowledges.

Keywords: Decoloniality; Insurgencies; Teaching Practices in Mathematics; Mathematics Teachers' Education.

1. For a Decolonial Stance

Toda invención está en el dibujo; así como todo ordenamiento en la proporción. Así, puede subsistir, sin ninguna otra modalidad de arte, un grafismo geométrico ordenado. Es el sabio dibujo de los primitivos, de los egipcios, de los incas y los aztecas, y también de los griegos.

Joaquín Torres-García, *Universalismo Constructivo* (1935)

In Latin American contexts, the ideas and actions built around *decoloniality* have shown themselves to be a political, epistemological, and pedagogical force, which destabilize the hegemony positions of dominant academic tendencies with Eurocentric perspectives. Initially emerging in specific areas of humanities and social sciences in Hispanic America, debates on decoloniality have recently reached other territories and fields. Thus, we place this article in the Brazilian territory and in the field of Mathematics Education.

There is an important group of intellectuals – inserted in the so-called *modernity/coloniality research network* (Escobar, 2003) – who demand a political, epistemological, and pedagogical

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approach of Western modernity through the ways of coloniality. For these intellectuals, “coloniality and modernity are the two sides of the same coin” and only through the exercise of coloniality “Europe can produce the human sciences with a single, universal and supposedly objective model of knowledge production, and, in addition disinherit all epistemologies from the periphery of the Western world” (Walsh, Oliveira & Candau, 2018, p. 3).

Despite its rather recent insertion in Brazil and in Education, several political, epistemological, and pedagogical positions we hold, particularly in the field of Mathematics Education, share questions, reflections, and actions that, in general, we consider as implied in this terminology. We can, with no hesitation, intertwine decoloniality and Mathematics Education. The risk is, however, that a mere and careless adjectivization of our positions as *decolonial* may make invisible or misrepresent the endeavors of several groups that, in society and in the University, have undertaken struggles to overcome inequalities caused by colonialism, racism, patriarchy, capitalism, eurocentrism, and other elements that configure the current patterns of world power. Hence, for the approximations between decoloniality and Mathematics Education to transcend a merely incidental dimension, so that the *decolonial* is not just regarded a *trend* or a *brand* to qualify our positions, some attitudes are necessary. We argue, particularly in this article, that a *decolonial stance* requires not only an acknowledgment of these struggles, in conceptual or procedural aspects that substantiate actions of teaching or research in the field of Mathematics Education – but also a reappraisal of individual and collective existences, of epistemic and political positions, as well as of the political agenda that drives us. Therefore, we consider it crucial to begin by explaining such attitudes.

A first attitude concerns refusing to characterize, in the past or the present, any teaching or research action as *decolonial*. We do not understand decoloniality as an *adjectivization* for theories or methodologies, which, for instance, qualify them in relation or in opposition to others; but as a *posture* that, in the educational field, we assume in the face of these actions. By recognizing it as a posture, we understand decoloniality as a *choice*: a decision to share a political agenda engaged in struggle, resistance, and insurgency against the various traces and effects of coloniality we are traversed by. Thus, as a first move, a decolonial stance in Mathematics Education makes us aware and insurgent regarding the bonds established between Mathematics and the patterns of world power that, in Quijano’s (2002) view, consists of the intertwining between:

1) the coloniality of power, that is, the idea of “race” as the foundation of the universal patterns of basic social classification and social domination; 2) capitalism, as a universal pattern of social exploitation; 3) the State as a universal central form of control of collective authority and the modern nation-state being its hegemonic variant; 4) eurocentrism as a hegemonic form of control over subjectivity/intersubjectivity, particularly in the ways of knowledge production. (p. 4, our translation)

We express this attitude, firstly, in the scope of language, by choosing the term “*decolonizar*” instead of “*descolonizar*”⁴, as proposed by Walsh (2013). The adoption of the prefix *de-*, instead of *des-*, grammatically recognizable in Romance languages, is due to two reasons. First, semantic-linguistically speaking, the word “*decolonial*” carries a subversive game of language that aims to show *there is no null state of coloniality*, in which it would be possible, for instance, a Mathematics that overcame coloniality or that operated neutrally in relation to its traces and effects. The second reason, which is conceptual, reinforces the idea of “*decolonialidade*” as a project, a process, a bet, in constant movement, always following a way. “*Decolonizar*” corresponds, in this sense, to the construction of paths to face the inequalities engendered and governed by the patterns of world power. In the particular case of Mathematics Education, this corresponds to replacing Mathematics in an analytics of coloniality, unveiling how both Mathematics and the patterns of world power cofunction, and creating mechanisms to overcome the *myth of Western Modernity* (Dussel, 1992), broadly characterized as the belief of Modernity as an emancipation, a “way out” from obscurity through an effort of reason that has gifted humanity with a linear and universal development, referenced in Europe as an ideal. A second attitude is related to the non-classification of the decolonial stance as a *trend* in Mathematics Education. Such trends, as described by D’Ambrosio and Borba (2010), can constitute a tapestry in which the issues they deal with and intersect – being educational, social, political, cultural or other – are not determined by systematic, previous, static and generalist theoretical or methodological landmarks, but are produced together with the problems we face. However, these trends are often interpreted as theoretical or methodological frameworks which constrain or determine teaching or research actions, inciting an existential, conceptual, or procedural stability that affects teachers and researchers. Seeking to avoid the risk of establishing models, we resist the understanding of decoloniality as a trend to develop actions

