Essay

LINHAS CRÍTICAS

Saving the Amazon? Cultivating “Education in the Forest”

Salvar a Amazônia? Cultivando a “Educação na Floresta”

¿Salvar la Amazonía? Cultivando “Educación en el Bosque”

Anselmo Gonçalves da Silva Fátima Cristina da Silva

Highlights

This article proposes a specific educational system for traditional populations living in sustainable-use conservation units in Brazil.

A public policy of differentiated education is the historical agenda of the Amazonian gatherer social movement.

This initiative would have the potential to positively impact the future of the Brazilian Amazon.

Abstract

The expression “Saving the Amazon” rose in the national and international social and political agenda. It emerged as the consequence of a fast and profound transformation scenario capable of turning this region into a savanna area. The aim of the present essay is to argue that part of the solution to the herein addressed issue is linked to expanding the resilience of traditional populations living in ≅160 conservation units in the region. The proposal presented in the current article lies on conceiving a new model for a specific education system applicable to these traditional populations — education in the forest and in its waters.

Resumo | Resumen

Keywords

Amazon. Protected Areas. Philosophy of Education. Tipping Points. Transitions to the Pluriverse.

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Introduction

The present article[1] approaches the outstanding on-going changes observed in the Brazilian rain Forest, also known as the Amazon. We read about these phenomena as social changes that trigger inflection points in regional socio-ecological systems (Dearing et al., 2015; Milkoreit et al., 2018; Cinner & Barnes, 2019). From this perspective, if the current trends remain, if nothing changes this trajectory, the Amazon might become a savanna region. Accordingly, we herein embodied a popular quest: “how can we save the Amazon?”.

Based on our own vast experience[2] with traditional populations living in the herein assessed region, we propose that the answer to this quest lies on broadening the resilience of traditional populations living in sustainable-use conservation units (CU). We stand for the proposition that it would be possible to achieve by implementing a specific education system in the region.

Throughout this article’s sections, we will introduce the following discussions: framing the Amazonian crisis from the “extractivism” and “tipping points” perspective; a brief sight over deforestation pressure over both “protected areas” and “traditional populations” in the region; the precariousness of “implementing conventional school education in sustainable-use conservation units”; the inadequacy of the conventional school model to these territories and populations; and, finally, we recall that the proposition of a differentiated education for non-indigenous traditional populations is a historical agenda advocated by Amazonian social movements. Therefore, it would be timely implementing a differentiated education system in this region.

The Amazonian context: extractivism, sociological crises and inflections

Humans have destroyed most of ecological system meshes that had been stable for thousands of years in the Americas, in the last five centuries. Significant forest remnants are concentrated in the South American regions known as the Amazon - given its inner diversity, it should be called “Amazons” (Porto-Gonçalves, 2015).

The anthropocene is the time framing human kind’s historical expansion. This time represents the geological period featured by the human impact on the planet’s ecological systems. The capitalocene can also be included in this expansion period, a fact that features such a phenomenology as the very effect of political and economic power relationships, and of inequalities triggered by the global capitalism (Moore, 2022). Overall, humans have been quickly changing their social systems

1 We would like to express our gratitude to PRODIGY project for having introduced us, during the course Tipping points and biodiversity in the Southwest Amazon, to the set of theories presented in this essay. We are also grateful to our colleagues in workgroup 4, as well as to professor Rosineide de Moura e Silva, at *Instituto Federal do Acre*, for her kind and very helpful edits.

2 As shown in the Lattes Platform: http://lattes.cnpq.br/6823153284169361 and http://lattes.cnpq.br/0211813881953471

through technical and technological innovations that lead to the 'territory' standard accountable for ruling out non-human lives and configurations of the existing systems – it molds extractive-profile social systems.

The understanding of these processes of change has been broadly mediated in critical social sciences by the concept of extractivism (Chagnon et al., 2022). This author introduces a set of practices that, sometimes legally and by institutionalized ways, generate submission, fatigue and lack of reciprocity with non-human environments and lives. Besides, extractivism emerges as the anthropocentric mentality, according to which, anything that is not human is seen as an object, as a thing (Kröger, 2022). This ontology opened room for a wide variety of institutions and social artifacts to organize the contemporaneity of extractive human societies. This context, and the herein addressed issue, must be the object of political and scientific critique, as well as of the development of long-lasting solutions.

