



Decolonial option in Mathematics Education


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Abstract: This article aims to present reflections on the constitution of the decolonial option in Mathematics Education. As theoretical assumptions, it is based on references based on the Ethnomathematics Program, decolonial studies, discussions woven in the interface between Mathematics Education and Decoloniality, in addition to reflections arising from the dialogue between Mathematics Education and affirmative actions. It is understood that Mathematics, in its historical process of constitution, participated in several colonization processes and still reproduces several of its effects via coloniality(ies), making invisible, silencing and denying various forms of knowledge(s), as well as its connoisseurs. In this way, it is proposed that the decolonial option in Mathematics Education enables dialogical spaces between the different ways of reading and interpreting the world from the very world in which we live.

Keywords: Ethnomathematics. Decoloniality. Critical Interculturality.

Opción decolonial en la Educación Matemática

Resumen: Este artículo tiene como objetivo presentar reflexiones sobre la constitución de la opción decolonial en la Educación Matemática. Como presupuestos teóricos, se sustenta en referentes fundamentados en el Programa de Etnomatemática, estudios decoloniales, discusiones tejidas en la interfaz entre Educación Matemática y Descolonialidad, además de reflexiones surgidas del diálogo entre Educación Matemática y acciones afirmativas. Se entiende que las Matemáticas, en su proceso histórico de constitución, participaron en varios procesos de colonización y aún reproducen varios de sus efectos vía colonialidad(es), haciéndolas invisibles, silenciando y negando diversas formas de conocimiento(s), así como sus conocedores. De esta manera, se propone que la opción descolonial en Educación Matemática permita espacios dialógicos entre las diferentes formas de leer e interpretar el mundo a partir del mundo en el que vivimos.

Palabras clave: Etnomatemática. Descolonialidad. Interculturalidad Crítica.

Opção decolonial em Educação Matemática

Resumo: Este artigo tem como objetivo apresentar reflexões acerca da constituição da opção decolonial em Educação Matemática. Como pressupostos teóricos, apoia-se em referenciais pautados no Programa Etnomatemática, estudos decoloniais, discussões tecidas na interface

entre Educação Matemática e Decolonialidade, além de reflexões advindas do diálogo entre Educação Matemática e ações afirmativas. Entende-se que a Matemática — no seu histórico de constituição — participou de diversos processos de colonização e ainda reproduz vários dos seus efeitos via colonialidade(s), invisibilizando, silenciando e negando diversas formas de conhecimento(s), bem como seus conhecedores. Dessa maneira, propõe-se que a opção decolonial em Educação Matemática possibilite espaços dialógicos entre as diversas maneiras de ler e interpretar o mundo a partir do próprio mundo em que se vive.

Palavras-chave: Etnomatemática. Decolonialidade. Interculturalidade Crítica.

1 Introduction

*Our knowledge didn't come from studying books
It was from holding, touching, listening and other senses
Was it primordial knowledge?
Manoel de Barros (2015, p. 15)*

The considerations in this essay come from different areas of knowledge, especially Mathematics Education, with a central focus on the perspective of the Ethnomathematics Program (D'Ambrosio, 2019; Knijnik, 2001), decolonial studies (Mignolo, 2017; Grosfoguel, 2009; Porto-Gonçalves, 2005; Walsh, 2017) and authors who have been discussing the interface between Mathematics Education and Decoloniality (Giraldo & Fernandes, 2019; Giraldo, 2021; Tamayo & Mendes, 2021; Fernandes, 2021).

The discussions mobilized here, propose a different perspective on the ways of reading and interpreting the world from the world(s) in which we live, especially the cosmologies and epistemes of the indigenous peoples of Brazil. In this way, the entry of these peoples into academia opens the way for rich intercultural and inter-epistemic dialogues, especially in the field of Mathematics Education, since this area has been expanding its frontiers, encompassing diverse forms of knowledge(s), know-how and actions.

