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ARTICLE

ENVIRONMENTAL WEAVINGS: EPISTEMOLOGICAL AND AXIOLOGICAL INSPIRATIONS FOR INSURGENT EDUCATIONS

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ABSTRACT:

Part of the theoretical network created to analyze and discuss the empirical material constructed in a qualitative research conducted in public schools in the urban periphery of a large city in Latin America (SÁNCHEZ, 2020) is presented. This network was woven from the contributions and views, mainly, of Enrique Leff, Félix Guattari, and Marcos Reigota. We propose and detail a set of epistemological characteristics and axiological principles that we call *Environmental Weavings*, and which would underlie environmental educations thought from the perspective of the contemporaneity of Latin America. The content and political and historical burden present in the concept of *Environment* are analyzed, and the ethical and aesthetic implications of assuming it in this expanded representation are presented, while deepening on its intercultural and interdisciplinary aspects. Finally, the becomings and some challenges in the field of everyday school life and educational policies implicit in this environmental perspective are discussed.

Keywords:

Environment;
Environmental
Education;
Latin America.

TEJIDOS AMBIENTALES: INSPIRACIONES EPISTEMOLÓGICAS Y AXIOLÓGICAS PARA EDUCACIONES INSURGENTES

RESUMEN:

En este artículo, se expone parte de la red teórica creada para analizar y discutir el material empírico construido en una investigación cualitativa realizada en escuelas públicas de la periferia urbana de una gran ciudad de América Latina (SÁNCHEZ, 2020). Esta red se tejó a partir de los aportes y visiones, principalmente, de Enrique Leff, Félix Guattari y Marcos Reigota. Se propone y detalla un conjunto de características epistemológicas y principios axiológicos que denominamos *Tejidos Ambientales* y que estarían subyacentes a educaciones ambientales pensadas desde la contemporaneidad latinoamericana. Se analizan el contenido y la carga política e histórica presentes en el concepto de *Ambiente*, presentando las implicaciones éticas y estéticas de asumirlo en esa representación ampliada, profundizando, a su vez, en sus aspectos interculturales e interdisciplinarios. Finalmente, se discuten los devenires y algunos desafíos en el campo de los cotidianos escolares y de las políticas educativas implícitas en esta perspectiva ambiental.

Palabras clave:

Ambiente;
América Latina;
Educación Ambiental.

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TECITURAS AMBIENTAIS: INSPIRAÇÕES EPISTEMOLÓGICAS E AXIOLÓGICAS PARA EDUCAÇÃO INSURGENTES

RESUMO:

Expõe-se, neste artigo, parte da rede teórica criada para analisar e discutir o material empírico construído em uma pesquisa qualitativa realizada em escolas públicas da periferia urbana de uma grande cidade da América Latina (SÁNCHEZ, 2020). Essa rede foi tecida a partir das contribuições e olhares, principalmente, de: Enrique Leff, Félix Guattari e Marcos Reigota. É proposto e detalhado um conjunto de características epistemológicas e princípios axiológicos que denominamos *Tecituras Ambientais* e que estaria subjacente a educação ambientais pensadas a partir da contemporaneidade de América Latina. São analisados o conteúdo e a carga política e histórica presentes no conceito *Ambiente*, apresentando as implicações éticas e estéticas de assumi-lo nessa representação ampliada, aprofundando, por sua vez, nos seus aspectos interculturais e interdisciplinares. Por fim, comentam-se os devires e alguns desafios no campo dos cotidianos escolares e das políticas educacionais implícitos nessa perspectiva ambiental.

Palavras-chave:

Ambiente;
América Latina;
Educação Ambiental.

RATIONALITIES IN QUESTION

In the search for ethical horizons that inspire the development of school processes relevant to the realities of Latin America and heeding the encouragement of the French philosopher Félix Guattari (1996) for the construction of new paradigms that are preferably inspired by ethics and aesthetics, we found the concept of *Environmental Rationality*, theorized by the Mexican environmentalist-economist Enrique Leff. Rationality that aims at a hopeful deconstruction of modernity, seeking the redefinition and the establishment of social relations (economic, techno-scientific, academic, spiritual) within the limits, possibilities, and characteristics of the ecological and cultural backgrounds of territories and communities (LEFF, 2009).

Environmental Rationality shares some aspects of that ethical-aesthetic articulation that Guattari (1996) calls ecosophy, in which the ecological, social, and subjective registers are articulated to conveniently respond to the challenges of contemporaneity. The similarity between the two perspectives comes from their opposition to hegemonic *Instrumental Rationality* and rejection of economic, historicist, and ecologicist reductionisms and essentialisms. In both perspectives, ethics and aesthetics are vectors of articulation between the different aspects that make up a political and integral conception of the *environment*. Guattari (1992), analyzing the characteristics of contemporary societal crises, states that the survival of the human species on the planet is threatened

not only by ecological degradations, but also by the degeneration of the weave of social solidarities and psychic ways of life that must literally be reinvented. The re-foundation of the political must pass through the aesthetic and analytical dimensions that are implicated in the three ecologies:¹ of nature, of socius, of psyche (GUATTARI, 1992, p. 33, our translation).

In epistemological terms, in *Environmental Rationality*, knowledge is rooted in the Being, in its desiring, historical, symbolic, relational textures, as opposed to *Instrumental Rationality*, which seeks a transparent relationship between concepts and reality. An environmental rationality deconstructs the illusion of the modern project that sought a fixed and total identification of words with things (LEFF, 2010). In this

relational perspective, knowledge is conceived as a social production, historically situated, and, therefore, constituted by processes and results susceptible to critical use and understanding (RODRIGUES, 2014).

Being, in this contemporary rationality, is understood as the expression of a plural, polyphonic, hybrid, relational subjectivity in which different semiotic registers concur and whose relations are not structured in fixed hierarchies (GUATTARI, 1992). This hopeful rationality considers people and human groups as active agents that can subvert different types of determinism (geographical, cultural, genetic, ecological, technological, economic, historical, among others).

