


Between Contagions and Reverberations with an Amerindian Anthropology: a Mathematical Education

Thiago Pedro Pinto ¹ 
 João Ricardo Viola dos Santos ¹ 

¹. Universidade Federal de Mato Grosso do Sul, Campo Grande, Brasil.
thiago.pinto@ufms.br 

Recibido: 07/Noviembre/2023
 Revisado: 08/Mayo/2024
 Aprobado: 24/Julio/2024
 Publicado: 29/Agosto/2024



Abstract

How can we produce other modes of contagion and reverberations in our inventions of life? How can we philosophize beyond the onto-epistemological modes centered on the scientific method and Eurocentric (colonial, racist, patriarchal, modern) philosophy? What mathematics education others are possible for us to produce in a relationality with Amerindian Perspectivism? What other modes, bodies and affections are possible in mathematical educations that cannibalize anthropology itself? In this essay, we take place in a movement of inhabiting Amerindian perspectivism (pointed out by Eduardo Viveiros de Castro) and affecting and being affected in inventions with bodies, collectivities in a process of equivocation. Our discussions problematize certain narratives and logics of mathematical education that are instituted on a daily basis, from primary schools to postgraduate courses at universities. We are provoked to look into a mirror that gives us back an image in which we don't recognize ourselves and, thus, we are provoked into new inventions of mathematical education in movements of contagion and reverberations. Tupi cannibalism is brought up to think about possible means and relationalities for accessing this mirror that is the other.

Keywords: bodies, collectivities, humanities, multinaturalism, perspectivism

Entre Contágios e Reverberações com uma Antropologia Ameríndia: uma Educação Matemática

Resumo

Como produzir outros modos de contágios e reverberações nas nossas invenções de vida? Como filosofar para além dos modos onto-epistemologicamente centrados no método científico e na filosofia eurocêntrica (colonial, racista, patriarcal, moderna)? Que educações matemáticas nos são possíveis produzir numa relacionalidade com perspectivismos ameríndios? Quais outros modos, corpos e afetos são possíveis em educações matemáticas que canibalizam a própria antropologia? Neste ensaio, acontecemos em um movimento de habitar o perspectivismo ameríndio (apontado por Eduardo Viveiros de Castro) e afetar e ser afetados em invenções com corpos, coletividades num processo de equivocação. Nossas discussões problematizam certas narrativas e lógicas de educações matemáticas que se instituem cotidianamente desde escolas da Educação Básica a cursos de Pós-Graduação em Universidades. Somos provocados a olharmos para um espelho que nos devolve uma imagem na qual não nos reconhecemos e, assim, provocados a novas invenções de educações matemáticas em movimentos de contágios e reverberações. O canibalismo Tupi é trazido para pensar meios e relacionalidades possíveis para acessar este espelho que é o outro.

Palavras-chave: corpos, coletividades, humanidades, multinaturalismo, perspectivismo.

Entre Contagios y Reverberaciones con una Antropología Amerindia: la Educación Matemática

Resumen

¿Cómo producir otros modos de contagio y de reverberación en nuestras invenciones de vida? ¿Cómo filosofar más allá de los modos ontoepistemológicos centrados en el método científico y la filosofía eurocéntrica (colonial, racista, patriarcal, moderna)? ¿Qué educaciones matemáticas nos es posible producir en una relacionalidad con los perspectivismos amerindios? ¿Qué otros modos, cuerpos y afectos son posibles en las educaciones matemáticas que canibalizan la propia antropología? En este artículo, nos situamos en un movimiento de habitar el perspectivismo amerindio (señalado por Eduardo Viveiros de Castro) y afectar y ser afectados en invenciones con cuerpos, colectividades en un proceso de equivocidad. Nuestras discusiones problematizan ciertas narrativas y lógicas de la educación matemática que se instituyen cotidianamente, desde la escuela primaria hasta los cursos de posgrado en las universidades. Somos provocados a mirarnos en un espejo que nos devuelve una imagen en la que no nos reconocemos, y así somos provocados a nuevas invenciones de educación matemática en movimientos de contagio y reverberaciones. Se trae a colación el canibalismo tupí para pensar posibles medios y relacionalidades para acceder a ese espejo que es el otro.

Palabras clave: cuerpos, colectividades, humanidades, multinaturalismo, perspectivismo.

Between peeks, chasms and gaps

Taking the paths that lead us to these questions, explained in the summary, has been a practice in our classes, debates and personal life; it has also been a writing practice, in this and other texts (Pinto & Viola dos Santos, 2023). Philosophy and Education and Mathematics Education and Anthropology and perspectivism have been encounters that produce power in us, or bring power to these views that are produced in these encounters. The search for answers, always ephemeral, seems to enable displacements, movements and lives.