Different approaches can be useful at the time to analyze the effects of extractivism, among them, one finds inflection points in socio-ecological systems (Milkoreit et al., 2018). According to this approach, social systems tend to embody stable standards of relationships with ecological systems; it enables these last standards to reproduce themselves by keeping the same structural qualities. Based on such a theorization, deep changes in social systems can change inter-systemic relationships between social and ecological systems. This process leads to the reorganization that accounts for boosting the restructuring process faced by the socio-ecological system, also known as SES, a fact that ends up establishing new standards (Dearing et al., 2015; Cinner & Barnes, 2019). Scientists point out that this is an on-going phenomenon in Amazonian SES (Lovejoy & Nobre, 2018; 2019).

Although colonization in the Americas started more than five centuries ago, the Brazilian Amazon kept its forest coverage quite preserved until the 1970s (Fearnside, 2005). From this point onwards, deforestation became a continuous process, despite fluctuations in the recorded rates of it (Garrett et al., 2021). Thus, it is possible saying that the Amazon has been suffering with a late colonization process that changes the national limits, or, yet, with a (re)colonization carried out by Modern-Western societies, because the capital, and the commodities that are always expanding in this region, are bond to a global economic and political system that is co-responsible for the current violence against non-human forms of life (Beckert et al., 2021).

This extractive socio-political, economic and cultural operation acts to change what is traditional and/or stable in Amazonian SES (Sauer, 2018; Kröger, 2022). The Amazon remains approached from outside in, as reserve of resources, mainly of minerals and timber, as a frontier for land use expansion, for the production of commodities such as soybean, cattle, among other monocultures, as void where one finds different opportunities (Porto-Gonçalves, 2015; Ioris & Shubin, 2020).

Therefore, it is essential recalling that the forest is inhabited by a wide diversity of native traditional populations (indigenous peoples) and by other traditional populations that were forged by successive modernization and old migration

processes (Fraser, 2018), like those lived by gatherer communities (*extrativistas*[3][4]), riverside communities, artisanal fishermen, caboclos, among other categories (Carneiro da Cunha et al., 2021). There is also a wide network of cities and intense livestock areas within this territory; together, they exert economic and cultural pressure, which crosses the traditional forest fraction that, in its turn, ends up heading towards extractivism and to a Modern-Western ontology (Silva et al., 2019).

We are witnessing a critical period for the region's future, it shows the apparent transition in the spirit of the time, and it opens room for uncertainties and for a potentially hazardous future. The view of the future in Brazil, and the Amazonian sustainable development project (which grew as consensus in the 1990s), are at crisis. This project gathered a wide set of institutions, policies and projects, as well as created expectations towards the diversity of Amazonian traditional populations.

Several policies reached populations in the forest and in its waters. Several traditional territories were acknowledged as protected areas. Although one finds all these positive aspects, the region remains far from witnessing significant advancements in the so-called alternative and sustainable development in indigenous lands (IL), CUs, settlement projects and in other types of forest and rural Amazonian areas. Public policies often reach this region at low intensity, they get fragmented, disrupted and out of local-reality contexts (Garnelo, 2019; Kadri & Freitas, 2019; Sousa, 2020; Soares et al., 2020).

Simultaneously, people are changing (Hoelle, 2015). According to several Amazonian traditional populations, new needs, different from those of past generations, have been rising, and it demands faster financial resources; however, resources deriving from the traditional economy or from the sustainable development process are not enough (Le Tourneau, 2015). Youngsters from traditional populations have also been formulating new and more diversified expectations about their future (Silva et al., 2019). This new generation overall experiences social reproduction contexts that tend to be much different from those observed by previous generations.

With respect to the current crises, we can say, in general terms, that there is no fundamental crisis in traditional populations when it comes to view of a future sustainable Amazon. Nevertheless, there is a deep crisis caused by frustration about this project failure, in the last decades, in achieving a project for the future. Sometimes, it creates the need of seeking alternatives to reach the needs one formulates. This is the moment when extractive economies emerge as opportunity, mainly in the commodities sphere. This context has been politically used by groups

3 Gatherers form an Amazonian traditional-population category that often represents those who live from the sustainable management of natural resources (nuts, tree sap such as rubber, among others). They use to live in a type of protected area called *reservas extrativistas* (gatherer reservations), although they can also live in other areas.

4 The term *extrativistas*, in Portuguese, cannot be mixed with its literal translation in English (extractivism), as it would have an antagonistic meaning to its meaning in Brazil. In order not to make any confusion, in the English version of the text 'extractivims', to designate the herein adopted concept, gatherer and gatherer reservations will be used to designate the category of traditional populations and protected areas.

of interest, mainly by the agribusiness, to question the contents and to suggest changes in directions guiding people's future at local level. The idea is to get back to a recent past of extreme extractivism, which was timely called "development". This critique grew during Bolsonaro's administration, and it had potential mid-term sociocultural and political effects (Barreto Filho, 2020; Carrero et al., 2020).