4 “Decolonizar” is the most common translation of “decolonize” in Portuguese and Spanish.

in the field of Mathematics Education, and we defend it as a permanent movement of insurgency to dominant academic approaches from a Eurocentric perspective. The decolonial stance is therefore positioned as a political, epistemological, and pedagogical force which challenges the paradigms of teaching and research established by Western Modernity, causing displacements that destabilize their hegemony and stretch their normative senses.

Based on these attitudes, regarded as indispensable to this article, we propose actions for the construction of a political agenda grounded on the decolonial stance and which is directly linked to Mathematics Education as an epistemological field and a field of teaching and research actions. For this purpose, we will subdivide this article into three parts: firstly, we discuss meanings for terms such as “colonialism”, “coloniality” and “decoloniality” in their relations with the production of Western Modernity; secondly, we point out, without an intention of totality, teaching or research actions for the construction and sharing a political agenda, on a collective dimension; finally, in the latest remarks, we summarize the discussion presented and invite our community, Mathematical Education, to engage with the agenda that has been constructed.

2. Modernity, colonialism, coloniality, decoloniality

In this article, we understand the *decolonial* stance as a posture, an action, a commitment of agency and action in transformation movements of a modern western world marked by the patterns of world power, which align ourselves with the resistance and struggles that challenge violence, inequalities, and hegemony caused by these patterns of power. As the *decolonial* stance acknowledge other ways of resistance and struggle, it is not intended as the only possibility, but “an option that, besides affirming itself as such, also highlights others as possible options, and not simply the irrevocable truth of the history that needs to be imposed by force” (Mignolo, 2017, p. 13, our translation).

The authors participating in the *modernity/coloniality research network* have denounced coloniality as a pattern of power that emerges from and remains due to modern territorial and political colonialism. By dominating the economic, political, and territorial power of the colonial world, Europeans have built for themselves and for the world an image of superiority of their own bodies and cultures. This image has been built through the violent oppression of other peoples and territories – blaming the individuals themselves for their alleged state of primitivism, based on a linear and universal notion of evolution and progress; usurping their

natural environments; barbarously exploiting their human workforce; invisibilizing their ways of knowing and being in the world (and yet appropriating of them in a hidden way); and domesticating the bodies of individuals who, oppressed, understand their own existence as inferior, dehumanizing themselves. In the words of Krenak (2019):

The idea that white European could colonize the rest of the world was based on the premise that there was an enlightened humanity that needed to meet the obscured humanity, bringing it into this incredible light. This call to the bosom of civilization has always been justified by the notion that there is a way of being here on Earth, a certain truth, or a conception of truth, that guided many of the choices made at different periods in history. (p. 8, our translation)

Colonialism appears, then, as one of the best-structured weapons of Eurocentrism and, although it is not formally present any longer, its violence, inequality, and hegemony remain in the form of *coloniality* (Quijano, 2002). In order to maintain a project of economic and subjective domination, coloniality is established along with the naturalization and legitimization of social, economic, cultural, political, environmental, territorial, gender, race, ethnic, and generational dichotomies and hierarchies, among many others that still today constitute the relationships in which we participate, as subjects and collectivities, in our world.

Thus, through the obliteration of histories that coexisted before colonialism and the invention of a linear and universal narrative of humanity, coloniality presents itself as a constitutive dimension of Western Modernity, with the effects of the colonization of non-European territories being a central point for understanding the historical transformations that have taken place since the Age of Enlightenment. The assumption that Modernity is inaugurated by the Enlightenment in Europe, configuring historical and epistemological models from the 17th century to current times, contributes to the production of a geopolitics of knowledge. In one of its dimensions, this geopolitics affirms the paradigms established within modern Western thought as universal truths. In other dimension, it makes invisible and silences individual and collective subjects constructed in other ways of relating with the world and with themselves.