In contagions and reverberations (attitudes to be (un)folded), our political-economic-pedagogical assumption in this essay lies in precisely taking our bodies (the ones we invent every day and often forget about) as an end and a means in cannibalization. This is not a movement critical of a set of statements (theories) or a specific object (a subject's practice in math education). Nor is it a question of bringing a discussion from Contemporary Anthropology (a field of research) to Mathematics Education (another field of research), still captured by the binarity of here and there, of the other and the other's other; of operating with identities (in things by themselves, in essences independent of relationships). Nor are we trying to operate with the appropriation of one field and concepts for another or in an approximation. It is perhaps a question of moving around in lurks and abysses and gaps and questions. It's about observing our image in mirrors that give us distorted images in which we don't recognize ourselves, like a child in a science museum. Eduardo Viveiros de Castro encourages us to think: [t]he radical originality of the continent's peoples' contribution to humanity's intellectual heritage has not yet been fully absorbed by anthropology (2018, p. 249). Amerindian Perspectivism affects us in a corporeal way, in another instance, below and beyond language or intelligibility. What mathematical educations take place in the midst of Amerindian Perspectivism?

In this essay we have two objectives: to inhabit ideas, affections, provocations, concepts and political attitudes in contagions and reverberations with Amerindian perspectivism and; to affect by being affected in writings with bodies, collectivities and equivocations, in an inventive bet between philosophies, mathematics and educations. In a cry that is not heard, with a knife that does not cut, in a desire that does not pulsate and, in various other contradictions of ours, some essayistic writings take place between anthropologies and a philosophy of mathematical education. In a journey through the cosmopolitics of multinaturalism, what other inventions take place in our philosophy of a mathematical education of our bodies? In other crossings, proving concepts of Amerindian cosmopolitics, what other inventions take place in everyday mathematics education, in classrooms; in teacher training projects that teach mathematics; in research practices in postgraduate programs in mathematics education? In front of a distorted mirror, what mathematical educations take place?

The anti-narcissistic anthropology of Eduardo Viveiros de Castro

Eduardo Viveiros de Castro, in recent years, has drawn our particular attention, both in terms of his scientific production, which expresses a radical approach to our experiments with Ludwig Wittgenstein (2009), with language games, and with Romulo Lins, with the Model Semantic

Fields (1999). His texts demand more than an effort, they invite a transfiguration of ethical, aesthetic, political, economic and ontological horizons. The anthropologist from Rio de Janeiro has invested efforts in practicing an Anti-Narcissistic Anthropology. In his work *Metafísicas Canibais: elementos para uma antropologia pós-estrutural* (*Cannibal Metaphysics: Elements for a Post-Structural Anthropology*) (Viveiros de Castro, 2021), in the very first pages, he announces his intention to write “The Anti-Narcissus: Of anthropology as a minor science”, of which the metaphysics would perhaps be a synopsis. This work would be inspired by the work of Gilles Deleuze and Félix Guattari. The narcissistic aspect he criticized is related to the movement of not seeing in the other, an other, but rather a deformed self, still in formation, still on the way to becoming someone as evolved, as civilized, as humanized as ‘me’. This narcissistic movement has justified many actions, exterminations, catechizations and acculturations throughout human history. Viveiros de Castro perceives in Claude Lévi-Strauss’ notes (an important name in structuralism, it is important to point out) a first post-structuralist turn, when he points to a certain “incongruity” or “untranslatability” of the concept of the human in the contact between the Spanish and the peoples of the Antilles:

In the West Indies, a few years after the discovery of America, while the Spaniards sent commissions of inquiry to find out whether the indigenous people had souls or not, they tried to submerge white prisoners to check, based on long and careful observation, whether their corpses were rotting or not (Lévi-Strauss, 2017, p. 343 *apud* Viveiros de Castro, 2021, p. 35).

While some sought to understand which spirits animated those bodies, in order to say whether they were human or not, the others wanted to know what those bodies were, inhabited by a spirit. For Viveiros de Castro, these different questions point to differences between these groups that go beyond culture and, therefore, epistemology. It is quite common in anthropology, and even in common sense, to point to indigenous groups and see them as a different culture to the white man, with different values, ways of organizing the world and also different knowledge, based on other modes of legitimation. The anthropologist identifies this movement as “multiculturalism”. The existence of this multiplicity of cultures presupposes the same nature: they are human beings like everyone else, but immersed in different temporalities and cultures and, only because they are human like us, do we set out to study them, understand them and achieve a process of mutual understanding of human evolution - and so we call this study anthropological. Viveiros de Castro, on the other hand, identifies a turning point in certain cultural groups that points not to different cultures, but to different natures. Rather than dealing here with epistemological differences, we are ultimately dealing with ontological differences: multinaturalism.