In this way, questioning the place of mathematics in educational processes is a possibility. To do so, we must question the logics that engender this field. Thus, Giraldo (2021) points out that we need to understand not only the place of Mathematics Education, but also the place of the other in this process:

It is sometimes argued that it is indifferent to teach with any cultural references, because the mathematics that is there is the same. But are the meanings that determine learning the same for those in the positions of learners? And who can affirm this supposed indifference? How can we make such a claim without being taught by those who are in the positions of learners? How can this be said without teaching those who have always been in the places of the subaltern, who have never been heard, who are there but are not seen? And how is it possible to make such a statement without looking at what is around us, without seeing various pieces of evidence that show, for example, the dominance of white men in prominent social positions? If the mathematics that is taught is universal, who is outside this universe? It is sometimes argued that mathematics as a school subject is "more important" than the so-called humanities or the arts, because it is mathematics that produces progress in the contemporary world. But what is the meaning of progress implied in this statement? And who is this idealized progress for? Progress without social justice is an invention of coloniality, which serves to confine subjects in social and work positions that are not in their own interest, but rather in the interest of maintaining a hegemonic power project — just as mathematical knowledge without political critique serves this purpose (Giraldo, 2021, p. 5).

The scenario presented by Giraldo (2021) shows that the aims of Mathematics Education, when linked to a decolonial¹ perspective, must have an emancipatory, (auto)critical and dialogical character, since it questions the neutrality of Mathematics and who it serves. For this to happen, teachers need to be trained from this perspective.

In the case of indigenous students on teacher training courses that teach — among other things — mathematics, especially when these are not specific to these subjects (such as Intercultural Pedagogies), it can be seen that the perspective adopted comes from a ready-made knowledge, governed by proposals that diverge from the contexts in which they are inserted. It is an approach that does not take into account the experiences of these subjects, in other words, it is based on a colonizing view of thought formatting.

This process of invisibilizing and formatting the epistemes of indigenous peoples in the university space — and in (so-called) modern society itself — tends to conceive of them as myths, whereas they are considered, from the perspective of these peoples, as *other* ways of understanding and interpreting the world in which they live. Thus, the processes of disqualifying indigenous ways of thinking are “not just an attack on people and territories; rather, this attack is consummated in part through an ignorant and purposeful misrepresentation of indigenous cosmologies” (Watts-Powless, 2017, p. 253).

In order to undertake a *decolonial turn*, it is suggested that we (re)think the bases of knowledge that are considered legitimate in the academy, making it a place that can think about dialogical processes from an inter-epistemic perspective. These processes must take into account, for example, the thought-places of indigenous peoples, which have never functioned in a dichotomized way, since both could never be conceived and even separated, since the “thought-place is based on the premise that the territory is alive and thinking, and that humans and non-humans derive their agency from the extensions of these thoughts” (Watts-Powless, 2017, p. 252). To this end, affirmative policies in the university space play an essential role in the permanence and progress of groups and peoples who have their own logics for interpreting their realities.

In this context, an important aspect that should also be considered with regard to an alternative way of thinking about Mathematics Education is the dimension of equity, which, in this text, is in line with D'Ambrosio's (2019, p. 74) thinking on this issue:

When I talk about equity, I'm not referring to the Equity Principle, advocated by a panel of math educators and mathematicians: "Mathematics can and should be learned by all students". This principle responds to the ideal of continuity in today's competitive and exclusionary society, using selection instruments that are subordinate to mathematics. This conceptualization of equity necessarily involves the figure of the excluded. The ideal I am defending is the non-existence of excluded people.

In other words, we suggest thinking of different ways of constructing knowledge in the field of Mathematics Education based on a logic that opposes dichotomies (because it is in these that the included, the excluded and those who are not even part of such binarism are selected).

Likewise, in order to glimpse an epistemological turn in *liberating* Mathematics Education, it is important to take into account the decolonization of the mind, “and understand

¹ We understand *decoloniality* as a way of problematizing and stressing the social and racial structures that engender forms of coloniality, which produce effects in the ways of relating to the “others” (non-Europeans), in the processes of (in)validation of what is (not) knowledge, as well as in the subjects who produce such forms of thought (Quijano, 2007; Grosfoguel, 2009; Porto-Gonçalves, 2005; Maldonado-Torres, 2007).

the true heritage of poetic mathematics, not cold, but beautiful, fractal, present in nature, as well as in children's games in the development of their dialogical processes and in the progress of civilizations. None of them would exist without mathematical construction" (Rodriguez, 2021b, p. 8).