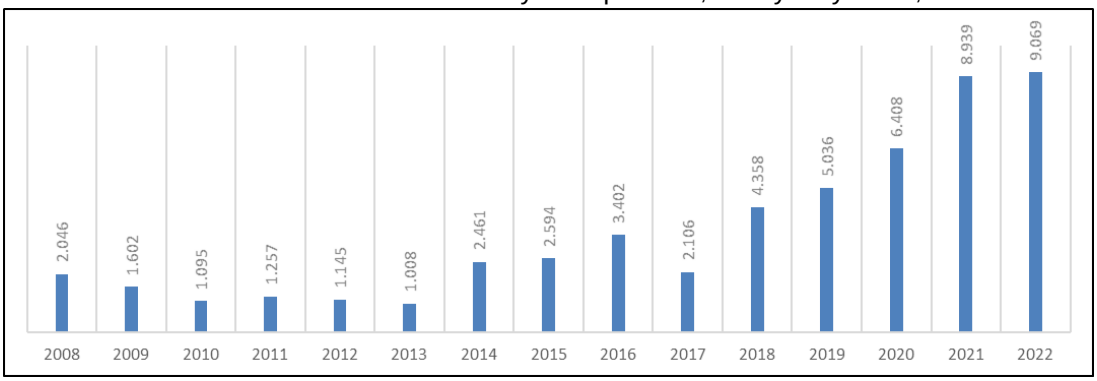
The Amazonian scenario of fast changes and strong pressure has broadened the risk of destabilizing socio-ecological systems that allow traditional populations to play key role in ecological conservation, mainly in protected areas.

Protected areas, deforestation and traditional populations

Protected areas are the main conservation strategies applied to ecological systems in the Amazon (Soares-Filho, 2016). According to Veríssimo et al. (2011), back in 2010, 43.9% of this Brazilian region was institutionalized as some sort of protected area; this number corresponds to 2,197,485 km2 (this area is bigger than Mexico, for instance). It is important highlighting that most of these areas house different types of traditional populations; deforestation has been growing in several of these zones (Araújo et al., 2017; Amorim et al., 2022). Many factors are related to such a scenario, including changes in soil use and occupation standards adopted by traditional populations.

Data have shown that between 2000 and 2020, planted areas in the Amazon destined to harvesting rose from 84,927 km2 to 234,460 km2 (increase by 176%), cattle herds grew from 47.2 million animals to 93 million (increase by 97%) (Santos et al., 2021). According to a study conducted by *Instituto do Homem e Meio Ambiente da Amazônia* (Imazon, 2023a), based on a historical series from 2008 to 2022, which took into account the interval between January and September, the deforested area in the Brazilian Amazon in 2022 was 443% bigger than that recorded in 2008 (Image 1).

Image 1
Deforested area in the Amazon from January to September, on a yearly basis, in Km²



Source: Recovered from "Forest degradation caused by wildfire and by wood extraction grew almost 5 times in September", by Imazon (2023a), Section "Deforestation in September exceeds by three times the territory of Belo Horizonte City".

Deforestation in protected areas, in the herein assessed region, has been growing, mainly in the last few years, but this is not a generalized phenomenon in all areas. According to *Instituto Socioambiental* (ISA, 2022), between 2019 and 2022, during Bolsonaro's administration, deforestation in ILs and CUs, in the Brazilian Amazon, was 94% higher than that in the four years prior to it (between 2015 and 2018). Imazon (2023b) used artificial intelligence in its research and showed that 23% of CUs and 9% of ILs are at high risk, or at very high risk, of deforestation. Deforestation implies a whole set of structural changes that affect traditional populations' social reproduction standards. This profile has impact on a broad set of long-lasting and/or permanent negative effects on regional SESs.

Changes emerging from the inside of the Amazonian social fabric, which are boosted by external influence and pressure, mainly from territory borders, can lead the Amazon to faster inflection points in its SESs. If these on-going processes keep their trends, one can estimate effects such as ecosystems turning into savanna areas, impact on eco-systemic services and changes in the planet's climate. This process would lead to cascading effects that would be hardly predicted (Lovejoy & Nobre, 2018; 2019). Furthermore, the so-called Amazon can stabilize itself as socio-ecological system in a way different from representations depicting the region. It would be possible facing the broad extinction of several forms of life, of living and of relationships. So, how can one effectively interfere with this trend?