This reshuffling of the conceptual cards led me to suggest the expression “multinaturalism” to designate one of the contrasting features of Amerindian thought in relation to modern “multiculturalist” cosmologies: while the latter are based on the mutual implication between the uniqueness of nature and the multiplicity of cultures - the former guaranteed by the objective universality of bodies and substance, the latter generated by the subjective particularity of spirits and meanings - the Amerindian conception on the contrary, it would suppose a unity of spirit and a diversity of bodies. “Culture” or the subject would here be the form of the universal, “nature” or the object, the form of the particular (Viveiros de

Castro, 2021, p. 43).

In an interview, Viveiros de Castro states:

[...] when I'm with the Indians, I like to know what they mean by anthropology. I'm not interested in doing their anthropology, I want to know what their anthropology is. Another sense of the possessive, of the genitive. I want to know what they mean by human, what they mean by non-human and what they mean by *logos*, by knowing, by knowledge. What they mean by knowing and what the human is. We think we know. The anthropologist supposedly gets there and already knows what man is and is going to study that particular variety of man which is Indian X or Indian Y. But he's already in possession of sovereign knowledge. He's just going to see how that Indian, let's say, expresses his concept of the universal, what his possession is. In this case, the Indian will be a specific manifestation of this concept. He could enrich the concept, he could possibly give it an additional determination, for example, showing how the Indian thinks like the child, thinks like the madman, or how indigenous thought clarifies childish thought and all that sort of thing. But you already know what thought is (Lutterbach and Castro, 2018, n.p.).

The other of the other can be another and it is in this impossibility that there is a power to invent with Amerindian perspectivism. For many of these communities, the universe is populated by various agents (human and non-human), gods, animals, the dead, plants, meteorological phenomena, and also objects and artifacts, as agents, not as mere “objects”, and these are provided with the same way of perceiving, thinking and eating that are based on a similar “soul” (Viveiros de Castro, 2021, p. 43), and here we can *better* understand the research invested by those peoples of the Antilles reported by Levi-Strauss. What “animated” those bodies was not a question for those indigenous people, but rather, what bodies were they, were those bodies so different at the same stage/moment as theirs? If not, what did they see? What smells did they smell?

In some way, all the agents have the same “culture”, similar ways of proceeding and organizing the world. For example: some of these groups drank corn beer and gathered and celebrated in ceremonial houses, the jaguar, for its part, had the same experiences when, for example, drinking blood (its corn beer), just as the tapirs revel in their ceremonial house: a muddy pit (idem, p. 53). For these groups, it is our natures, our ontologies, that are different. It is the nature of our bodies that places us in another “place”, and not our “culture”, our “humanity” or the presence or absence of a “soul”.

This reversal raises new questions. If when dealing with different cultures (and the same nature) we can question what stage of evolution this group or individual is in (and here we can talk about both anthropology and school), or, in a more contemporary way, what and how this individual thinks about this world that we share; when dealing with other natures and the same “culture”, we are moved to, for example: in what materiality is this “spirit”, what body is this? What world does this group or individual inhabit? What does he see around him and, above all, what does he see when he looks at me? In the words of Viveiros de Castro: “What these people see, however - and what kind of people they are - constitutes precisely one of the most serious philosophical problems posed by and for indigenous thought.” (2021, p. 44).

This humanity that inhabits everyone and everything puts us in a different relationship to the one we are used to. How do I relate to a river that is also human, that has a soul? What relationships do I establish with this other human being who is the mountain and who has feelings and desires like mine? How do I talk to a stone, which is also human and also an agent of its life?

In the current context, we can use the words of Ailton Krenak to exemplify one of these ways of relating. In his book, *Ideas for Postponing the End of the World*, he recounts how the Krenak village relates to a nearby mountain, Takukrak is its name, which also has a personality and the indigenous people can see its face and understand its expressions, which somehow guide their actions with it:

Early in the morning, from the village yard, people look at her and know whether it's going to be a good day or whether it's better to keep quiet. When she looks like "I'm not up for a chat today", people are already paying attention. When she dawns splendid, beautiful, with light clouds flying over her head, all decorated, the people say: "You can party, dance, fish, you can do whatever you want" (Krenak, 2019, p. 10).

The dominant anthropological model looks at the other from the perspective of the same nature and tries to understand their culture, a move that is still narcissistic, as the Western European way continues to be the image reflected in the mirror (as well as at school). Viveiros de Castro thus proposes an anthropology that is not centered on the anthropologist himself, nor is it centered on the group he is investigating, since, not being in their body, not participating in their ontology, he could do little other than describe them from his own words and perceptions of the world (also a narcissistic project). On the other hand, it is also not a question of "giving voice" to another, as if they had no voice in their own spaces and as if the researcher had no role to play. For Viveiros de Castro (2021, p. 21), based on Maniglier (2005), a true anthropology would be one that gives us back an image of ourselves (researchers/anthropologists) in which we don't recognize ourselves, a "distorted" image that only this gaze of the other can give us of ourselves. This investigation would be the opportunity to carry out an "experiment on our own culture" (p. 21). That would allow us to put ourselves in a regime of variation, to bring us questions that allow us and perhaps force us to introduce new variables and concepts, "the structure of our conceptual imagination that must enter into a regime of variation, assume itself as a variant, version, transformation" (p. 21). What kind of math education supports this inventive speculation?