Thus, we propose to conceive of it in a way that can cooperate in overcoming the hierarchical thinking that disqualifies other forms of knowledge production(s), which is very present — and at the same time “invisible” — in the academy, which disregards *other* epistemes, as well as the bodies of *other* subjects (indigenous, black, people with disabilities, LGBTI+ people, etc.).

In this scenario, this paper² proposes reflections on the possibilities of (re)thinking the field of Mathematics Education, particularly with regard to opening up other ways of reading and interpreting the world from the very world in which we live, especially in epistemologies from the Global South, namely indigenous peoples.

2 (Re)thinking Mathematics Education: possible horizons

We believe it is important for Mathematics Education to have its foundations rethought from *other* perspectives (D'Ambrosio, 2019; Knijnik, 2001; Giraldo, 2021; Tamayo & Mendes, 2021). To do this, it is necessary to investigate its logics, which have a history of universality and pseudo-neutrality that are intertwined with the processes of *global colonialism and global coloniality* (Grosfoguel, 2009).

In addition to the exclusion of other epistemologies, it is important to note that mathematics has historically participated directly and effectively in various processes of colonization and coloniality. Fernandes (2021) points out that this subject/area operated, and still operates, alongside racism in disqualifying the other, as well as justifying the fact that the other has historically been subjugated and subordinated through structural, physical and symbolic violence, as well as “epistemological” violence, because, in addition to the bodies that are disqualified and dehumanized, they also invalidate their epistemes, cultures and ways of interpreting the world.

One of the examples cited by Fernandes (2021), already in modern times, concerns the mathematical models that make up complex algorithms and are part of our lives, especially on social networks, search engines, streaming platforms, etc. Although they are made up of complex mathematical algorithms, these do not carry concepts such as equity or social justice, but rather the political and economic interests of those behind, or in charge of, these processes (Fernandes, 2021).

The author stresses the importance of the presence of researchers concerned with issues of various kinds in the construction of these algorithms, especially with regard to human rights violations, racism and prejudices, which reinforce colonialities, since this is currently a point of no concern to the companies that produce these algorithms.

As an example, Fernandes (2021) cites the episode that took place in 2015, in which, when searching for the word “gorilla” on *Google*, the search results showed images of young black men. Google's spokesperson simply said that the technology was new and not yet “perfect”. This shows how issues relating to the production of colonialities in mathematics also

² This paper is part of the master's dissertation defended under the Postgraduate Program in Science and Mathematics Education (PPGECM) at the Universidade Federal do Sul e Sudeste do Pará (Unifesspa), which aimed to understand the, possible, contributions of Mathematics Education to the permanence and academic progress of indigenous students entering the Mathematics Degree course at Unifesspa.

occur in the current context, but which are sometimes invisibilized and sometimes not a cause for concern.

According to D'Ambrosio (2019, p. 77), mathematics, since its creation, has been constituted by a character "of infallibility, rigor, precision and of being an essential and powerful instrument in the modern world, which makes its presence exclusive of other forms of thought". In other words, mathematics appears as an entity superior to all other epistemologies, more powerful and even more miraculous than the non-human beings who are present in various cultures (D'Ambrosio, 2019), such as indigenous populations.

Corroborating the argument raised above, Rodriguez (2021a) questions the deterministic and rigid nature of Mathematics Education in the context of training people for life in society. According to the author, mathematics has been used as an artifact of coloniality and oppression, especially in the historical process of invasion of the Americas. Thus, it is argued that the fixed and rigid character of mathematics in the context of its political function is not taken into account when problematizing the field (Rodriguez, 2021).