Broadening the resilience of traditional populations in the region seems to be a primary strategy (Cinner & Barnes, 2019). In order to achieve such a goal, we believe that it is necessary recovering expectations and social engagement at local level, so that a new cycle of an Amazonian sustainable development project can come up (politically stable, at local level). Accordingly, it would be essential deeply supporting the implementation of pro-resilience initiatives, based on substantial financial support, in compliance with the diversity of traditional populations (Morelli, 2021; Schönenberg et al., 2022) and mediated by the 'pluriverse' of their ontologies. In order to do so, it would be necessary to have a broad political, economic and social, multi-level agreement among several social and political sectors, be them local, regional, national or international. Without a new feasible agreement for a new cycle, the crisis of the Amazonian project and the spirit of the time observed at local level would be hardly coped.

Although the concept of traditional populations in social sciences and in the legislation is broad and covers a varied universe of sociocultural and political groups (Diegues, 2019), two sets of populations that live in protected areas are strategic, namely: native (original) peoples living in indigenous lands, and traditional populations inhabiting sustainable-use conservation units. Together, these populations account for 34.38% of this biome's area (ISA, 2023; Brasil, 2023). Oftentimes, these areas are also the most forested, biodiverse and threatened ones. Table 1 was created to introduce the dimension of these populations and their territories.

Table 1
Data of protected areas where traditional populations are legally set in, in the Brazilian Amazon (a)

Type	Amount (units)	Estimated population	Surrounding population (10 km radius)	Total area (km2)	Biome's %	Correspondence to areas of other countries
Indigenous lands (b)	428 (c)	352.981 (c)	-	1.152.948,99 (c) (d)	22,99	Area > than the Colombian territory.
Sustainable-use conservation units (e)	160 (f)	249.968 (g)	979.161 (g)	571.102,65 (f)	11,39	Area > than metropolitan France.
Total	588	602.949	-	1.724.051,64	34,38	Area > than that of Spain, Finland, Germany, New Zealand and the United Kingdom, altogether.

Observations:
(a) If one takes into account the Legal Amazon, with approximate area of 5,015,067.86 km2.
(b) At several acknowledgement stages.
(c) Based on ISA (2023).
(d) It includes delimited indigenous territories, at different acknowledgement stages.
(e) It includes categories of conservation units that, based on the legislation, can house traditional populations: 77 extractive reserves, 23 sustainable development reserves and 60 forests.
(f) Based on Brasil (2023).
(g) Based on D'Antona & Alves (2018).
Source: Elaborated by the authors.

However, how can one support the resilience of these peoples and populations that are so diverse and specific? How can one promote a long-lasting project capable of structuring capabilities and resilient institutions?

The herein proposed answer is:

– With schools! With specific and high-quality education systems!

Indigenous peoples got the right to a differentiated education system, the so-called "Indigenous School Education" (Grupioni, 2001). Although this is a relevant achievement, we believe that a broad discussion must be put in place to approach the quality of this modality, its organization and permanence due to resilience and to its function to these peoples (having in mind the evolution of this policy). However, the other traditional populations living in nature conservation units do not have a differentiated and specific education, and it is a concerning issue, as introduced below. From this point onwards, we will address education policies applied in these territories' conservation units and introduce the proposition of a specific education system to them.

Problems linked to the implementation of conventional school education in sustainable-use conservation units in the Brazilian Amazon: sight from Chico Mendes and Cazumbá-Iracema RESEX

> The second negative point [throughout three decades of gatherer reservations' implementation] was the fact that we had a school… to have education is a positive point, but, gee… the education we have inside the gatherer reserve makes us want to leave. It doesn't… doesn't value those who live in here, it doesn't empower us to develop and doesn't empower the position of our territory. Got it?... So, well, in my opinion, it was a negative point. […] At that time, we already thought about modernizing Education, we stood for our rights. So our kids could… where our kids could have education, without losing the quality we had of defending the territory. Of empowering this territory. (Aldeci Cerqueira Maia, 62, community leadership at *Reserva Extrativista Cazumbá-Iracema*)[5]

The citation above was recorded in an interview conducted with "Nenzinho", who is a historical leadership of the rubber tapping movement in Acre State, Brazil[6]. He followed the trajectory of all these conflicts[7] until the territorial ordering model was implemented and the development system was called *reserva extrativista* – RESEX (gatherer reservation)[8] (Allegretti, 2008; Almeida et al., 2018; Silva, 2023). This man, and some other people who we got to known during a research about youngsters' projects of future in their gatherer reservation, in Acre State, called out attention to two problems: precariousness and inequality in education policies set for traditional populations living in Amazonian conservation units. Pictures and knowledge shown in this essay are preliminary results from parts of our perception about the referred research; they were completed by our professional experiences in Amazonian gatherer reservations.

The almost total lack of formal education policies for traditional populations in the Amazon always marked a centenary exclusion and submission scenario. Formal school was universalized in this region in the last three decades. For some families, it was the first generation of youngsters who, different from their ancestors, had access to school contents and to this socialization modality. This process brought along positive effects, but also several negative impacts on cultural, social and productive dimensions.