If we take the example of the Spaniards in the Antilles, the very notion/conception of "soul", "spirit" (in order to consecrate them as human) is put into question when they realize that for those who were there "everything" could potentially have a "soul", a "spirit", in other words, also be human. If human becomes everything, or almost everything, that which was rightly relegated to the non-human, rivers, mountains, stones, animals, which what purpose could such a concept have? According to the anthropologist, this and other experiences bring us face to face with an impasse, an insurmountable difference, an equivocation in translation, and herein lies the privileged place of the researcher/anthropologist.

To translate is to install oneself in the space of equivocation and inhabit it. Not to undo it, which would imply that it never existed, but, quite the opposite, to enhance it, opening up

and widening the space that was thought not to exist between the conceptual languages in contact - a space that, precisely, the equivocation concealed. The misunderstanding is not what prevents the relationship, but what founds and propels it: a difference in perspective. To translate is to assume that there is always and forever an equivocation; it is to communicate through difference, instead of silencing the Other by assuming an original univocity and an ultimate redundancy - an essential similarity - between what he and we “were saying” (Viveiros de Castro, 2021, p. 90-91).

So, in order to settle into this equivocation, we put ourselves through the previously frustrated process of translation. Viveiros de Castro invites us to inhabit these equivocations and question our own practices, our own language games, to use the expression of the Austrian philosopher Ludwig Wittgenstein (2009).

The attempt at translation involves an attempt to understand the other, to understand how the natives could perhaps say they inhabit the other’s body, in order to discover what they see when they look around, when they look at us.

This way of seeing, or ‘seeing’ oneself, through the eyes of others seems to have been exploited by some peoples in cannibalistic rituals, as the anthropologist points out. Studying cannibal rituals among various Amerindian tribes, he realizes that the least significant aspect was “feeding” from an energetic/biological point of view. When he analyzed Tupi cannibalism, he saw it as a process of transmutation of perspectives (Viveiros de Castro, 2021, p. 158-159). By ingesting the “flesh” of another, one is not trying to satisfy one’s hunger, but rather to “change places” with this other, to assume, even momentarily, the other’s perspective:

I therefore ended up defining it as a process of transmutation of perspectives, where the “I” determines itself as “other” by the very act of incorporating this other, who in turn becomes an “I”, but always in the other, through the other (“through” also in the solecistic sense of “by means of”) (Viveiros de Castro, 2021, p.159).

In other words, some members of the tribe fed on the enemy in order to have a privileged view of themselves, precisely the enemy’s view of them. The anthropologist argues for the existence of songs that take this stance, narrating the other’s view of the tribe itself. This inversion of perspective leads to a positional inversion (p. 159), a reciprocal self-determination that essentially depended on this access to the other: the enemy’s view of you. This inversion, of looking at “oneself” from the perspective of the other, seemed to us to be quite interesting to explore, including in the educational context. For anthropology itself, Viveiros de Castro presents a native multinaturalist anthropology that has at its core the apprehension of the enemy’s point of view on oneself, in a process of self-description by the other, an “anthropophagy as anthropology” (p. 160).

We understand that Viveiros de Castro’s anthropological proposal goes through a process of cannibalization of the other, by enunciating it as a mirror that reflects back to us an image in which we don’t recognize ourselves, we are, in a way, trying to inhabit this body of the other that sees us, and sees us from its own perspective/corporality and thus sees us differently from what we are capable of seeing on our own.

The contagions and reverberations of a cannibalistic mathematics education

The ideas of approximations, dialogues and transits between areas of knowledge, for example, Anthropology and Mathematics Education, always seem a little strange to us, because, in a way, they indicate a process that takes place between identities: Mathematics Education and Anthropology. The supposed possibility of suspending a body and an intelligibility, which places us as autonomous, free and self-knowing individuals, with our beliefs, truths and ways of organizing worlds, in the face of other productions that come to us, also seems a little strange to us. Thus, a movement in contagions and reverberations, always in attempts, peeks, abysses and gaps, propels us towards an unknown and, at the same time, desired; in an anguish that sometimes paralyzes, at the same time, as an obstinacy of something that satiates and soothes. Contagion in ways of feeling smells, glimpses, *déjà vu*, in violence with our own bodies, which tend to settle into captures that appease. Contagion in a future, without expectations, with very few certainties. Reverberating like a sound that moves through space-time-matter and is invented in affective memories, in fantastic imaginations, in an impulse. Reverberating in effects that happen; in words that appear between our fingers on a keyboard and a rectangular screen that glows and institutes black dots on a white background and that imposes a narrative on us that always frightens us, because we can never anticipate a location for our inventive productions.