Decoloniality emerges from the exposure, confrontation and transgression of dichotomies and hierarchies caused by coloniality, as “a concept that is useful to transcend the assumption of certain academic and political discourses which argue that, with the end of colonial administrations and the constitution of states-nations in the peripheries, we would live in a decolonized and post-colonial world” (Castro-Gómez & Grosfoguel, 2007, p. 17, our translation). This *concept*, in the view of Walsh (2012), is not determined by a single sentence,

but must be “defined by horizons of possibility, creativity, and construction, as well as by other modes of power, of being, of knowledge, of living; a project, a process, and an insurgent and purposeful bet – and not just reactive – always on the move, on the way, and in construction” (p. 18, our translation). Based on these understandings, we see decoloniality as a political-theoretical-methodological-existential stance directed towards actions that scrutinize and challenge the patterns of world power.

In the scope of Mathematics Education, choosing decoloniality as a stance draws our attention and puts in movement regarding the bonds established between Mathematics and the patterns of world power. It consists, then, of a bet which seeks to hold Mathematics in *political-epistemic disobedience*, aligning it to social, economic, cultural, political, environmental, territorial, gender, race, ethnic, national, among many other struggles, that strive to challenge the capitalist, racist, patriarchal and colonial world-system. Particularly in Brazilian research, in Giraldo & Fernandes (2019) we have argued that:

the *decolonial* stance can raise political interpellations concerning *from who, for whom, and in what are referenced* these knowledges and practices [linked to Mathematical Education], in the political, geographical and cultural delimitation that today is called Brazil, and in the political and epistemological delimitation that today is called Mathematics. (p. 471, our translation)

Aiming at these *political interpellations*, we understand that the choice for a decolonial stance can contribute to the construction of an agenda that, being imbedded in education and research processes, is linked to Mathematics Education. In the next section, we propose actions that can be undertaken within this agenda – far from any intention of exhausting the topic.

3. Towards a political agenda in Mathematics Education: pointing out actions

Following the discussion outlined in Giraldo & Fernandes (2019), we intend to propose actions to guide the construction of a political agenda in Mathematics Education, grounded in decoloniality and directly related to education and research practices. Such actions, which are not limited to the ones listed below, are intended to set in motion and in attention:

- Mathematics, in its ontological, epistemological and methodological perspectives, problematizing the naturalization of practices and conceptions concerning the discipline and its teaching, and setting it in motion of political-epistemic disobedience;

- collective memories tied to Mathematics and Mathematics Education, deconstructing Eurocentric narratives, which make bodies, knowledges, and ways of being in the world invisible;
- Mathematics teachers' education processes, interpellating conventional narratives on their knowledges and practices.

Next, we discuss the potential of each of these actions, mentioning possible or previously verified strategies in Brazilian contexts.

3.1 A first action: denaturalizing practices and concepts concerning Mathematics and its teaching

Among the alternative paths presented to construct the political agenda, the first one aims to expose, problematize and transgress the ways Mathematics, in school cultures, is inserted the set of mechanisms and processes which operate to maintain the patterns of global power. Thus, we are interested in reflecting upon the interpellations that a decolonial stance can promote towards school practices related to Mathematics, considering their ontological, epistemological, and methodological perspectives.

In Western Modernity, especially since the Age of Enlightenment, a narrative on Mathematics as a science was produced by means of exclusions, in different levels, ignoring and neglecting the participation of colonized or non-European peoples in its historical processes (Joseph, 1997). In this spirit, ideals such as *humanity*, *civilization*, *evolution*, and *progress* started mobilizing the knowledge around a *mathematical aegis* aiming the self-assertion of European peoples as more civilized, more developed, and more evolved, authorizing and justifying civilizing processes over peoples which were seen as *inferior*, *primitive*, and *barbaric*. In occupying this place, Mathematics became an argument and a criterion of humanity: there is a *humanity*, which knows Mathematics; whereas there are *sub-humanities*, which ignore it.

Thus, a plausible action within this part of the agenda would be questioning how – based on this history reverberating contemporarily – Mathematics operates in the constitution of subjectivities in school environments, allowing the establishment of *degrees of humanity* in the relationships between the referred subjectivities and the educational practices associated with Mathematics. This ontological dimension proposes to consider Mathematics as a *resource* of Western Modernity, which operates in the production of sub-humanities, as it upholds idealized subjectivities in school cultures.

Particularly in the Brazilian scenario, we are experiencing the expansion of curricular policies involved in the production of these idealized subjectivities through educational processes concerning Mathematics. In regard to School Education, we followed the issuing of the National Common Curricular Basis⁵ (BNCC) (Basil, 2018), which aims to define a set of essential and progressive learning items all Brazilian students must fulfill throughout School Education. Even though BNCC's official documents address guarantees of alleged flexibility for states' and cities' public school systems to adapted prescriptions to their local contexts, we identify, in this policy, attempts of delimitation and imposition of learning items, described in terms of competence and skills, aiming at the production of subjectivities circumscribed to values, beliefs, and habits of the current patterns of global power.