The axiological system that makes up environmental rationality can be summarized in the following values: ecological sustainability, social equity, cultural diversity, and community participation. This rationality would represent a contemporary ethical horizon or utopia that advocates for a distribution of wealth, power, and knowledge through economic decentralization, participatory management, responsible appropriation of technoscience, and democratization of ecosystem resources. In this way, every human being and every community could fully develop their affective, productive, and intellectual potentials, reaching satisfactory levels of quality of life, which is consistent with the premise that “the only acceptable end of human praxis is the production of a subjectivity that continuously enriches its relation to the world” (GUATTARI, 1992, p. 33, our translation).

The economic aspect of environmental rationality is guided by non-market principles, such as ecological potential and trans-generational equity. We seek to deconstruct the modern mechanicism, foundation of the hegemonic economic model, as a requirement for generating epistemological and political conditions that allow the development of territorialized and humanized economies (LEFF, 2010). One can infer that the target of questioning and radical attack of environmental rationality is the spirit that permeates the currently powerful instrumental rationality, foundation of modernity and the economic model, which considers itself essential, unique, eternal, and unlimited, tending to violate the ecological and cultural limits of peoples and territories.

The Instrumental Rationality that supports capitalism and the corresponding hegemonic subjectivity creates metaphysical and teleological hierarchies between knowledges and between beings and, in this way, justifies practices of extermination, exclusion, segregation, producing pain, social injustice, economic inequality, alienation, and ecological and cultural homogenization.

Capital crushes under its boot all other modes of valorization. The signifier silences the infinite virtualities of minor languages and partial expressions. Being is like an imprisonment that makes us blind and insensitive to the richness and multivalence of the universes of value that proliferate over our eyes (GUATTARI, 1992, p. 42, our translation).

Instrumental rationality is supported by a legal code of private property, whose axis is modern positive law that conceives the human being as isolated individual and the nature as resource (LEFF, 2010). This legal code seems to have reached a saturation point, which is expressed in the different types of contemporary environmental crises (ecological, climatic, migratory, war, health), becoming particularly evident in the huge fissures and psychosocial fragilities that are coming to the surface with the Covid-19 pandemic.

The vulnerabilities of humanity have gained visibility, in these pandemic times, in the great technical and scientific distances between countries and population segments, in the unequal access to vaccines, in the absolute lack of social protection suffered by large contingents of human beings, in the precariousness of health systems that affects most countries, in the existential voids produced by the accelerated and insipid social routines framed in productivism and capitalist consumerism, in the ease with which false information is constructed, disseminated and consolidated in social networks, as well as in the latent danger of activation of viruses alien to the human species due to climate change and unregulated interactions between civilization and nature.

For Guattari (1996), in contemporaneity, there is an exacerbation of the production of material and immaterial goods, at the expense of the consistency of existential territories, which generates an immense emptiness in subjectivity, which tends to become increasingly absurd and without support. An ecosophy

would try, by all possible means, “[...] to conjure up the entropic growth of the dominant subjectivity” (GUATTARI, 1996, p. 77, our translation).

The capitalist system cannot continue to exploit natural resources, as it has been doing, for much longer without collapsing. However creative and expansive capitalism may be, there is a concrete ecological limit, and this limit is already showing its signs (REIGOTA, 2011, p. 156, our translation).

Aiming at other horizons, the principles and values that permeate environmental rationality transform and enrich modern law, configuring a new field of cultural, ecological, and collective rights that respond to alternative forms of socialization with nature (LEFF, 2010). In the opinion of Enrique Leff (2010), to overcome the individual-centered perspective that characterizes the codes of modern law, and to give culture and ecosystems a prominent place in the construction of new legal systems, is to understand that representation, language, and communication are not individual properties of an isolated and self-centered person. The consciousness of the individual arises from a communal source, from the original sociability of the human being and his symbiosis with his ecological substrates.

According to the epistemological and axiological precepts presented, we can deduce that this political horizon is constructed from an infinite variety of substrates and diversity of styles, indicating that there is no single and omnipotent Environmental Rationality. Instead, there would be multiple *Environmental Rationalities*. In this sense, we consider insufficient the great semiotic effort with which Enrique Leff (2010) tries to clarify the distance and even the opposition that the content of the term Rationality has, in his political-epistemological proposal, in relation to modern rationalism that reduces life, society, human beings, and nature to the narrowness of the insipid game of Cartesian reason. We consider that the insurgent political and educational proposals, worked out from the Latin American senti-thinking environmentalisms, cannot be satisfied with interpretations in which the affective, spiritual, passionate components seem to be diminished, denied, or eliminated.

Taken by these feelings, and remembering that language, more than describing the world, helps to organize the world, being, therefore, the seed of the future, we consider more adequate to use the term *Environmental Weavings*. The weavings express this diversity of practices, processes, social and political movements, as well as their correlated theoretical, affective, epistemological, pedagogical networks that are woven in Nuestra América,² in which the sciences, the biosphere, symbols, affections, history, and emancipation are linked. At the same time, the *Weavings* give recognition to these beautiful ancestral practices, through which, in different weaves (hair, wool, cotton, fibers, seeds, etc.), the cultures of Nuestra América give life and color to their existences and project their dreams, paths, and futures.

By way of summary, three characteristics of *Environmental Weavings* can be highlighted: 1. They are based on an expanded, complex, Latin American conception of environment, which we will call here *InSUR-gent Environment*. 2. They are developed through strategies of fair, respectful, and supportive intercultural dialogues. 3. The concept of territory and the communal vision derived from this category are the axes of his socioeconomic, technological, and theoretical constructions. We will go further in this argument, deepening the presentation of these characteristics and commenting on their implications for the educational field.