Given these ideas, the concepts of bodies and collectivities seem interesting to us, in contagion and reverberations with Amerindian perspectivism. These move us in equivocations with other concepts that are so well established in math education practices. In them and between them and in them in the midst of a perspective, we weave our invitations: our mathematics, philosophy, education in the midst of an Amerindian anthropology.

We have not dialogued, nor brought, nor approached, much less appropriated notions of Viveiros de Castro's multinaturalism to think about Mathematics Education, or a Philosophy of Mathematics Education. We are infected by reverberations. And we are infected by a narrative that happens, by effects and bets; by inventive powers and silences, by an attempt.

Body

The body in mathematics education is sometimes constituted from a Eurocentric perspective of the world. Fixed, rigid, unique. A biological body that is established as an organism, made up of organs, which serves only as a dwelling place for rationality. *In math class you have to sit still and be silent. You can't learn math jumping, playing, putting your body in motion. Learning math requires effort, repetition and concentration.* Who hasn't heard that at some point in their life? Mathematical education, taken as practices that take place in a given space-time-matter, usually with students, teachers and content, agglutinated in the face of a task of **one** (student) learning mathematical content **from another** (teacher). In these events, mathematics (which is often taken as unique) is presented as disembodied, generalized, universalized and neutralized, an objectified knowledge. The student's body makes no difference. A function concept is independent of a student's body. Logarithms in Brazil happen in the same way as in other

countries. This is the supposed potential of mathematics: to be neutral and universal.

What if other possibilities were constructed? Not in other meanings for the concept of the body, because then we would still be operating from the idea of essence and representation. What if other bodies were invented, for example, by Amerindian cosmologies? What contagions and reverberations would these invented bodies have on our cannibalizations of our everyday mathematical educations?

Taylor and Viveiros de Castro (2019, p. 769) state that “[...] a body is never enough for itself. It’s a matter of imagining that its shape is determined by the gaze directed at it, according to the relationship that is established with it.” According to the authors,

[...] the human body no longer occupies a unique and stable place in the scheme of the cosmos, since its form is entirely relative to the perspective of a witness - human or non-human - provided by the gaze of the other, rather than being an essential attribute of a given class of beings (2019, p. 769).

A first shock would be that a body does not happen because of a pre-established identity in order to relate to another (also pre-established) body. We don’t have the individual who, through a teacher’s didactic strategies, learns school mathematics. If a body becomes a body in the midst of a perspective, in a math classroom various bodies are invented at different times. Bodies that listen; other bodies that imagine; other bodies that feel anguish and pressure; other bodies that belong; other bodies that are excluded; other bodies... Other bodies that can be invented from perspectives far removed from an idea of the student, the school and mathematics.

There would be many different student-bodies, in relationalities that invent math classrooms. There is no object (one identity) here, another there; an intentionality that has a cause and produces an effect, in a linear and pre-programmed process. There are crossings, affects in the invention of multiple student-bodies, in bodies-teachers that are also multiple, in bodies-students-teachers-mathematics, in entanglements with bodies-portfolios, bodies-feelings.

Uniforms in schools that dress students’ bodies in a policy of security, of homogenizing them, intensify the idea of a fixed, identifiable body. That student-body is a student at that school. It doesn’t matter how this student invents relationalities. In a way, it doesn’t matter which uniform a student wears to school, because it’s a simple garment: a piece of cloth that covers your body. On cold days they are thicker and cover more of the body; on hot days they are smaller and cover less of the body. Uniforms operate as a strategy for maintaining the binarity of body and soul (we could think of the body and intelligibility or rationality) and push us towards a process of silencing the production of other bodies.

In another way of inventing bodies, with Amerindian Perspectivism, objects, paintings, clothes (uniforms) don’t just fit on a body, they aren’t merely things that are on a body. They manufacture other bodies. How would these objects, paintings and clothes potentiate other relationalities in other bodies in a space-time-matter classroom? With younger children, for example, it’s very common for them to put on a superhero costume and see themselves as a superhero. It is also common for an adult to remind them that they are not superheroes and

that they are just wearing a costume that makes them look like a superhero. According to Taylor and Viveiros de Castro,

Adornments, body paintings and masks have no meaning unless they are worn by a living body. Far from being simple decorations, some kind of fantasy, these artifacts are literally extensions or elements of the body. They must be animate, in the proper sense of the term, or they are nothing (2019, p. 772).