Within the debates on the dimensions of decoloniality, we underline that this performance of school Mathematics, in the production of subjectivities referenced and personified in the image of the European white man, a body idealized as the threshold of the experience of humanity, is tied, in a way inseparable from an ontology of knowledge, with the *coloniality of being*. Addressing the coloniality of being means to stress questions on the traces and effects of coloniality in processes of subjectivation, particularly when considering the negation and inferiorization of the other, the non-white, the non-male, the non-European, in processes that dehumanize them. Fanon (2008) refers to the dehumanization of person due to their color as "treatment of non-existence". As Santos (2019, p. 42) points out, in "Western modernity, there is no humanity without sub-humanities. At the root of the epistemological difference, there is an ontological difference" (Santos, 2019, p. 42). We can say, then, that the knowledge of Mathematics, as a Eurocentric epistemic field, has become a criterion of humanization and, as a consequence, of dehumanization. Therefore, this ontological dimension of coloniality is materialized not only in what individuals are or could be, but, above all, in discourses of power that impose what *they are not* and what *they are not allowed to be* because of their identity of gender, their color or their roots. Thinking from this ontological perspective of Mathematics requires going beyond the appreciation of individuals as beings, and including dimensions of *non-beings*, that situate their existence also in terms of *non-existences* produced by the criteria of humanity determined by coloniality and ratified by Mathematics.

⁵ Base Nacional Comum Curricular.

In an epistemological dimension, we note that Mathematics is often described, through a conventional historical narrative, as a body of knowledge originated in the Ancient Greek culture, and that, since then, has its development in constrained to Europe, with little relevant contributions from other peoples. In fact, and even though the global scenario has changed in recent years, the narratives on history of Mathematics in many mainstream textbooks account for scarcely any evidence of non-European peoples' participation in its development. The interactions with these peoples are presented in a way that is not only merely figurative and allegorical, but also produce sub-humanities.

The construction of narratives associating Mathematics with ideals of humanity, civilization, evolution, and progress, developed along with Western Modernity, naturalizes Eurocentric paradigms as universal truths. Even when the contribution of other epistemic fields in shaping these paradigms is evident, several procedures are triggered to make invisible and silence those peoples whose knowledges and histories allowed forms of knowledge credited to European.

But a far stronger counter-influence was the political climate of the day, when the same period saw the culmination of European domination in the shape of a “Scramble for Africa” and the final subjugation of Asia by imperialist powers. As an adjunct to imperial domination arose the ideology of racism and white superiority which spread over a wide range of social and economic activities, including the writing of histories of science. These histories emphasized the unique role of Europe as providing the soil and spirit for scientific discovery. The contributions of the colonized were ignored or devalued as part of the rationale for subjugation and dominance. And the developments in mathematics before the Greeks – notably in Egypt and Mesopotamia – suffered a similar fate, being dismissed as of little importance to the future of the subject. (Joseph, 1987, p. 15)

Besides the ontological and epistemological dimensions, this part of the political agenda demands a methodological approach which may promote a look on the different materialities which constitute educational practices associated with Mathematics in school cultures, such as the narratives produced through classroom observation or participation, textbooks and other classroom materials, curricular documents, syllabuses, descriptions of the School and classroom structures, among others. The investigation of these materialities aims not only to expose inequalities reverberating from the colonial, patriarchal, and capitalist discourses in Mathematics classrooms, but also to “challenge and pull down the social, political and epistemic structures of coloniality – permanent so far – that sustain patterns of power grounded

in rationalization, in Eurocentric knowledge and in the inferiorization of some beings as less human” (Walsh, 2009, p. 12, our translation).

The analysis of these materialities can be guided by questions, such as: *How to raise awareness of traces and effects of coloniality that, through Mathematics, are configured in school environments? How do these materialities reveal educational practices associated with Mathematics which reinforce these traces and effects? How do these educational practices disclose coloniality in their possible exercises or manifestations in Mathematics classes? How can we assume positions of resistance and insurgency concerning the traces and effects of coloniality, proposing other practices and paths for the teaching of Mathematics?*

Thus, a decolonial stance in Mathematics Education can be intended to tension the naturalization of conceptions and practices related with the discipline and its teaching, going across discourses and materialities that constitute school environments. This tension aims mainly to reconfigure the positions, relations, and actions that puts Mathematics at the service of coloniality and other dimensions of the current patterns of world power, pushing it into a movement of disobedience for the affirmation of other existences in the School and the society.