HISTORY OF A HOPEFUL CONCEPT-PERCEPT-AFFECT

Before detailing the characteristics of the Environmental Weavings, it is important to fly over the set of paths that led to the construction of the concept Environment, which “links the material and the symbolic, the entity and the being, the economic and the ecological, the internal and the external, the objective and the subjective, the already seen and the yet to come” (LEFF, 2010, p. 334, our translation).

For this, it is necessary to remember that the environmental field has emerged and been configured from subsidies that came in a double track, encompassing the theoretical-abstract realm and the practi-

cal-concrete realm. In the theoretical, when the 20th century was born, there were different scientific advances: Quantum Mechanics, Theory of Relativity, Uncertainty Principle, Gödel's Incompleteness Theorem, General Systems Theory; and in philosophy, the germ of the linguistic turn in the work of Ludwig Wittgenstein, which radically destabilized the hegemonic mechanistic paradigm, which was most clearly expressed in the naive realist perspectives of early positivism.

Later, in the mid-twentieth century, the development of the environmental issue took shape from concrete situations that were emerging in a worldwide context of ecological, pacifist, countercultural, anti-colonial, national liberation, and anti-system movements. The strength of these movements highlighted a growing disenchantment with the unfulfilled promises of modernity, with the cruelty of colonialism, with the extractive dynamics derived from it, and with the tragedies of the great wars that devastated humanity, reflecting concerns about the ecological and ethical unsustainability of the current socioeconomic model.

The environmental issue emerges as a 'rebel daughter' of the contradictions and breaches of the instrumental rational thinking style, of the wear of the idea of linear and infinite progress and its disappointing consequences on ecosystems and social relations (RODRIGUES, 2014). It is possible to state that the environmental field stems from a social and epistemological malaise related to a type of Benjaminian discomfort and distrust in relation to the idea of infinite progress.

Walter Benjamin, in his theorizations, launched structural criticisms to developmentalist perspectives, including those proposed by orthodox Marxism, for being anchored in evolutionary and hierarchical concepts of history and culture, in which the development of productive forces and the accumulation of wealth based, in turn, on positivist and mechanistic conceptions of nature and on an instrumental and corrupted representation of labor³ were the only legitimate ways to reach the different ideological paradises.

There is a painting by Klee called *Angelus Novus*. An angel can be seen in it, apparently at the moment of turning away from something he is staring at. His eyes are bulging, his mouth and wings are open. The angel of the history must be like this. Its face is turned toward the past. In what seems to us to be a chain of events, he sees a single catastrophe, throwing ruin upon ruin at his feet, piling it on endlessly. The angel would like to stop, awaken the dead, and rebuild what has been destroyed. But a hurricane blows from heaven and spins on its wings, and it is so strong that the angel can no longer fold them. This hurricane irresistibly drags him into the future, to which he turns his back, while the pile of ruins in front of him grows into the sky. This hurricane is what we call progress (BENJAMIN, 2013, p. 22, our translation).

These disappointments, contradictions, and rebellions took shape in what Reigota (2011) calls 1968 thinking, which was maturing in a two-decade process along the environmental paths of the South. The concept of environment was thus being woven in those space-times of the Global South where geographies became verb in the practices and struggles of indigenous and *quilombolas* peoples, of the rural and the urban periphery communities. There where *territories* are perceived as constituents of social being, and land and nature as systems of representations and affectivities, and not only as means of production or sources of material resources (LEFF, 2009).

From the above, it follows that hopeful environmentalism finds arguments and bases in the most diverse ontological and epistemological fields, ranging from polytheistic and monotheistic religious cosmology's with a deeply humanistic character, to philosophical constructions anchored in the different possibilities of critical theories, decolonial currents, and post-structuralist and anarchist views, to some scientific narratives of a complex, organizational, systemic, and ecological type.

It is at the intersection of heterogeneous machinic universes,⁴ of different dimensions, of strange ontological texture, with radical innovations, signs of ancestral machineries once forgotten and then reactivated, that singularize the movement of history (GUATTARI, 1992, p. 53, our translation).

This conjunction of contemporary philosophies with decolonial and intersectional struggles gave birth in 1992 to the Global Alternative Forum, in Rio de Janeiro, an event that represented a deep and radical question-

ing of the hegemonic development model, proposing actions, mobilizations, educations, and public policies that promote economic structures rooted in cultural and ecological substrates of social relations (SÁNCHEZ, 2016).

According to Leff (2010), the Latin American perspective on the environmental issue and its political challenges expressed at Rio-92 represented a renewal of hope. Latin American environmentalism projected itself at a moment of paralysis for humanity, after the collapse of the Soviet Union's attempt at socialism and the subsequent implosion of theoretical and axiological referents.

In that decade when neoliberalism predicted the end of history, critical thinking found itself disarmed in the face of uncertainty and powerless in the face of the chaotic strategies of globalization that penetrated the vital tissue of humanity, annihilating its diversity and transformative action.

With the fall of the Berlin Wall, there is a shift from the East-West strategic axis that characterized the Cold War to the North-South axis, where the environmental problem becomes of fundamental strategic, political, military and economic importance (REIGOTA, 2011, p. 38, our translation).

In the face of this change, in the last three decades, the concept of environment that we claim has been gradually inserted into progressive public and educational policies, within the institutional framework of the Nation-State of some Latin American countries and of some intergovernmental organizations of global order; and, in turn, it has been consolidated in the praxis of social movements in *Nuestra America*.

ECOLOGICAL CATASTROPHE... OR ENVIRONMENTAL CHALLENGES?

*There is no human nature because all nature is human
(SANTOS, 2008, p. 72, our translation).*

The Environmental Weavings are anchored on a conception of *environment* understood as dynamic interfaces where networks of relationships between the psychological, cultural, economic, ecological, and historical aspects are established. This broad conception does not equate *environment* with *nature* or *biosphere*; nor does it equate *environmental education* with the *teaching of ecology*.