How does a desk happen as a desk in a body-wallet-student relationship? How does a classroom happen as a classroom in a body-mathematics-students-taught relationship? Still with Taylor and Viveiros de Castro, adornments, body paintings and masks,

[...] they don't make representations of the body; they make bodies first and foremost. Utensils are thought of, described and often decorated as bodies. The "work of art" that matters in Amazonia is the human body.

Taking bodies invented from different perspectives in a space-time-matter math classroom, what other relationalities can happen? A body as a work of art, a body...

Our project is not to take the math classroom and invent it as a workshop for the production of indigenous lives. Our project is to become infected and reverberate in Amerindian knowledge and affections, in a different cosmovision (or cosmoperception) and try to make it happen in other classrooms. It's not a search there and bring it here. It's not transforming one here. Perhaps it's cannibalizing. Making a classroom a territory of equivocations, settling in the equivocation and inhabiting it as a privileged place. Showing that there are not only epistemological misconceptions, but also ontological ones in our (mathematics) classrooms and that we can't even be in each other's bodies or get to know each other if we don't cannibalize them is already part of our movement and questioning of mathematics education.

Collectivities

Territories in which mathematics education takes place are sometimes marked by the idea that an individual learns content. The political-economic-pedagogical strategies that the centrality of these territories is the learning of someone (a student, a teacher, a student teacher in initial or continuing training) of some content, idea, process, theorization, objectified knowledge. A subject taken as an individual who moves in upward directions, in steps of degrees, such as Early Childhood Education, Elementary School I, Elementary School II, High School, Graduation, Master's Degree, Doctorate, is common in our society. It's always someone who receives, earns and deserves a degree and, as a result, has the chance to work professionally in certain spaces: our degrees are individual.

Learning content is a hallmark of a modern school project, built on narratives and logics that are still colonial, such as progress, improvement and development. Effort, dedication and merit are other logics and narratives that make up this school and that are engendered between an ethnocentric colonial project and a Judeo-Christian religious policy. The latter is widespread at different levels, in different ways and with different intensities, at least in contemporary Brazilian society.

Collectives are sometimes an extension of an individual's own idea. People who organize themselves in similar ways, who dress in similar ways, who believe in similar ideals and who are often managed by a leader who, in addition to telling them what to do, builds a sense of appeasement and accomplishment, are common in mathematics education. From basic education to postgraduate courses, there are processes of homogenization that sometimes constitute the proclamation of a narrative that is attentive to differences, at least in its discourse, but which, in practice, often in unnoticed ways, feed the maintenance and reproduction of identity. A 'unique' identity, based on words and expressions such as 'normal', 'majority' or 'common good', 'collectivity'. All of these inscribe and circumscribe bodies, ideal bodies belonging to the collective, bodies that want to participate in the collective and thus submit to the ways and means stipulated in the group's rules of belonging.

How can we produce collectivities in educational spaces that are invented with logics and narratives that move away from identity? Which classrooms can use other logics and narratives that move away from the idea of the individual? What possibilities does a Perspectivist Amerindian Anthropology bring us?

Once again intentionally repeating (and it is worth emphasizing that *repeating the same* is always operating in difference) the words of Viveiros de Castro, the [...] radical originality of the contribution of the peoples of the continent to the intellectual heritage of humanity has not yet been fully absorbed by anthropology (2018, p. 249), our bet, or even an invitation to philosophy, mathematics, education is that other ways of inventing collectivities are constituted as powers in contagions and reverberations with Amerindian cosmologies. According to Taylor and Viveiros de Castro (2019, p. 774)

For indigenous peoples, it is not the subjective dimension that forms the core of the "humanity" so generously distributed among the world's existents. To say of an entity that it is a person means, first and foremost, to attribute to it a quality of membership of a community: the "human" can only be something collective, and the "person" represents a piece of society before being an individual with individual destiny and character.

Still with these authors, we have

The model of the collective to which one must be affiliated in order to be human is that of the natural species, the principle of "those who look alike, come together". Every species - every collective formed by existents united by appearance and behavior - forms a society. Reciprocally, every society - starting with the one to which the indigenous enunciator belongs - constitutes a species (2019, p. 774).

A first problem would be in relation to the individual learning of school subjects. What sense would it make to think of a student's "inner" learning in the classroom and place this (supposed) learning in a metric that determines their permanence or exclusion from a school space (collective-society-species)? In schools, or in many of them that follow a modern project, the mind (related to learning content) is separated from the body; as well as the individual (student with name x, related to school average y) is separated from their community. In schools, ancestry, dreams of the night before, rites and bodily memories are sometimes left far away from math classes - or are supposed to be.