3.2 A second action: revisiting collective memories

One of the bets of the decolonial stance is to revisit the collective memories which different social groups get and keep as part of their existence. These memories are pervaded by coloniality and largely made up of narratives that insistently seek to determine who we are, how we are, what we cease to be, and what we can be, constituting a basis for the conservation of processes that subordinate bodies and knowledges and make individuals and communities invisible.

Therefore, this second action to the construction of a political agenda is related to the collective memories linked to Mathematics and Mathematical Education. Beyond the narratives that shape us subjectively, a decolonial stance in Mathematics Education urges us to challenge the hegemonic narratives, and to reinvoke subordinate, migrant, hybrid, and borderline histories, establishing narratives that do not hide our colonial landscape. In the words of Ramallo and Porta (2018), these narratives:

Weaken more and more the unambiguous pretension of *the* report. They re-found the hegemonic narrative, make it explode into micro-stories with local meanings and territorial cleavages, since they constituted of and built up social and discursive practices of production

and distribution of knowledge at the service of their people. They regain the right to name themselves, and to decide how to tell their stories, they are in themselves an inescapable historical repair. (p. 261, our translation)

There are countless approaches within this part of the agenda, and we chose to discuss, as an example, the traces and effects of coloniality that pervade the hegemonic narratives on Mathematics teachers' education in Brazil.

The creation and expansion of the Faculties of Philosophy, Sciences, and Language in Brazil made ideals and discourses on teachers' education to be constructed and spread. These institutions appeared in the 1930s and had, in general, two objectives: first, to promote the development of scientific knowledge, creating programs and courses disconnected from the idea that all university education should always correspond to a professional and technical profile, described in terms of a liberal profession (such as physicians, engineers, pharmacists, lawyers, etcetera); and, second, to commit to teachers' education, given the expansion of Brazilian secondary education. From this twofold goal, emerged the model later labeled as "3 + 1", which consisted of first graduating scientists in specific undergraduate programs of their respective fields (Mathematics, Chemistry, Natural History, etcetera), and then preparing them to the exercise of teaching at school in the course of Didactics.

However, we understand that this hegemonic narrative about Mathematics teachers' education in Brazil – which has its founding landmark in the Mathematics Undergraduate Program at the University of São Paulo (USP) – reproduces traces of coloniality, strongly affecting our contemporary teachers' education programs.

A first trace concerns the subordination of pedagogical knowledge to scientific knowledge. Particularly in Mathematics teachers' education, the knowledge on didactic-pedagogical aspects of teaching was subordinated to the mathematical scientific-academic knowledge. In a study on the 80th anniversary of Mathematics Undergraduate Program at USP, Gomes (2016) states that "the main role of the program was the education of mathematicians, pushing aside the goal of professional education of Mathematics teachers to be subordinated to the education of scientists" (p. 429, our translation). This subordination remained over the following decades, making it possible to identify, in the collective memories shared by those involved in Mathematics teachers' education, the naturalization of ideals and discourses conditioning teachers' education to scientists' education. Mathematics teachers' education is, therefore, subordinated, both conceptually and institutionally, to the physical and subjective spaces

occupied by professional mathematicians. Thus, in the course of time, undergraduate programs for Mathematics teachers' education are constituted under the shadows of undergraduate programs for mathematicians' education.

Narratives reinforce this model by affirming *disciplinary thinking* and an *arboreal organization of knowledge* (Castro-Gómez, 2007). Both thinking and organization favor the idea that "knowledge has its hierarchies, its specificities, its constraints, which mark the difference between certain fields of knowledge and others; their epistemic boundaries, which cannot be infringed; their canons, which define their procedures and particular functions" (Castro-Gómez, 2007, p. 81, our translation). Thus, a disciplinary epistemic model prevails in Mathematics teachers' education, which places scientific-academic mathematical knowledge in a position hierarchically above other forms of knowledge, including didactic-pedagogical ones. This perspective manifests itself not only in Mathematics and its epistemologies, but also in the structures of departments, institutes, faculties, and their programs' syllabus.

A second trace of coloniality concerns the *shaping the idea of the University as a privileged space of knowledge production* (Castro-Gómez, 2007). The University becomes not only the single space for production of knowledge associated with moral and material progress, but the one responsible for establishing the criteria and surveillance over this knowledge legitimacy, determining which bodies and knowledges are or are not admissible to these spheres. Particularly in teachers' education, the idea taking shape is that the University is responsible for drawing the paths of teaching processes taking place in schools, being responsible for the creation, assessment, and dissemination of didactic-pedagogical materials.

When the University, an institution today referenced to a great extent in European cultures determinant for the configuration the contemporary geopolitics of knowledge, becomes the privileged space for the production and legitimation of knowledge, it reinforces the position of superiority of Eurocentric epistemic fields. In the history of Mathematics teachers' education in Brazil, the official records about USP's program highlight the contributions of foreign personalities, such as French, German and Italian professors, being the records on the roles of Brazilian professors' roles still scanty.