5 The interview, the pictures and the knowledge presented in this section were generated in a participatory workshop and during participatory-observation research activities carried out with the cited school communities, at the scope of the research project known as "*Quais os sentidos do desenvolvimento amazônico?*", by *Instituto Federal do Acre* (IFAC).

6 Social movement that rose in Acre State to claim for land recognition in forest territories traditionally occupied by rubber tappers; they were directly related to RESEX creation (Allegretti, 2008; Almeida et al., 2018).

7 Even was the word used to feature the pacific mobilization type Acre rubber tapping movement used to adopt to stop deforestation in rubber plantation areas between 1976 and 1988 (Allegretti, 2008).

8 The gatherer reservation (*reserva extrativista*, in Portuguese), is a settlement modality conceived by the rubber tapping movement; it allows recognizing traditional territories by taking into account their differentiated forms of organization and living. Nowadays, there are 77 Amazonian units, and they correspond to ≅147,464 km² - this area is larger than England, for example (Silva, 2023).

We can say that only basic school got to Acre State. Sometimes, it was improvised in empty houses (Image 2), in porches, in storerooms (Image 3), in rooms in the association, as well as in other locations. Oftentimes, schools in these communities only had one classroom, the kitchen and, sometimes, a restroom, all made of wood (Image 4).

Image 2
Old residence adjusted to house a high school class at Icuriã rubber plantation, in Assis Brazil, Acre State.

Source: Elaborated by the authors.

Image 3
Storehouse for rural production adjusted to a high school class, in São Pedro rubber plantation, Xapuri County, Acre State

Source: Elaborated by the authors.

Image 4
Common school in Acre gatherer reserve (new), in Macauã community, Sena Madureira County, Acre State.

Source: Elaborated by the authors.

Teachers are often temporary and precarious; sometimes, they come from the city seeking a new income opportunity in a new class season. It is common not to have electric power; there is no internet or computers; there is no State concern with water supply; there are severe impairments to public school transportation, such as boats or adjusted cars (Images 5 and 6), which are rarely acquired before constant demands by the community. Some students spend 4 hours walking to – and returning from – school, or on horse back riding for the same purpose; others move to locations closer to school, so they can study; some, given the difficulties, stop trying to access the school, which is often to far from their houses.

Image 5
School transportation made on a truck, in Sibéria rubber plantation, Xapuri County, Acre State.

Source: Elaborated by the authors.

Image 6
Two boats used to river transportation, Tabatinga rubber plantation, Sema Madureira County, Acre State.

Source: Elaborated by the authors.

Food provided to the students is often industrialized, and it comes from the city (Image 7); teachers coming from the city, in some cases along with their families, live in the school or in a family home close to it (they do not have good infrastructure or housing support – everything is improvised). Teachers often prepare children's food, and also clean the facility (there is no principal or any other employee) – in some cases, students are in charge of these activities. Teachers are also accountable for their own transportation to the city when they have to attend qualification meetings, to get their wage, to buy their food and hygiene items.

Image 7
Food items provided to the students, Xapuri County, Acre State.

Source: Elaborated by the authors.

When we observe the availability of high schools presenting the aforementioned profile, problems get even worse, given the lack of teachers for specific subjects – there are cases in which one teacher teaches all high school subjects, alone (this is the only way, because there are no other teachers available to go to the schools due to the paid salaries and to the precarious conditions they would have to deal

with). The Amazonian hit, the small size of inadequate rooms to house so many students are among the challenging conditions affecting students' concentration and learning, in all teaching modalities.

Yet, it is important highlighting that there are some schools, mainly those closer to urban zones, that are made of masonry, that have air conditioning, water supply, internet, and other facilities (Image 8). These schools are seen by teachers, students and managers as the standard set for the future, according to which, all schools must be just like the aforementioned ones (Image 9). These schools, which are closer to the cities, have many teachers who go from the city to the reservation, every day; they often take their motorbikes, but it also accounts for significant wear (Image 10). It mainly happens due to lack of a local state teachers' qualification policy).

Image 8
New school made of masonry (standard) in Paraguaçu rubber plantations, Assis Brasil County, Acre State.

Source: Elaborated by the authors.

Image 9
Contrast between the new part of the school, and the old one, made of timber, in Floresta rubber plantation, Xapuri County, Acre State.

Source: Elaborated by the authors.

Image 10
Boat for transportation on Xaouri River, it connects Xapuri's downtown area (AC) to the dirt roads leading to *Reserva Extrativista Chico Mendes*. In the figure, one can see 3 teachers returning home after a school day in the reservation.