Collectivities such as traces of bodies that look alike, are arranged and communicate in similar ways can be taken as constituents of a school in which learning is placed in favor of inventions of relationships of belonging. The learning of a content by a student (almost always the result of a pedagogical action by the teacher) fades into a school project in which learning (always in the plural) of narratives and logics of a school mathematics and also of feelings, affections, ancestries, contemplations, imaginations that run through gaps and flows of lives that are entangled between living people who share inventive powers with the Earth System (and not in the Earth System).

We (all species) happen to Gaia (Latour, 2020) and a school can be one of the territories for inventing, building and maintaining belonging, which is only in a region of (transitory) permanence and which is always moving towards the future. Learning takes place as a relationality that inhabits these territories. Ancestry happens as another relationality that drives and invites the construction of other temporalities. These also happen as another relationality, in the twisting power of a god Chronos, who sometimes loses (and loses himself) in the smile of a child who overflows his body, imagination and sensibilities in the face of a drawing, a game, an adventure with his peers (just as an example). Immense moments inhabit and can inhabit our practices and relationalities, and break with the fatalism of the present becoming the past. Still with Taylor and Viveiros de Castro (2019).

An Amazonian subject or a human, in short, is a being who has the bodily properties, dispositions and aptitudes necessary to maintain relationships with their counterparts. Subjectivity has little to do with that private space, opaque to others, prior to any cultural and social form that we associate with the mind or spirit. Its interiority is constituted precisely by this set of things that we group together under the term culture - the essence, in our eyes, of a public domain, shared by all. While for us culture is associated with the domain of convention, rule and artifice - in a word, variability - from the indigenous point of view it is a natural attribute of intraspecific sociability and in no way a matter of collective choice, historical inconstancy or determinism stemming from the natural environment. Everything that makes it up is inherent in the sociability shared by individuals - be they animals of this or that species, spirits, or simple humans - who recognize themselves and are recognized by others as similar (p. 776-777).

Bodies that are produced and produce worlds according to perspectives that enhance possibilities. Collectivities that affect the construction of other logics and narratives, in which classrooms (from primary to postgraduate) are invented as spaces-time-matters of belonging. Collectivities that go beyond the agglutination of individual bodies, bodies that are always produced in perspectives, collectives that are also produced in perspectives.

Equivocation as a strategy (a cry from an Amerindian anthropology)

The demands of a contemporary world place the 'human species' (this humanoid species, which still thinks it is the center of the entire universe) in problems in which the ways of producing social policies and organizations (and educational spaces), in relation to other species and the Earth System, are insufficient. Climate collapse, for example (not a climate

crisis, as it would be possible to solve it; not climate change, as it would be possible to adapt) is a demand that makes this situation explicit. We believe that most people, if asked, would point out that it is necessary to build strategies to deal with ecological collapse. They recognize the problem and feel impelled to move with it. However, as we move towards political and economic strategies that deal explicitly with the problem and that could substantially affect a scenario in the coming years, we are still paralyzed, on the edge, with the affection of indignation and without the courage to break with some paradigms. Not even the Covid-19 pandemic, a virus, a “non-human” and “non-living” agent, which collapsed stock exchanges all over the world, demanded changes in ways of organizing personal and professional relationships in various corners of the world, had a significant impact on carbon emissions and on reducing the increase in the temperature of the Earth System.

Amerindian territoriality, stemming from its cosmopolitics and ontology in perspective, places us in another position, no longer as those who inhabit the Earth, but as those who need to listen to it in order to guide their actions and respond to it; human beings do not interfere with nature, they are nature itself in relationality with other species, with other humans who inhabit different bodies.

Between bodies and collectivities, in a cannibalistic mathematical education, a strategy from an Amerindian perspectivist anthropology is the notion of equivocation (Viveiros de Castro, 2018). This is not an explanatory or interpretative move, or one that reveals or unveils something that is still in the process of being known. According to Viveiros de Castro (2018) equivocation appears as [...] the mode of communication par excellence between different perspectival positions - and, therefore, as both the condition of possibility and the limit of the anthropological endeavor (p. 249). Equivocation is a condition of possibility for anthropological (or educational, as we propose here) production. Still with Viveiros de Castro (2018):

An equivocation is not a mistake or a deception. Instead, it is the very foundation of the relationship it implies, which is always a relationship with an exteriority. An error or a deception can only be determined as such from within a given linguistic game, while an equivocation is what unfolds in the *interval* between different linguistic games. Deceptions and errors presuppose premises that are already constituted - and constituted as homogeneous - while an equivocation not only presupposes the heterogeneity of the premises in play, but also places them as heterogeneous and presupposes them as premises. An equivocation determines the premises rather than being determined by them (p. 255).