This being said, we intend to draw attention to the fact that, often, the collective memories we build or promote produce effects which strengthen the coloniality pervading educational processes. Most imperatively, this action on the political agenda demands the interpretation of

our teachers' education processes through no-Eurocentric lenses – which, in the end, presents us the challenge of producing “non-colonialist” narratives of Mathematics Education.

Actions aligned with decoloniality have challenged the imperative understanding of the University as the single manager of the geopolitics of knowledge. The idea of *pluriversity*, a disruptive institution with activities, integrations, and partnerships with individuals, collectivities and social movements representing knowledges and histories that have been historically made invisible, has opened possibilities of conceiving spaces of resistance and experience situated in co-creation, cooperation, and complexity.

In Brazil, the emergence of teachers' education undergraduate programs aimed at different collectivities, such as indigenous and peasant populations, has re-signified the usual guidelines and prescriptions for these programs. Particularly in Mathematics Education, as we have argued in Fernandes (2019), these programs act “breaking with traditional ways of conceiving and practicing Mathematics teachers' education, allowing the constitution of epistemologies and curricula designed in the production of other meanings for education, for school and, fundamentally, for mathematics” (p. 42, our translation). This corresponds to the possibility of redesigning the narratives which participate in Mathematics teachers' education, so that other social and cultural aspects replace the general pedagogical instructionism, towards the political emancipation of the University and of different cultural groups.

3.3 A third action: challenging conventional narratives on education and knowledge of Mathematics teachers

As a third action to consolidate the political agenda claimed in this article, we propose the interpellation of conventional narratives on education and knowledge of Mathematics teachers. The sense of *interpellation* we initially propose suggests taking a decolonial stance that aims at a displacement of conventional frameworks in Mathematics teachers' education research literature, in order to produce other meanings and destabilize places of hegemony. With this first move, we do not necessarily propose a full rupture with such narratives, but interpellations that push them towards other territories, exposing their gaps as spaces of power, pervaded by references that incorporate and acknowledge the role of other bodies and ways of being in the world. In this sense, we recognize the need to carry on with this movement. In the unfolding of this agenda, towards a turn in the debate on Mathematics teachers' education grounded on references that were and are wiped out or made invisible by the colonial project.

In the initial paths pointed out in this article, we propose a critical look over the current research literature, through a decolonial stance, in order to reveal, expose and tension gaps left empty in the conventional debate on the Mathematics teachers' education. The research literature on teachers' education, in Education and in Mathematics Education, in the Brazilian and international scenarios, has widely defended the legitimation of knowledge (including content knowledge) specific of teachers, as well as an affirmation of teaching in School Education as a professional activity, with its own epistemology.

Shulman's (1986) work, which has constituted a reference in the field, proposes the notion of *pedagogical content knowledge* as the knowledge on the aspects of the content that make it teachable to others, which can be described as a dimension of knowledge *about* the content *for* its teaching. We agree with Noddings' (1992) statement that the expression pedagogical content knowledge has become "more a political rallying cry than a label for a real body of knowledge" (p. 198). We consider that the political cry proclaimed by Noddings describes some of the ways in which Shulman's work has been appropriated by research communities in Mathematics Education – as a movement of reaction against the historically constructed subordination of Mathematics teachers' knowledge and education to mathematicians' knowledge and education. In this sense, Davis and Simmt (2006) underline that "the subject matter knowledge needed for teaching is not a watered-down version of formal Mathematics, but a serious and demanding area of mathematical work" (p. 295). In the context of Brazilian research in Mathematics teachers' education, Moreira and Ferreira (2013) state that:

Although, even today, a sound education in mathematics is advocated for prospective teachers without, in most cases, explaining what effectively would constitute such soundness and, even less, arguing on the effective impact of such sound education in the teachers' professional practices, there has been produced, parallelly to the advances in research on teachers' professional knowledge, new ways of justifying and defending the maintenance of the centrality of what was conventionally called content knowledge in the Mathematics teachers' education process. (p. 984, our translation)

Thus, these authors denounce an underlying strand in recent research, according to which "*content knowledge* is prevailingly valued in school teaching practice and in the definition the place of Mathematics in teachers' education" (Moreira & Ferreira, 2013, p. 1000, our translation). As we have noted in Giraldo et al. (2018), works by these and other authors:

set forth a criticism regarding the existence of a tacit and widespread conception that the knowledge necessary to teach mathematics at school is situated outside the professional and cultural locus of the classroom, and that the authority over such knowledge rests with groups from which school teachers are excluded. That is, it would be due to groups [...] whose members may not interact at all with school environments – and may not even recognize the legitimacy of knowledge emerging from school practice – to dictate to teachers how they should or should not teach mathematics at school. (p. 188, our translation)