Ecology teaching and environmental education are different, however, it is very common to see them as synonyms. Although ecology as a science has an important contribution to be made to environmental education, it is no more authorized than history, portuguese, geography, physical education, the arts in general etc. (REIGOTA, 2012b, p. 44, our translation).

The Environmental Weavings and the knowledge they produce “have their roots in the ecosystemic organization of nature but embedded in subjectivity and the order of culture” (LEFF, 2010, p. 219, our translation). The nature, when socially appropriated, will always be a signified nature. Thus, the environment is understood as a second nature, which in the contemporary world, starts to determine the destinies of the ‘original’ nature. “In addition to the increasing complexity of ontic orders that emerge in the process of self-organization of *physis*, matter has become more complex due to the reflection of the knowledge on reality” (LEFF, 2009, p. 247, our translation).

This conception of environment allows us to critically analyze the adequacy and relevance of the outdated concept of virginal, untouched and pure nature in a contemporary world where culture, techno-science and political interests have colonized all human spheres and all biomes and geographical corners of the biosphere. The idea of environment that we claim becomes meaningless when we subtract the cultural component.

That pristine environment, traditionally homologated with an Edenic representation of nature, may have never existed or ceased to exist at the very moment when the culture was born, in that subtle instant

when, in community, the *Mulier sapiens sapiens*⁵ gave meanings to the reality that challenged her, communicating, and recording these meanings and establishing, through work, a symbolic and economic relationship with nature. “Cultures, by signifying nature with words, transform it into act; by baptizing it, they build territorialities through appropriation and management practices” (LEFF, 2009, p. 125, our translation).

Thus, we can think that even those biomes and geographic spaces that apparently remain unexplored and untouched by humans are the product of political decisions that, based on complex power games, cultural manifestations, and economic interests, have been reserved for preservation. Everything in the world that remains in its apparently Edenic forms is a product of human decisions. Ontological naturalism and ecological essentialism have no meaning in a technologized global village where language, culture and knowledge are active constituents of natures.

Leff (2010) emphasizes that the representation of environment that he defends flees from reductionism and determinism, because he understands that a mechanistic view veiled the intelligibility of the biological order and that the organicist and ecologist views are not calibrated to see the specificities of the historical and symbolic orders, of power and desire. The horizons of sustainability are not exclusively defined by the ecosystemic laws of nature, for nothing is less natural than the subject, consciousness, and knowledge (LEFF, 2009).

It is no longer possible to continue attributing evolutionary determinations unilaterally to primary nature, since technology and culture have irreversibly penetrated the biomes and the nucleus of cells and atoms. The development of technoscience, especially in areas such as biotechnology, genetic engineering, neurochemistry, information and communication systems and technologies, has transformed us into cyborgs, hybrid entities constituted by technological, biological, and textual processes articulation (LEFF, 2010).

These contemporary transformations raise ethical reflections that destabilize traditional concepts of human life, quality of life, productivity, family, and work, incorporated in controversies ranging from the right to safe abortion, genetic engineering, universal basic income to self-managed euthanasia (REIGOTA, 2010).

The fundamental doubt of post-modern times, which fills us with questions and responsibilities, is related to the transmutation of the notion of life through the development of genetic engineering, which puts into question concepts, values and habits that took centuries to establish themselves and achieve the status of universal validity (REIGOTA, 2011, p. 24, our translation).

Understanding and working with these contemporary deconstructions and challenges in education implies bringing up economic, affective, and aesthetic aspects where the knowledge and powers of the different epistemologies, disciplines, and cultures are not established in a hierarchical, exclusive, rigid, and immutable perspective. The apprehension of the world “whether by concept, by affect, or by percept is absolutely complementary” (GUATTARI, 1996, p. 25, our translation).

In their integrity, particularisms, and constant dynamism, the aspects that make up the environment (ecological, cultural, economic, psychological) are complementary lines of comprehension and action that provide the basis for more integral, responsible, and fairer understandings, educations, and interventions in the realities. Perceiving ‘nature’ and society from an ethical and cultural perspective takes us away from dangerous reductionism and totalitarian holism. “Underlying the concept of environment is an ontology and ethics opposed to any homogenizing principle, to all unitary knowledge, to all totalizing globality” (LEFF, 2009, p. 247, our translation).

For Reigota (2011), the environmental problem in the countries of the global north seems to be synonymous with natural issues, of ecology, while for many the most renowned educators and environmentalists, and for Latin American popular movements, issues such as hunger and poverty are not dissociated from the environmental crisis. On the contrary, they are considered fundamental environmental issues.

The responsibilities and the impacts of the environmental crisis are expressed differently depending on the histories and the specific forms of insertion of different cultures, territories, and geographies in the game of world capitalism. There are communities and peoples who are more vulnerable than others to en-

vironmental tragedy. There are communities and peoples who have been victims, while others have been victimizers in the current development model (LEFF, 2010).

This would explain why the ecologicist perspective generally advocated by the countries of the global north boils down its claims to an attempt to greening and make ecological the capitalism. This perspective proposes specific techno-scientific remedies, such as the development and use of clean technologies, individual modifications in consumption patterns, greater 'environmental' responsibility of industries, among other useful analgesics.

As an example, it is worth remembering the first approach from the global north on the environmental crisis, which warned and emphasized the impact of population growth in third world countries on the carrying capacity of the biosphere. This perspective was supported in a pioneering study by the Club of Rome, entitled *The Limits to Growth*.

It was a prospective analysis, established based on mathematical models, which intertwined population and economic growth trends and the use, degradation, and depletion of finite resources, to predict the limits beyond which ecological catastrophe would occur (LEFF, 2010, p. 202, our translation).

This model was criticized and responded to, in Latin America, with a work entitled *Catastrophe or New Society* (HERRERA et al., 1976). In this work it was argued that the limits to development were not mainly physical, nor demographic, but mainly political and ideological. From the South, it was responded that:

the impact of human population is mediated by culture and technology, by patterns of production and consumption; that socio-ecological degradation is due more to the consumption patterns and levels of the opulent sectors of the industrialized countries than to the population growth of the peoples of the third world and all the underworlds (LEFF, 2010, p. 296, our translation).