Thus, Mathematics Education from this perspective is shaped by a process of cultural assimilation, "through which the creativity essential to being human is eliminated" (D'Ambrosio, 2019, p. 77). When it comes to teacher training courses, especially those that train teachers to teach mathematics, the logic of the knowledge that circumscribes them revolves around Eurocentric knowledge. This excludes other ways of living and thinking about the world from the very world in which these *other* subjects live/lived, demonstrating that, in addition to the colonial legacy of racism, subalternization and invisibilization, there is a colonial legacy that reverberates to the present day, in the form of what we can call the coloniality of knowledge (Porto-Gonçalves, 2005).

This highlights the need to problematize the dominant, and always, universal knowledge, which is Euro/nortocentric knowledge. To this end, it is necessary for Mathematics Education to reflect from other perspectives and review "its own trajectory, so that it can account for these multiple processes that are installed in our lives" (Knijnik, 2001, p. 8), since, in general terms, what we see is a treatment that is given either with disdain or omission (Knijnik, 2001).

D'Ambrosio (2019) points out that the subject of Mathematics, as it is currently known, is an Ethnomathematics that was born in Europe, but which received various contributions from Indian and Islamic societies, reaching its current state around the 16th and 17th centuries, and from that point on, it began to be disseminated throughout the world. The widespread dissemination of mathematics has led it to acquire a universal *status*, mainly due to the primacy of science and so-called modern technologies, which have corroborated current economic models that promote inequalities (social and racial) and exclusions.

This universalization of mathematics has made it possible to open up to the processes of globalization that we are currently experiencing, affecting all areas of knowledge and the very social dynamics in which we are inserted. Knijnik (2001, p. 8) points out that globalization gives us the feeling of being "'at home' in any supermarket in the world, in small towns and large cities". At the same time, it is this same process, linked to a neoliberal logic, that promotes exclusions, inequalities, and sets us a (non)place, in very well-defined borders between "us" and "them", that is, between the "other" *anthropos* and the "other" *humanitas* (Mignolo, 2017).

This conception of *globalization*, according to D'Ambrosio (2019), had its genesis at the beginning of Christianity and Islam, since both are religions that preach the conversion of everyone so that they have the same God, the same faith and the same dogmas. In this way,

considering the context of Latin America, Christianity serves as the “spearhead” of colonialism. In this way, “just as Christianity is a product of the Roman Empire, taken to a character of universality with colonialism, so are mathematics, science and technology” (D'Ambrosio, 2019, p. 76).

During its spread, Christianity underwent changes, appropriating cultural elements from the colonized peoples, which led it to expand into other "hybrid" strands. As this happened with the Christian religion, it was expected that it would also happen with other ways of reading and understanding the world,

consequently, mathematics, science and technology also went through this process of 'acclimatization', the result of cultural dynamics. However, this did not and does not happen and these branches of knowledge have acquired an absolute universal character. They do not admit variations or any kind of relativism (D'Ambrosio, 2019, p. 76).

In this respect, it can be seen that the history of mathematics is constructed under the aegis of essentially Eurocentric knowledge, in which thinkers from Ancient Greece, as well as various other countries from the Global North, are always used as a reference.

The mention of this mathematics and its heroes in diverse cultural groups, such as Native or African Americans or other non-Europeans in the Americas, groups of oppressed workers and marginalized classes, in general, not only brings to mind the conqueror, the slaveholder, in short, the dominator, but also refers to a form of knowledge that was constructed by him, the dominator, and which he used and uses to exercise his dominion (D'Ambrosio, 2019, p. 77).

In this context, we can see how the processes of coloniality of knowledge act on the imagination of culturally differentiated groups, such as indigenous populations, especially with regard to the universalist and exclusionary notion that mathematics has perpetuated for centuries. In this way, it is important to think about processes in Mathematics Education that take into account "the natural, social, cultural and imaginary environment" (ethno), which enable us to "explain, learn, know" (mathema) the most diverse "modes, styles, arts, techniques" (tics) (D'Ambrosio, 2019).