The confinement of the authority over the knowledge necessary for teaching in this “place, external to the professional and cultural locus of the classroom” – a territory where school teachers are not allowed full autonomy over their own activities –, is related to the disqualification of the teaching at school as a professional activity. The work of Tardif and his collaborators is a reference for the characterization of teaching as a profession. Tardif, Lessard, and Lahaye (1991) note that, although teachers occupy “a strategic position within the complex relationships that unite contemporary societies with the knowledge they produce and mobilize for different purposes” (p. 216, our translation), “education activities seem to be progressively fall into the background” (p. 217, our translation). For these authors, the “erudite men” or “scientists”, responsible for the production of new knowledge, constitute a group increasingly separated from teachers, who are responsible for education activities. Thus, teachers would deal, in their activities, with a type of knowledge (scientific knowledge) in whose production they are not engaged with – which would reduce teaching to a technicist activity, consisting of merely applying certain knowledge, without interfering in it at all.

From this analysis, Tardif et al. (1991) characterize teaching as a profession, with its own epistemology, based on the recognition of other knowledge that integrate this activity – which they call *teaching knowledge*. In particular, the authors highlight the so-called *knowledge of experience* or *practice*, which “emerge from the experience and are validated by it. They are incorporated into individual and collective experiences in the form of habitus and skills, of knowing to do and to be” (p. 220, our translation). Nóvoa’s work (2009) situates the discussion on teachers’ education in the context of teachers’ professionalization. Thus, the author advocates a conception “teachers’ education built inside the profession”.

The subordination of teaching knowledge to scientific knowledge and the disqualification of teaching as a profession, demarcated by the contributions of the authors mentioned above and several others, can be interpreted, from the perspective of the decolonial stance, as a process

articulating coloniality of knowledge and of being. In Matos (2019), we have argued that certain conceptions of teachers' knowledge carry traces and effects of coloniality insofar as they "conceive the school as a *remote* but *strategic place*, conducive to the progress of Mathematics as a science and to the social perception of mathematical knowledge primacy" (p. 147, our translation). Thus, the coloniality of knowledge constitutes the imposition of academic knowledge as superior and the invisibilization of other forms of knowledge produced and mobilized in school education contexts. It operates in an articulated way with the coloniality of being, which relegates teachers to subordinate social and professional places, where their authority and autonomy in regard to their professional activities are weakened. In this sense, we can argue that it is precisely due to the strategic position occupied by teachers in contemporary societies, as Tardif et al. (1991) pointed out, that their social and professional places need to be subordinated – to put themselves at the service of a project of hegemonic power that depends on schools that does not put established hierarchies and inequalities into question. From this perspective, the political cry pronounced by Noddings (1992) can be interpreted as representative of decolonial insurgency movements, which claims that teaching at school is a professional activity, with its own epistemology.

However, directing our gaze through different lenses, we also recognize that the legitimation of knowledge and practices produced at School, by itself, does not ensure that these knowledge and practices are not fundamentally shaped by Eurocentric references, or that they explicitly assume a political commitment to bodies, knowledges and ways of being in the world historically subordinated and made invisible by coloniality. Beyond the narrative of the School being subordinated to the University, we recognize that, as highlighted by Walsh (2009), the coloniality of knowledge is deeply rooted in the educational system, from the School to the University, so that both are appropriated by a project of hegemonic power to impose Eurocentric epistemologies and rationalities as a single scientific-academic-intellectual framework. Thus, we align ourselves with teachers' education research literature in the claim for knowledge and practices which are specific of school teaching, and not epistemologically subordinated to corresponding disciplinary academic fields. But we also *interpellate* these authors with respect to: *from who, for whom and in what are referenced* these knowledge and practices, as well as the theoretical and methodological frameworks which support academic debates about them?

One aspect of this interpellation refers to a critical reflection upon which references to characters and cultural artifacts appear in curricula, textbooks and other materials, and are used in classrooms, especially in Mathematics and other so-called “exact” disciplines. Morais and Santos (2019) denounce the idealization of a historical narrative which illustrates Europe as the privileged place where most of concepts and theories that support contemporary science would have been first formulated, and as a region that stands as predestined to bestow upon humanity the individuals capable of conducting complex intellectual works. For the authors, “whenever we think of a scientist or come across his figure in a textbook, we are tempted to agree with such predestination” (Morais & Santos, 2019, p. 67, our translation). Thus, a first move within this action of a political agenda consists of denouncing and dismantling this Eurocentric historical narrative made up of male white heroes, and their heroic deeds – incorporating in Mathematics teachers’ education historical narratives situated in other territories, with other protagonized by other characters.