Therefore, the paths from the South to think and work on the environmental crisis will be in the redefinition of basic needs, in the redistribution of wealth and in the reorientation of the development style. That is, in the construction of a New Society and a new Human Being guided by other logics, senses, knowledge, affections, and rationalities (LEFF, 2010). This environmental revolution must "not only be concerned with the visible large-scale relations of forces, but also with the molecular fields of singularity, of intelligence, of desire" (GUATARI, 1996, p. 10, our translation).

The inSURgent perspective of the environmental issue highlights the immeasurable and priceless social and ecological debt⁶ generated by the hegemonic development model, in which the social welfare and hyper-consumption of the Northern countries have been sustained by the poverty, oppression and ecological degradation of the peoples of the South. The demands of environmental movements in Latin America are not disconnected from the pain of subjugation, colonization and slavery and have historical roots in the struggles of peasant women, ethnic groups, and women workers for the defense of land, work, sovereignty, autonomy, and a dignified life.

In a leap towards sustainability, one would need to change the indicators that measure controversial progress and fragile and elitist social welfare. For example, moving on from the modern, hegemonic, so publicized, anti-ecological and referenced GDP,⁷ that measures economic growth and accumulation of wealth, for other indicators that measure quality of life, social equity, and human development. These new indicators would be established according to the degree of satisfaction of the basic needs of the population and their culturally defined and socially discussed aspirations.

In this sense, when it speaks of equity, Latin American environmentalism does not propose the equitable reproduction and homogenization of the production and consumption styles of the powerful. This path would undoubtedly lead to catastrophe due to the entropic limits⁸ of the biosphere. When we mention equity or equality in sustainability we mean the right to autonomy, democratic participation, redistribution of wealth, and cultural diversity. This implies the promotion and construction of alternative economies inspired by non-hegemonic subjectivities (LEFF, 2010).

The environmental problem is not the spontaneous product of an inevitable evolution of matter; it is the result of the intervention of an ethic and a way of thinking in the world. The hegemonic “economic rationality is a social construction and not the result of the natural evolution of human civilization” (LEFF, 2009, p. 194, our translation). Likewise, the future of the planet and the human species does not follow a continuous and irreversible arrow directed toward a sustainable society. This path is not written in the forces of matter, in genetic codes, in supposed laws of history, nor does it derive from a superior omniscient intelligence. Sustainability depends on social struggles and political decisions, and education, school, and curricula are strategic spaces for these struggles. These understandings allow us to leap outside the teleologies of Northern naturalistic ecologism and situate ourselves in Latin American environmentalism as a politics of knowledge, difference, and social justice, going far beyond the simple ecotechnological adaptation of productive processes to capitalist functionalism.

From the arguments exposed above, we believe that the maintenance of the laxity and ambivalence in the use of the words ‘environmental’, ‘ecological’, ‘natural’, ‘socio-environmental’, ‘socio-ecological’, generates deep epistemological confusion in the academic debate and in the construction of decolonized knowledge, curricula, citizen practices and public policies. Therefore, we consider politically and epistemologically legitimate, necessary, and urgent a consensual updating, socialization, and rigorous use of the concept *environment*.

The current societal challenges need to be worked on from Environmental Weavings projected from alternative representations of nature, work, happiness, life, human beings, state,⁹ expressed by communities located on the peripheries of modernity. This would promote processes and practices of self-management, solidarity, respect and autonomy among the infinite forms and possibilities of being in the world, as well as an empowerment of marginalities, a potentiation of diversities, the achievement of a broad sense of social justice (ecological, economic, sexual, ethnic, epistemic, racial, cultural, historical).

ANTHROPOPHAGIC KNOWLEDGE

The intercultural dialogues anchored in the territories that would characterize the Environmental Weavings can be understood through the notions of anthropophagy¹⁰ and intercultural translation.¹¹ Anthropophagic translations and dialogues as paths to enter into passionate contact with other traditions, times, scenarios, symbolic universes. Dialogues as possibility of alterity and empathy; of admiration, reflection, and existential criticality; of solidarity and political agency. Intercultural dialogues that would underpin inSURgent educations in which “survivors, fragments and diffused elements of natural culture can surface, bringing with them all their original strength, through the devouring of the dominant culture, refusing well-behaved assimilation” (REIGOTA, 2011, p. 56, our translation).

Environmental Weaving goes beyond an ethic of diversity that promotes tolerance of otherness. In an anthropophagic sense, it proposes the reconstitution of being through the introjection of otherness. “The openness to the complexification of the self in the encounter with others leads us to understand identity as the conservation of the one and the same in the incorporation of the other” (LEFF, 2010, p. 369, our translation).

Underlying this idea is a plural, relational and dynamic representation of identities and cultures which, rooted in territories, are not frozen entities in time. Without ceasing to be named after some ethnic, national, or religious origin that offers them political strength, they reconstitute themselves and become more complex by self-managing their relations and re-appropriating their life worlds. In a globalized world, the inevitable intercultural contacts imply the permanent reconstruction of identities and cultures, demanding the judicious overcoming of any essentialism that intends to project them without history and politics (LEFF, 2009).

We see that the Environmental Weavings are ethical horizons that inspire social praxis and the construction of knowledge. Based on these horizons, the communities would produce *Environmental Knowledge*. To

refer to Environmental Knowledge, we can make our own the words of Isabel Carvalho (2017) when she describes the meaning of the knowledge produced from her proposal of *ecological epistemologies*: “are not knowledge about the world and the beings that inhabit it, but regimes of knowledge that are produced with and in the world” (p. 23). We can also complement the definition of these knowledges with the character of the political and pedagogical stakes by Catherine Walsh (2017) in the “fissures that give life and sustenance to small hopes, hopes that when they begin to talk to each other, ally with each other, and weave among themselves, become stronger and more unstoppable in their encouraging, growing, walking” (p. 38, our translation).