Yet, we propose that Mathematics Education should be understood in its multiple aspects and references. It should not be thought of from a single point of view. In the case of indigenous students entering courses that train teachers to teach mathematics(s), it is essential to ensure that the processes involving mathematics education are constituted considering the knowledge and the cultural and symbolic universe of which these students are part, in order to think of other possibilities of conceiving ethnomathematics(s) (D'Ambrosio, 2019).

In the same way that genetic diversity is beneficial, ensuring that future generations can face a variety of situations and overcome them, the field of Mathematics Education also needs multiple research approaches, diverse perspectives to deal with social, political, economic and cultural contexts, as ways of ensuring diversity in Mathematics Education (Kilpatrick, 1996).

3 Decolonial option in Mathematics Education: other ways of reading the world(s)

When it comes to Mathematics Education that considers cultural aspects as essential elements, the Ethnomathematics Program, coined by Ubiratan D'Ambrosio (2019), presents several intercultural possibilities with decolonial interfaces when it comes to promoting and

valuing *other* knowledges, since it seeks to learn and know the various arts and ways of such knowledge from the most varied social, cultural and imaginary environments, including beyond the - so-called - ethnomathematical knowledges (D'Ambrosio, 2019).

Ethnomathematics, among several objectives, seeks to contribute to the recovery of the dignity of the subject(s), which is daily violated through processes of exclusion (social and cultural), which are commonly, and historically, promoted by hegemonic society, especially via systems and institutions for the production and validation of knowledge, such as the university.

Furthermore, this system of violation and subjugation of the *other* takes place through the invalidation of the ways of being and living of such subjects (indigenous peoples, Africans, riverside dwellers, rural peoples, caçaras, quilombolas), which can be exemplified through actions such as “turning the traditional costumes of marginalized peoples into costumes, considering their myths and religions folklore, criminalizing their medical practices. And by making their traditional practices and mathematics mere curiosities” (D'Ambrosio, 2019, p. 10).

From the recognition of other ways of thinking, that is, other models of epistemological organization, which also includes Mathematics itself, we can glimpse more holistic reflective processes of the very ways of thinking about Mathematics(s), both from a cognitive and epistemological perspective and from a historical, social, cultural and educational perspective. This highlights the role of universities in promoting and opening up such debates, especially in the context of teacher training courses, especially for teachers who teach mathematics.

According to D'Ambrosio (2019, p. 18), the driving force behind what he calls Ethnomathematics “is seeking to understand mathematical knowledge/doing throughout history, contextualized in different interest groups, communities, peoples and nations”. However, the author points out that research within the scope of the Ethnomathematics Program, although rigorous and interdisciplinary in nature, should not be understood solely in this way, as it can be a pernicious conception. Thus, it is necessary to bear in mind that one cannot have a ready and finished thought about the mathematical knowledge and practices of a given culture, because the latter is not watertight, ready and finished. Culture is made up of a dynamic, fluid character that recreates, reconfigures and updates itself.

Starting from this notion, we, academics and members of non-indigenous society, in an attempt to align ourselves with decolonial thinking — or rather, with the *decolonial option* — especially with regard to these reflections from the point of view of Mathematics Education.

We can contribute not by telling scholars, intellectuals and indigenous leaders what the problem is, because they know it better than we do, but by acting in the hegemonic domain of academia, where the idea of nature as something outside of human beings has been consolidated and persists. Decolonizing knowledge consists precisely of this type of research. The next step would be to build decolonial options on the ruins of imperial knowledge (Mignolo, 2017, p. 6).

Thinking of Mathematics Education as a *decolonial option* implies detaching oneself from the logic of modernity, which is constituted from a narrative that seeks to undermine other ways of seeing and thinking about the world(s). Tamayo and Mendes (2021) point out that if we assume that the logics that make up Western mathematics have no relation to the historical processes of coloniality — of power, knowledge and being — we can easily be contradicted, since this field was founded “as a discourse that legitimized political/epistemological options that contributed to the legitimization and imposition of the rationality of modernity as a universal standard” (Tamayo & Mendes, 2021, p. 3).