Source: Elaborated by the authors.

Besides the small schools in the communities, there are also some pole schools in some regions; they receive students from closer communities. It happens when transportation logistics is made on dirt roads, because it allows the school to support many communities, since they can be reached by school buses – these schools often have a better infrastructure (Image 11). Briefly, in all cases, all aspects seem precarious to us.

Image 11
Pole school, Icuriã rubber plantation, Assis Brasil County, Acre State.

Source: Elaborated by the authors.

Problems related to the conventional education system: lack of education project focused on traditional populations living in conservation units

The aforementioned issues are related to negligence with the implementation of conventional schools in these territories – what is rather serious. Furthermore, there are more complex matters, most of all, lack of a specific education project for these territories. There is no State concern with conceiving and modeling an education policy and system for this context, and with the peculiar features of these populations in these territories, or with differentiated projects for socio-environmental development in compliance with sustainable-use conservation units in Brazil. Actually, depite the simple name, “rural education” or “countryside education”, used by the State to refer to the school modality available in these territories, in practice, it seems to us that it just applies the same conventional urban school model to them (it is so, when it comes to propositions, modeling, content and organizational culture). This finding shows this policy’s negative impact on the social reproduction process experienced by these social groups and on the feasibility of protected areas.

Different from previous generations, traditional youngsters in these areas go to school everyday. They do not attend a significant part of production activities and do not share the family’s responsibilities in the territory, although this is how their culture is often shared and reproduced, and how their knowledge and skills - that have given these communities the potential to remain traditional - were developed. By seating on school chairs, these students learn about a school that talks about the “city”, about a “world” that is not their own, but where they want to go to. These students are not instructed in the epistemology of the “place”, based on their contexts and issues, in the potential and opportunities found in their territory and culture, in building a project for the local life; this process leads to ambiguity and conflicts that take them apart from their territories. We have detailed such a discussion in another article, see (Silva & Da Silva, 2022).

Briefly, the State is not worried with modeling a specific education system for Amazonian traditional populations, which should be based on a participatory phylosophy focused on the continuity and development of these specific groups and territories (it would broaden their resilience). Actually, the State has implemented the conventional school – a urban and Modern-Western project –, which is away from the historical, cultural and territorial bases, as well as from the view of world and from the future pictured by gatherer populations living in the forest. Chart 1 provides a summary of issues linked to the implementation of conventional schools in these territories.

Chart 1
Conventional school problems in traditional-population territories in Amazonian conservation units.

Items	Problems
1	There is no clear and contextualized definition (philosophic goal) of the role played by the school in the social reproduction process experienced by populations aimed at the continuity of traditional socio-ecological configurations.
2	Conventional education modeling does not carry along a vision and Project for the future of the local social capable of articulating endogenous existence in its socio-ecological fabric.
3	Given the lack of a specifically defined philosophic goal (Item 1), consequently, the modeling applied to the education system is inadequate. This process echoes on content importation, on how teaching is organized, on the modeling adopted for educational structures and equipment, on schools' organizational culture, on teachers' formation and career, among others.
4	Based on item 3, school is conceived, according to common sense, as physical space comprising classrooms, where classes are often theoretical, and limited to few pedagogical resources (such as books). In other words, the school, as instrument, is not modeled from a specific education Project, but as alien part adjusted to fulfil the space of an instrumentality that should be developed as peculiar to the local social/territorial.
5	Education modeling accounts for the 'epistemicide' of traditional knowledge. It is done through ontology and epistemology teaching, and through contents and life projects that are alien to contexts, problems and local vocations.
6	Education modeling drastically changes local social systems' organization, since it changes the configuration of populations' social reproduction methodologies – it has several negative impacts, including on resilience.
7	Education modeling ignores the territories' potential and opportunities to the sustainable development of local social groups.
8	Education modeling ignores the traditional knowledge produced through generations.
9	Education modeling ignores interdependence relationships towards the territories and non-human lives – including affection dimensions.
10	Education modeling ignores and devaluates local culture, history and identities.
11	Education modeling ignores the organization and life models, such as Family and community activities, as well as seasonal activities, like family productive units' practices and management, dirt roads and rivers' cleaning, planting and harvesting, gathering activities (nuts and rubber), traditional festivals, among others. Actually, it teaches this new generation on a daily basis, according to a labor logic (modeling to future job positions).
12	Education modeling ignores the school potential to empower territorial management, since it disregards the quality of these populations as co-managers for solution-finding.
13	Education modeling ignores locally generated issues, based on how they are formulated by the populations, it ignores their contributive potential for solution-finding.
14	Education modeling, by ignoring local elements (ontology and epistemology, way of life, productive practices, issues, opportunities and potentials, among others), stops their dialogue with modern knowledge, techniques and technologies – it could improve local life aspects and promote endogenous territorial development.