Reviewing, for our purposes, the theorization of Enrique Leff (2010), we can find several types of Environmental Knowledge, whose consistency and potency depend on the styles, proportions, and directions in the multitude of possible contacts, swallowings and combinations between different symbolic substrates. We would have the *Sustainable Tactics*, which are popular knowledges, including *Ancestral or traditional knowledges*, and those that Bouffleur (2013) calls *Gambiarra*s,¹² acquiring political force when nourished by the values and principles that we present as underlying environmental weavings.

This knowledge is related to experience, incorporating subjectivity and the multiple human dimensions in the construction of culturally sensitive and socially transformative knowledge (LEFF, 2010). These are knowledges that arise from ancestralities, from communities and their daily lives, producing collective well-being, solidarity, autonomy, and self-management.

From this understanding, it is possible to highlight that every Sustainable Tactic, in the sense of emerging from the territory, with flavor and popular rhythm, represents an ancestral knowledge or a Gambiarra in Bouffleur’s terms (2013). But the opposite does not apply, in other words, not all ancestral knowledge and not all Gambiarra is a Sustainable Tactic. There may be popular knowledges that reproduce or are functional to distinct regimes of oppression. For Sustainable Tactics to exist, Gambiarra and Ancestral Knowledge must be permeated by an ethical link, that is, these popular creativities must be crossed by the axiological network of environmental weavings.

We would also have the *Pop-Knowledge*, which are those crossbred, mulatto, caboclo knowledges, produced from the creative and respectful dialog between ancestral and popular knowledge of subaltern epistemologies with disciplinary constructions and philosophical and techno-scientific products of modernity and post-modernity. Through this type of knowledge, sustainability is thought as an open process to the recovery and improvement of traditional practices of resource use, integrating popular knowledge and the advances in knowledge and modern and post-modern techno-science, thus opening new paths in history (LEFF, 2010).

In addition to these, we would have the *Sustainable Sciences*, which, unlike the other types of environmental knowledge, do not arise from below, do not originate in popular daily life. These knowledges arise from the hegemonic sciences and technologies, from a process of greening of traditional disciplines favored by the advances in cybernetics and thermodynamics, which gave rise to a diversity of ‘environmental’ sciences and post-normal sciences in the last decades of the 20th century (environmental engineering, environmental architecture, environmental legislation, etc.).

However, for Leff (2010), these ‘environmental’ sciences alone would not constitute sustainable sciences or environmental knowledge. These new ‘environmental’ disciplines need to overflow into the field of ethics through the axiological net of environmental weavings, allowing them, in a respectful, assertive, and relevant way, to be open and articulate with practical knowledges, with marginalized voices, silenced words, repressed desires, ignored needs. Sustainable sciences are scientific and techno-scientific knowledges, appropriated and transformed (anthropophagy) in direct relation to their cultural conditions and contexts of application. In this way, Sustainable Sciences and Pop Knowledge would demonstrate, that, “science can also be seen as an ally for the construction of fair, free and democratic societies” (REIGOTA, 2012a, p. 514, our translation).

Knowing the processes and products that are developed through different types of environmental knowledge allows us to see that environmental weavings are not based on the foundations of an anti-modern and/or an-

ti-scientific dogmatism. The values that permeate this axiological network translate into “productive principles that give coherence to a new theory of production, which requires mechanisms that provide it with efficiency, feeding and guiding the advances and applications of science and technology” (LEFF, 2009, p. 225, our translation).

The environmental weavings are not an escape from the past, an essentialist defense of traditions, but the projection of new futures, full of sustainability, efficiency, diversity, and frugality. They are a sensual and appetizing fusion of popular knowledge with modern and post-modern knowledge. It is the affirmation of a will to Be-Becoming through miscegenations and hybridizations between natures, technologies, and cultures (LEFF, 2010). This axiological network and its correlated knowledges would adhere to science, “but not necessarily to its mechanistic, competitive and productivist assumptions” (REIGOTA, 2012a, p. 514, our translation).

The Environmental Weavings respect the epistemological specificities and incommensurabilities underlying different disciplines, cultures, and epistemes. The products of these weavings are marked by the sign of dialogical diversity and not by the sign of integrative totality (LEFF, 2010). Modern disciplines are problematized, transformed, hybridized, complexified, anthropophagized, not reduced to totalizing univocities. To environmentalize knowledge is to open it to the dialogue of knowledges and to root it in the territories and in history.

This perspective of emancipatory knowledge construction opens a rich and promising research program, which Enrique Leff (2010) calls *Environmental Anthropology*. According to the Mexican author (2010, p. 187, our translation), the environmental anthropology:

would be in charge of studying the potentialities of everyday life, cultural knowledge, and its possibilities of hybridization with modern and post-modern knowledge and techniques to increase the ecological efficiency, economic productivity, and self-management capacities of communities.

This decolonial research field would enrich environmental education programs investigating the ways and possibilities in which different knowledges, cultures and epistemes can hybridize, redefining cultural codes and enabling a better quality of life for traditional and/or marginalized communities.

ENVIRONMENTAL WEAVINGS IN EDUCATION

Different rationalities, ethical frameworks, political and economic interests configure different representations of the environment and, in turn, different types of Environmental Education. Sampaio and Wortmann (2014) think of EA as a multiple political and conceptual territory in which a variety of discourses compete penetrating people’s lives and acting in the manufacture of subjects with certain values.

Some training programs highlight technologist and economicist perspectives, in which technoscience and the internal dynamics of the market could remedy the ecological imbalances produced by economic growth. There are also ethical-normative perspectives that encourage, through punishments and rewards, changes in individual behavior as a mitigation of human impact on the planet. These utilitarian and short-term approaches tend to neglect and ignore the role of a comprehensive approach to the environmental issue as a fundamental basis for building collective capacities to move us towards sustainability.