Rodriguez (2021a, p. 5), in order to link the *decolonial option* to Mathematics Education, points out that “the decolonial is not exclusionary and opens up the possibility of including what is excluded in modernity-post-modernity; it elevates and resignifies Mathematics Education to spaces of planetary understanding, beyond education or Mathematics”. In this way, it seeks to dialog with other ways of making sense of the world lived by the many ways of *being* in the world.

In this way, a path that can be followed concerns incorporating the *grammar of decoloniality*³ (Mignolo, 2010), that is, appropriating the decolonial option to approach other histories and epistemologies in Mathematics Education (Tamayo & Mendes, 2021), so that we allow ourselves to be *affected*, i.e. to experience “the real effects of this particular network of human communication on our own — not that of science” (Favret-Saada, 2005, p. 157). In other words, it's not a question of “experiencing” the other's place from our own convictions (or those of science), because it is precisely by occupying this non-place in another's experience that we can assume perceptions of what it would be like to *be there* (Favret-Saada, 2005).

It is considered that this *decolonial option* should be woven from an interface with the perspective of critical interculturality (Walsh, 2009), since conceiving it “provokes in us, above all, the need to shift our gaze, to think differently, to let ourselves be seen in other ways and to let ourselves be affected by other ways of seeing the world” (Tamayo & Mendes, 2021, p. 5). In this context, *weaving a self-critical* Mathematics Education that opposes racist conceptions and the projects of modernity/coloniality and their “universal standards” is essential, mainly because it becomes a possibility to understand the causes of non-dialogue (Tubino, 2005), which have created mechanisms that perpetuate social asymmetries, legitimize processes of denial and exclusion of *other* knowledges, especially in the academy — which is still massively westernized. Likewise, it is not enough just to understand this process, but to propose ways out of this colonial labyrinth.

Although this research deals with courses that are not specific to the training of indigenous teachers to teach mathematics — because, for that, they would have to be degrees or intercultural pedagogies — it is necessary to think about these issues within the scope of these degrees, to identify their gaps, so that within the real possibilities, we can, from their fissures and cracks, promote sowing (Walsh, 2017). In this context,

it is important to decolonize mathematical science in the face of the South, in the face of Western imposition loaded with skepticism. [...] It is a matter of exercising a true educational policy, an anthropolitics that demystifies the curricula, the exercise of power in the mathematics classroom as an avoidance of the aspirations to be educated and to be able to ascend and build every day, to re-construct its theories from our own applicability, from the everyday life and knowledge buried from the South. It is the mathematical science patrimony of humanity to which we can all learn, with mind, body and heart (Rodriguez, 2020, p. 127).

Giraldo and Fernandes (2019), in a paper which, based on the *decolonial option*, seeks to debate the training of teachers who teach mathematics(s), problematize the various effects of colonialities — of power, knowledge and being — with regard to the knowledge of historically excluded social groups (indigenous people, African people, among others), and consider that it is important that we reflect on “political questions *about who, for whom and in what these*

³ For Mignolo (2010, p. 112), “the grammar of decoloniality (the decolonization of being and knowledge, of political and economic theory) begins at the moment in which actors who inhabit languages and subjectivities that are racialized and denied in their humanity, become aware of the effects of the coloniality of being and knowledge”.

knowledges and practices are referenced, in the political, geographical and cultural delimitation that today is called Brazil, and in the political and epistemological delimitation that today is called Mathematics" (Giraldo & Fernandes, 2019, p. 471, emphasis added).

With regard to Mathematics Education and its role in the field of affirmative policies, Giraldo and Fernandes (2019) propose three paths, which, for the context of the research in question, are pertinent, namely: teaching collectives as spaces of resistance; *methodologies in dialog with knowledge*; and *Mathematics as political-epistemic disobedience*.

In the first path pointed out by the aforementioned authors — *teacher groups as spaces of resistance* — we highlight the importance of establishing networks between teachers to reflect on their knowledge and practices. These processes can be rebuilt with the aim of establishing a *collaborative* perspective among these social actors, with their ethical, philosophical, political and cultural bases focused on the socio-cultural diversities in which the subjects of these *multiverses* are constituted (Giraldo & Fernandes, 2019).