15	Education modeling ignores the development potential and relational application between humans and non-humans. Accordingly, it is implicitly replaced by the application of Modern-western standards linked to the man-nature binomial.
16	Education modeling ignores the school as preparing and guiding institution for the lives of youngsters.
17	Discipline matrix and content unit often disregarded; it is not useful for application in daily life. It usually follows the national standard.
18	Class schedules follow the school-days calendar, and class hours are similar to those in the city; it is conflicting with the way of life of traditional populations (planting season, rainy season, among others) – is has impact on the socio-cultural reconfiguration of life organization based on the traditional mode.
19	The dynamics adopted for students' food preparation ignores the possibility of offering local food provided by students' families
20	The school is disconnected from an integral and broad education system (which must be elaborated). It is like a loose and solitary element.
21	The school is disconnected from the territorial management institutions, from territorial development promotion, from residents' associative representations.
22	Education modeling does not have systematic planning to provide specific education and means of access to it: a) qualification for the services sector and non-rural technical qualification (such as cars and boats' mechanics, hairdresser, beautician, construction site contractors, among other demands of local communities; b) agriculture-forest-based technical qualification to work with cattle, crops, forest, food processing, forest management, among others); c) higher education in different fields of interest for local youngsters (there is no "quota system" policy and support for permanence at college for these populations in Amazonian institutions, or a broad policy focused on specific courses developed for this public, in and outside their territories).
23	There is no qualification policy for native teachers from local-school communities, or specific teaching career policies for them.
24	Briefly, the school aliens and disciplines the local traditional socio-cultural fabric by modeling it based on the urban, Modern-Western profile. It can be featured as institution that, nowadays, keeps on operating the 'epistemicide' and the constitution of a subordinated population forged by public policies.

Source: Elaborated by the authors.

From "Education in the Forest and in its Waters" to Amazons with futures

The discussion about a differentiated school, mainly that related to the creation and implementation of the gatherer reservation model, was once a strong Amazonian gathering social movement, which gave birth to initiatives such as *Projeto Seringueiro* (Souza, 2011). Paulo Freire's approach was applied by *Centro dos Trabalhadores da Amazônia* (CTA) - due to the aforementioned project -, when there were no schools in rubber plantation settlements in Acre State; it was done to literate rubber tappers and to form local teachers. The content of school primers, the so-called *Porongas*, was based on rubber tappers' contexts and ways of life. The education institution used to respect families and communities' activity schedules and also qualified new teachers. That is how schools started in gatherer reservations in Acre State. The closest phase to this contextual model, which was

inspired by popular education, by the liberation theology and by rural unionism, was launched between 1981 and 1990. Later on, given the universalization of school policies and incorporation by the State, schools were turned into the model we see nowadays. Nevertheless, the proposition of a special education to these populations never left the agenda of Amazonian gatherer social movements organized by the Gatherer People's National Council (*Conselho Nacional das Populações Extrativistas* - CNS), which claimed for a differentiated education model.

Back in 2010, based on the relationship between CNS - as social movement - and the administration by the Workers' Party (*Partido dos Trabalhadores* - PT), it was possible formulating a study at the Secretariat of Strategic Matters of the Presidency of the Republic. It opened room for a political minute about this topic, the so-called "Forest Education Policy", which aimed at populations living in gatherer reservations and those in sustainable development reservations, also known as RDS[9] (Secretaria de Assuntos Estratégicos [SAE] & CNS, 2010). This policy's minute suggests a new school model for these areas, based on the alternating regime inspired by the Agricultural School-Families model, called Gatherer School-Family (*Escola Família Extrativista*). Unfortunately, the implementation of this proposition did not advance. Conservation units' youngsters are still attending a formal school focused on future job positions in banks, manufactures, among others, which are precarious, out of context and 'epistemicid' (Freire, 1987, 2001; Santos, 1995).

If one takes into account the herein described issues, it is possible recommending the Brazilian State, at federal scope, to take back the discussion about the National Policy of Forest Education, with emphasis on the conception, modeling and implementation of an education system specific for traditional populations living in sustainable-use conservation units in Brazil (which we named 'Education System in the Forest and in its Waters – this last word refers to CUs with representativeness of socio-ecological systems where water is essential for communities' existence). We expect that it would have strong mid- and long-term impact on the social resilience of endangered socio-ecological systems, mainly on the Amazonian ones, and, consequently, help to save them. We also suggest the observation of a set of propositions linked to the aforementioned recommendation, which must be introduced in policy brief format (Silva & Da Silva, 2023).