If the mechanistic understanding of the world is generating the entropic death of the planet, any proposal for a merely technocratic management of the environment would be founded on a fallacy and doomed to failure (LEFF, 2009). According to Leff (2010), understanding that the environment is not something natural, but a complex social construction in which processes of different orders intervene, allows us to think of education as a promising praxis space to contribute to the reorientation of human cultural paths in dialogue with the planet’s ecological substrates.

Based on the proposal for paradigmatic change that we have explained, it is possible to project the Environmental Weavings as bridges that facilitate connections between different cultures, rationalities, epistemologies, and human dimensions, thus producing knowledge that does not renounce to reason, but that irrigates

and expands it with sensibilities and senses (LEFF, 2009). The inSURgent environmental educations promote the dialogue between the most diverse subjects of the curriculum to find alternatives and solutions to different types of problems, especially issues of daily school and community (REIGOTA, 2012b.). In this perspective, EA could be considered as a frontier thought, as a new epistemological space in the curriculum, in which the disciplinary thought remains in reference, but submitted to constant swallowings through other epistemes.

The Environmental Weavings would provoke answers and paths to Guattari's (1992) uneasiness, when he asks about "what could become the life (...) in schools (...) if, instead of conceiving them in the form of empty repetition, we strove to reorient their purpose in the sense of a permanent internal recreation" (p. 189, our translation). It also answers the criticism exposed by Sato, Silva, and Jaber (2018), when they state that the school curriculum is out of the students' lives, distant from the contexts in which they live or perceive. According to these authors, culture and nature are essential dimensions to be considered, since they bring the school curriculum closer to the curriculum of life.

In these Weavings or InSURgences, we find the call for interdisciplinarity, transdisciplinarity and transversality in EA, which allow respectful border crossings, in which no discipline has absolute hegemony or is determined by another. Environmental interdisciplinarity is considered in a political sense. Not simply as a neutral methodology for the contact and production of ever broader sciences, disciplines, and teachings, functional for capitalism.

Environmental interdisciplinarity also avoids ecologist or biologist reductionisms that, through an integrative and holistic vision, leave out the specificities of the material, historical, and symbolic processes that constitute the different styles of school subjects and social relations. "The various levels of practice not only do not need to be homogenised, connected to each other under a transcendent tutelage, but it is convenient that they enter into processes of heterogenesis" (GUATTARI, 1996, p. 48, our translation).

Moreover, the Environmental Weaving, in school practices, generates tools that "allow us to perceive the multicausality and the interdependence of phenomena" (LEFF, 2010, p. 259, our translation). The environmental challenges and problems are analyzed and understood as integrations of interdependent processes; not as isolated events, predetermined and closed unilaterally by history, biology, the market, or technology (LEFF, 2010). The sign of difference of environmental interdisciplinarity prevents the closing of the signifying chain into a dogma.

The InSURgences of Environmental Education recognize the contributions of science and technology, but also their limitations in fully addressing the complexity of environmental problems. Moreover, they perceive the insufficiency of the aesthetic strategies of conservationism aimed at raising romantic awareness about some ecological aspects. In this sense, Reigota (2012b) warns us so that "the biological conservatism that conservationism usually proposes does not turn into political conservatism, characterized by the biologizing view of society and human beings" (p. 51, our translation).

Guattari's (1996) social aspect of ecosophy is in open conflict with this kind of conservatism, because the Environmental Weavings would always be open to reinvent and respect the various forms of affective relationships, promoting alternative forms of family, labor, and demographic organization. Weaving the environment implies perceiving reality as a problematic and disputed space-time, under permanent construction, as a challenge in which citizens must act in search of new perspectives and experiences, in which nature and culture are articulated in the establishment of a world where many worlds fit.

Environmental Weavings project explicitly political educations, inviting us to think of them, according to Tristão (2013), as forces that will shape dynamic curricula, conceived as scenarios of cultural encounters and political struggles. These curricula would be under permanent construction, representing the transience of knowledge and the fluid substance of everyday knowledge and issues on which they are built. In turn, they would drive processes that involve the empowerment of the vilified populations, their capacity for self-management, and the strengthening of resistance to distinct types of oppression. This promotes, in this way, in school actresses, a commitment to the expansion of citizenship and direct and collective intervention in the search for alternatives for a life inspired by the common good (CARVALHO, 2006).

The Environmental Weavings stimulate the problematization in schools and communities of the meaning of being and living on the planet, thus re-signifying the existential territories. In this way, reconstitutions of identities that promote unprecedented multiplicities and solidary identifications are stimulated. For Guattari (1996), individuals and collectives must become solidary and increasingly different.

The axiological and epistemological foundations of Environmental Weaving have the potential to have direct repercussions on the daily lives of public schools in Latin America. These principles call for the breaking down of some current walls and boundaries in teacher training, educational research, and in public policies that support cross-cutting school projects, in which the political potential that an inSURgent representation of the concept of environment could bring is castrated.

The current separation and radical fragmentation of the environment, health, democracy, technologies, culture, gender, sexuality, among others, resulting from a narrow and reductionist representation of the environment, produces a saturation and dispersion of efforts, wear, overlapping and disqualification of activities, eroding and hindering transdisciplinary dialogues in school practices.

An environmental approach to school projects and practices focused on health, for example, would conceive that the deterioration of public health is related to ecological degradation and its social impacts. It would emphasize the understanding that many diseases are facilitated by conditions of poverty caused by a development model that favors capital maximization by putting economic growth ahead of human well-being.

Thus, from this perspective of Environmental Education, possibilities open to reflect on and understand the gestation of political subjects, who think of themselves as incomplete, in a feverish and constant openness. The main objective of this environmental education is to enable and expand the informed and judicious political and social participation of all the subjects of the educational process (REIGOTA, 2012b).