However, it is possible to acknowledge and incorporate other territories and other protagonists, but yet keep operating with the same conventional meanings that have been shaping mathematical teaching. Therefore, a second move, which must go with the first one in this interpellation of conventional narratives, consists of denaturalizing the very dominant conceptions and meanings of education, school, and Mathematics teaching, as well as teaching methodologies and related postures. In Giraldo (2019), we have highlighted some socially disseminated conceptions on the nature of Mathematics which have counterparts in conceptions on the teaching of the discipline:

Mathematics is a “science of rigor”. Therefore, its teaching must be “rigorous”. Mathematics is a “science of certainty”. Therefore, its teaching must not give way to “mistakes”. Mathematical knowledge is “organized into theorems”. Therefore, its teaching must privilege the “presentation of answers”. Mathematics is historically produced by the “isolated inspiration of innate geniuses”. Therefore, its understanding is only accessible to people with “innate talent”. That is, those who are not born with “mathematical talent” will never be skilled in mathematics. The job of the math teacher would then be to just identify the “talented” students and to separate them from the “weak” ones. Mathematics is a “neutral science”. Therefore, its teaching must be “free of politics”. (p. 10, our translation)

Denaturalizing conventional meanings of Mathematics teaching imply, for instance, *unlearning* these conceptions, which are often understood as the only possible or desirable

teaching postures for Mathematics teachers. Thus, this denaturalization includes conceiving and practicing *other* possible Mathematics classrooms arrangements and agreements – classrooms guided by *collectiveness* instead of ranking pupils better than others; classrooms where “*mistakes*” are not seen as transitory and inconvenient symptoms of disability, but as a *creative force*; classrooms where “*not understanding*” is not seen as lack of knowledge, but as an opening for potential paths to *other forms understandings and knowledge*.

4. Final Considerations: an invitation

Throughout this article, we have argued that a first meaning for a decolonial stance in Mathematics Education may be directed to the proposition of a political agenda that, by revisiting our individual and collective existences and by questioning our teaching and research processes, allow us to align our positions and actions with struggles that seek to overcome violence, inequalities, and hegemonies engendered and governed by the patterns of world power which, among other dimensions, is based on colonialism, patriarchy, racism, capitalism and in Eurocentrism. Our proximity with theorists from the modernity/coloniality research network does not drive us away from other perspectives that emerge along with decolonial thinking. On the contrary, we have consistently been approaching authors who dwell on the outskirts of the dominant academic scenario; and we intend, rather briefly, to propose debates from other places of enunciation. In this sense, we recognize that we are also pervaded by coloniality and that the consolidation of a political agenda also involves an exercise – in which we include ourselves – of *unlearning* to think only from dominant references.

As a final remark, we would like to stress the political, epistemological, and pedagogical force of the actions outlined here. In the political field, a decolonial stance in Mathematics Education can destabilize power relations, subverting dominant hierarchies and empowering voices of historically subordinated peoples. In our view, it is not a matter of understanding or taking on the struggles of these peoples, but acting up for the establishment of their protagonism. This requires realizing – and, often, giving up – the places we occupy due to privileges granted by our skin colors, by our sexual orientations and gender identities, by our positions in the social and academic stratification, by the economic status we inherit, or by our corporal disposition. As Mathematics educators, we must question and subvert relationships that, through Mathematics, make us see ourselves as more important, more necessary, and, in the limit, more human than others.

In the epistemological field, we must recognize and question the hegemony which places Mathematics at the service of the patterns of world power. We know that Mathematics has a significant epistemological, methodological, and ontological participation in the configuration of Western Modernity and, therefore, we must destabilize the role it plays in the dynamics of the current geopolitics of knowledge, in the unquestionability of modern rationality, and in the affirmation of totalizing and totalitarian epistemological perspectives. As Mathematics educators, we can commit to epistemologies that have been absent in this scenario, creating spaces for the emergence of other ways of knowing the world and ourselves.

In the pedagogical field, we can strengthen resistance and insurgency movements in schools, universities, and society, placing Mathematics and its teaching in a collective construction position aligned with social, economic, cultural, political, environmental, territorial, gender, race, ethnicity, and generational, and many other struggles which are mobilized by previously subordinated individuals and collectivities. As Mathematics educators, we can push Mathematics towards political-epistemic disobedience, exposing and subverting the strategies that put it at the service of coloniality and other dimensions of the patterns of world power.

Finally, we hope this article will encourage theoretical-methodological dialogues, political debates, and, especially, adherence to the struggles of collectivities that daily engage in a project of social and educational deconstruction, reconstruction and opening of other possibilities. We believe that several of our positions and actions in the field of Mathematics Education can, in fact, make this commitment.

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