Getting it wrong can be a political-economic-pedagogical strategy in mathematics education, in which, in a space called the classroom, together with other counterparts called students and teachers, relating to logics and narratives that are usually considered mathematical, always in the plural, there is a production and maintenance of certain belongings. Certain, because this scenario should not (should) be exempt from a political project, which is always open and also well explained in relation to the demands, problems and possibilities of places called schools and teacher training.

To equivocate, as we inhabit this essay in lurking, abyss and gap. Equivocating in the in-

between of a power to stand in front of a mirror and produce a body and a collectivity, and a mathematical education. One, just being this one, that happens in these writings.

Settling into equivocality and making it a privileged place in our research and classrooms can give us different images that we may not identify with or like. However, an anti-narcissistic project of/with mathematics education can make use of this place and these images. The process of reproducing content and formatting bodies for the job market seems to be a nefarious objective of our schools and mathematics education, which corroborate capitalist, racist, sexist and exclusionary ways of being and interacting in/with the world. This process is reinforced by minimum bases and curricula which, at the end of the day, become the major goals of education and reflect, more directly, with the Common National Base for Teacher Training, for example, its reflexes and implications for teacher training. Before anything else, the space of equivocation requires us to embrace difference in its deepest sense. Equivocation takes us out of the orbit of teaching someone something fixed, be it content, a skill or a competence, and places us in a relationship with the other, truly assumed to be the other and not a self in formation, in process. It is therefore necessary to abandon the narcissistic stance of a teacher who has something to teach, of a researcher who has something to say to the school, the teacher or the curriculum. Making mistakes in mathematics education is perhaps more about reverberating, standing out and highlighting differences and distortions than assuming fixed, identitarian, pedagogical or didactic positions. When we look into this distorted mirror that Viveiros de Castro (2021) holds up to us, what mathematical educations do we find? In short, what it seems to us, and to paraphrase the anthropologist, that the great contribution of Amerindian perspectives to our mathematical education has not yet been cannibalized.

Final Statements

Authors' contributions. Thiago Pedro Pinto: conception of the text, writing of the initial draft, discussion and revision of the material. João Ricardo Viola dos Santos: conception of the text, writing of the text, discussion and revision of the material.

Conflicts of interest. The authors declare no conflicts of interest.

Funding. This article is directly linked to research developed within the Graduate Program in Mathematics Education at the Federal University of Mato Grosso do Sul (UFMS) and did not receive specific funding.

Ethical implications. The article has no ethical implications.

References

- Krenak, A. (2019). *Ideas to postpone the end of the world*. São Paulo: Companhia das Letras.
- Latour, B. (2020). *Facing Gaia: Eight lectures on nature in the Anthropocene*. Editora UBU. Lins, R. C. (1999). Why discussing theory of knowledge is relevant to Mathematics Education. In:
- Bicudo, M. A. V. (Org.) *Pesquisa em Educação Matemática: concepções & perspectivas*. São Paulo: Editora UNESP.
- Lins, R. C. (2022). Model of Semantic Fields: Establishments and Theorizing Notes. In: Angelo, C. L. et al (Orgs.) *Model Semantic Fields: 20 years of History (second revised and expanded edition)*. Porto Alegre: Editora Fi. <https://www.editorafi.org/ebook/652campos>.
- Lutterbach, A. L., & Castro, S. (2018, February 7). Interview with Eduardo Viveiros de Castro. *Derivas Analíticas*. Accessed: 10/08/2023. <https://www.revistaderivasanaliticas.com.br/index.php/castro>.
- Maniglier, P. (2005). “La Parenté des autres (à propos de Maurice Godelier: Métamorphoses de la parenté)”. *Critique*, n. 701, Oct., pp. 758-74.
- Pinto, T. P., & Viola dos Santos, J. R. (2023) Cannibalizing Mathematics Educations: an experience of intradutility. In: PAULUCCI, E. M., & OSORIO, C. T. (Orgs.). *InSURgent Lives in Mathematics Education: decolonial dialogues*. Bauru: Editora Gradus.
- Taylor, A. C., & Viveiros de Castro, E. (2019). A body made of looks (Amazonia). *Revista de Antropologia*, (São Paulo, Online), v. 62 n. 3, 769-818 | USP.
- Viveiros de Castro, E. (2018). Perspectivist Anthropology and the method of controlled equivocation. Translation by Marcelo Giacomazzi Camargo and Rodrigo Amaro. *Aceno - Revista de Antropologia do Centro-Oeste*, v. 5 n.10, 247-264.
- Viveiros de Castro, E. (2021). *Cannibal metaphysics: Elements for a post-structural anthropology*. São Paulo: Ubu Editora, n-1 editions.
- Wittgenstein, L. (2009). *Philosophical investigations* (6th ed.). Petrópolis: Vozes. Translation Marcos G. Montagnoli; revision of the translation and presentation Emmanuel Carneiro Leão.