In order to reach public policy coherence, we suggest that the education system in the forest and in its waters must be conceived in compliance with the approach of education policies focused on other Brazilian traditional populations living in territories legally acknowledged as differentiated. Thus, we recommend that the "Education in the Forest and in Its Waters", along with the "indigenous Education" and with the "Quilombola Education", should be managed by an exclusive Secretariat of the Ministry of Education (MEC) – An Education Secretariat for Traditional Populations. It also seems essential launching a new scientific

9 RDS is a modality of protected area by SNUC, its goals are similar to those by RESEX. What differentiates them from one another is basically the RDS model, which does not guarantee that the State would compensate private areas located within the perimeter of the protected area at the time it is grated with the status of protected area.

discussion field aimed at education in the forest and in its waters, with emphasis on non-indigenous traditional populations living in Brazilian CUs.

The present article does not intend to describe how this specific policy and system would be, we only focused on pointing out their potential to broaden the resilience capacity of traditional populations and on the positive impact it would have on the future of the Brazilian Amazon. This initiative would be a milestone for the respect to the ontological and epistemological 'pluriverse' of Amazonian traditional populations. Furthermore, it would launch a new development cycle (or post-development cycle) based on ways of "seeing", living and projecting the world from this regions' local level perspective – which has the potential to help Modern-Western societies overcome their civilizational crises (Escobar, 2022; Demaria et al., 2023).

The picture of the school found nowadays in the forest and in its waters is well-known – it is precarious and inadequate. However, the school and the specific education these populations have been claiming for, for decades, still wait to be built (collaborative and created under co-participation). Meanwhile, these traditional populations, which were never a priority, still wait for their rights to be met, with quality. However, they do not understand why they are never heard, since they are people like everybody else, people who are longing for an education that would seem dignifying to them.

We believe that it is necessary to have an education policy and system in compliance with the sociocultural 'pluriverse' observed in these regions in order to achieve a persistent resilience in the 'Amazons', which must be supported with quality to create resilience. Thus, education would be a strong expression of democracy, as it would be an instrument for the rise of local "voices" and epistemologies that, in their turn, would make it possible developing ontologically alternative socio-cultural futures (that are already in place, but that are only "seeds" in Amazonian forests and waters).

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About the authors

Anselmo Gonçalves da Silva

Acre Federal Institute of Education, Science and Technology, Xapuri, AC, Brazil
https://orcid.org/0000-0001-9825-4030

Master in Management of Protected Areas in the Amazon by the National Institute of Amazonian Research (2018). Professor at the Federal Institute of Acre. PhD candidate in Contemporary Studies at the Center for Interdisciplinary Studies at the University of Coimbra. Email: anselmo.silva@ifac.edu.br

Fátima Cristina da Silva

University of Coimbra, Coimbra, Portugal
https://orcid.org/0000-0002-6236-2993

Graduated in Pedagogy at the Federal University of Acre (1995). PhD candidate in Territory, Risk and Public Policy at the Center for Social Studies at the University of Coimbra. Junior Researcher at the Risk Observatory at the Center for Social Studies at the University of Coimbra.

Contribution in the elaboration of the text: the authors contributed equally in the elaboration of the manuscript. Email: floresta.cristina@gmail.com

Resumo

“Salvar a Amazônia” é uma expressão que emerge na pauta social e política, nacional e internacional. Surge como consequência de um cenário de rápidas e profundas transformações que podem levar à savanização da região. Neste ensaio, defendemos que parte da solução passa pela promoção da ampliação da capacidade de resiliência de populações tradicionais que vivem em ≅160 unidades de conservação na região. A proposta aqui apresentada é a concepção de um novo modelo e sistema de educação específico para essas populações tradicionais — uma educação na floresta e nas águas.

Palabras clave: Amazônia. Áreas Protegidas. Filosofia da Educação. Pontos de Inflexão. Transições para o Pluriverso.

Resumen

“Salvar la Amazonía” es una expresión que emerge en la agenda social y política nacional e internacional. Surge como consecuencia de un escenario de rápidas y profundas transformaciones que pueden conducir a la sabanización de la región. En este ensayo, argumentamos que parte de la solución pasa por promover la expansión de la resiliencia de las poblaciones tradicionales que viven en ≅160 unidades de conservación en la región. La propuesta que aquí se presenta es la concepción de un nuevo modelo y sistema educativo específico para estas poblaciones tradicionales: una educación en el bosque y en las aguas.

Palabras clave: Amazonia. Áreas Protegidas. Filosofía de la Educación. Puntos de Inflexión. Transiciones al Pluriverso.

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