Another path refers to *methodologies in dialogues with knowledges*, which seek to promote processes of decolonization of the university and the school⁴ itself based on situations of horizontal dialogue, which promote, value and consider the various *epistemes*. At the same time, in situations of conflict, *other* possibilities can be considered in order to overcome the epistemological barriers that hierarchize and legitimize certain knowledge to the detriment of others.

Thus, there is an opportunity to (re)think and consider as positive an intercultural and inter-epistemic approach between the different types of knowledge produced in different socio-cultural contexts. "In the context of the training of teachers who teach mathematics, this dialog can be promoted by revisiting teaching methodologies, placing them at the service of expanding the relationships between the knowledge present or absent in the training processes" (Giraldo & Fernandes, 2019, p. 484).

However, it should be borne in mind that the *use* of mathematics with a view to recognizing *other* knowledges, considering the *place* it occupies in epistemological structures, can favour and even reaffirm the hierarchization that the decolonial perspective seeks to combat. In this logic, Giraldo and Fernandes (2019, p. 485) question:

Should we take part in the game where the rule is that any given piece of knowledge, in order to assert itself, needs to mobilize mathematics? What should be considered, the value attributed to mathematics or the peripheral and simplistic role it assumes as a language, procedure or record of such complex issues in social life?

These questions are far too complex and we would not be able to exhaust them throughout this research. Nevertheless, based on these questions, we can (re)think the processes of decolonization of/at the university, especially in the training of teachers who teach mathematics. In this context, indigenous students, with their worldviews, experiences and cultures, have the opportunity to strengthen their roots and appropriate knowledge that contributes to overcoming asymmetrical power relations. This overcoming applies both to the training of teachers who teach mathematics and to the educational processes that these social

⁴ We know that both (university and school) are part of a colonial enterprise (Luciano, 2011). However, we must seek to promote decolonial processes in these *places*, above all by considering that access to these spaces by indigenous students, quilombolas, people with disabilities, LGBTI+ people implies a paradigm shift, which involves not only structural terms (such as building ramps, adopting a "quota" policy and similar actions). Above all, this change involves *other* attitude towards the ways in which these people perceive their realities and how these spaces dialogue with their perspectives.

actors will promote in their respective communities.

On the path taken by *Mathematics as political-epistemic disobedience*, Giraldo and Fernandes (2019) point out that, a priori, we must understand that the constitution of Mathematics is made under the aegis of a colonial project. Thus, teachers who teach mathematics, as well as mathematics education itself, must be understood as agents and effects of this colonial heritage. However, we must understand that although the coloniality of knowledge (Porto-Gonçalves, 2005) and its effects are present in Mathematics Education, we must not simply accept and/or obey them.

4 By way of a conclusion

The reflections in this paper suggest that we look for ways to tension Mathematics Education and the colonial traits that are present in it. From this tensioning, we can (re)think the meanings of the education of teachers who teach mathematics(s), conceiving mathematics education "not as a participant in this game, but as an intruder, a trickster and a treacherous player who, in a movement of disobedience, breaks through established rules and redesigns the meanings attributed to this education" (Giraldo & Fernandes, 2019, p. 492). In other words, this stance invites us to walk the path of the decolonial option (Mignolo, 2017).

Thus, we must conceive the training of teachers, indigenous or not, who teach mathematics from the logic of the decolonial option (Mignolo, 2017), that is, to overcome the myth of modernity/coloniality and promote educational processes that consider the different ways of being in the world, their narratives, their knowledge, in order to overcome some of the tensions that exist between scientific and traditional knowledge through the reformulation of knowledge in a dialogue, horizontal and respectful, with other knowledges.

Adopting a decolonial stance implies putting ourselves in another place, that of continuous critique, encompassing all the processes of colonization and coloniality, so that we can escape the traps imposed by them, which seek to perpetuate a single way of seeing and understanding the world, especially when it is a world seen from a one-sided perspective. That is, the side of modernity, which hides its darker side (that of coloniality), as well as all other epistemologies, cultures, worldviews, etc. (Mignolo, 2017).

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