Understanding education as a political act legitimizes us to direct the pedagogical work, aiming at this profile of a utopian citizen. To walk with passion day by day, amid the gigantic emotional intensities and the structural limitations of public schools in Latin America, and to maintain hope and candor, requires a lot of breath, a challenging dream, a living utopia, in which a sensual conception of the world, of society, and of the human being is reflected. Thus, the proposed environmental subject would be able to embody the ethical and aesthetic dilemmas established by the societal crises, guaranteeing the preservation and the collective character of the planet and being co-author of a sustainable society project (CARVALHO, 2012).

OPENINGS

We open the discussion around an inSURgent conceptualization of the environmental issue from which new meanings may emerge that provide a sensual and dialogical redefinition of life and a democratic reconstruction of the world. This conceptualization is driven by the winds of self-management and autonomy, providing us with a colorful ethical horizon for the development of environmental educations politically projected from the communities and their territories.

The environmental educations thus constructed would work as sophisticated bridges for interdisciplinary and intercultural transits in school practices, through which hybridization, diversification and socio-cultural relevance of knowledge would be promoted, allowing a constant reinvention of the Latin American school. A school that would address in an integral way the contemporary societal challenges, stimulating the understanding of the planet's collective character and the defense of its ecological and cultural diversity.

Specifically, the theoretical network we presented allowed us to glimpse the challenges and the political and cognitive potential underlying the School Science Fairs, if worked from an environmental perspective. In the cartography of urban periphery schools (SÁNCHEZ, 2020) the Science Fairs presented themselves as processes that transcend punctual activities, managing to establish dialogues between different disciplines and cultures based on the daily problems of the school and the community and through the mobilization of a great density of affections.

To enrich these theoretical contributions, it remains for us to critically analyze the current regulatory frameworks, public policies, and structuring projects in the educational and environmental fields. Likewise, it is necessary to cartograph and rethink teacher training programs and courses. But, above all, we must walk through the school settings, get to know the environmental education practices and processes that are developed, especially in quilombola, indigenous, rural, urban periphery, and migrant communities. In these social sectors that have settled on the margins and frontiers of modernity shine potent signs of the future. Listening to its actresses and authors, promoting dialogues, weaving networks, contrasting, and discussing what is thought, what is written, what is said and what is done is a commitment. After all, it is in the daily lives of the Wretched of the Earth that we can find and weave the most valuable lessons of life and resistance.

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NOTAS

- 1 We can consider *Environment* as the conjunction of Guattari’s Three Ecologies.
- 2 The name given by the Cuban poet José Martí to the portion of the American continent that stretches from the Rio Bravo in Mexico to Patagonia in Chile and includes the Caribbean and its Antilles.
- 3 “This conception of vulgar Marxism of what work is does not dwell much on the question of the effect that the

product of labor has on the workers when they cannot dispose of it. It is only willing to perceive the progress of domination over nature, not the setbacks of society. It already shows the technocratic characteristics that we will find later in fascism. Among them is a concept of nature that departs with ominous foreboding from that of the socialist utopias prior to the revolution of 1848. Work, as it is understood from then on, resolves itself into the exploitation of nature, exploitation to which the exploitation of the proletariat is contrasted with naive satisfaction (...) The corrupt concept of work is complemented by that nature which, according to Dietzgen's expression, 'is there, for free, always available'" (BENJAMIN, 2013, p. 26, our translation).

4 The term is not related to the notions of mechanics or mechanicism typical of the Cartesian paradigm of modernity. In *Anti-Oedipus*, Deleuze and Guattari (2005) introduce the notion of machine with the intention of overcoming the traditional concepts of identity and subjectivity. They use this expression to represent human beings as permanent productive flows with creative potentialities. The fundamental fuel for these productive flows would be the desire. In these machines, several registers (biological, social, climatic, ideological, technological) would articulate in a non-deterministic way, through bricolage, establishing different configurations of being. Thus, human beings are best understood as agencements of desire or open multiplicities.

5 We realize that scientific nomenclatures are strongly influenced by patriarchal determinations. We use the term *Mulier* to highlight and open this questioning.

6 In the opinion of Enrique Leff (2009), social mobilization around the ecological debt "remains a charismatic ideological and political resource that, by naming historical inequities, fuels resistance to globalization and supports political actions for sustainability" (p. 122, our translation).

7 Gross Domestic Product: the sum of all goods and services produced in a region, during a given period.

8 "The concept of entropy is projected as a limiting law that nature imposes on market expansion and economic growth. In this way, it reveals the ultimate cause of the unsustainability of instrumental rationality that emerges from the constitutive failure of economic science. In turn, it establishes the link with the laws of nature that constitute the physical-biological, thermodynamic, and ecological conditions of a sustainable economy" (LEFF, 2009, p. 136, our translation). This consideration of the Mexican environmentalist does not correspond to a return to deterministic nature, which would contain and give absolute meaning to Being, but would establish a connection with the matter and its forces, "a link without which the symbolic order overflows into a delirious orbit" (p. 161, our translation).

9 An intercultural and decolonial horizon in Nuestra América seeks the construction of Plurinational States (CANDAU, 2013). The political constitutions of Ecuador and Bolivia, as well as various struggles, movements, and reforms in Mexico, Colombia, and Chile are moving in this direction.

10 Anthropophagy is a concept created and theorized by the Brazilian writer Oswald de Andrade, who gave birth to the Anthropophagic Art Movement in the 1920s. In the year 1928, Oswald de Andrade published, in the first issue of the *Revista Antropofagia*, the *Manifesto Antropófago (or Antropofágico)* advocating the cultural devouring of imported ideas and models, especially from European countries, to re-elaborate them autonomously, transforming them into a force to produce something original. The act sought to move away from the model/copy relationship that predominated in the Brazilian cultural panorama until then (QUEIROZ, 2011, p. 1).

11 The content of Santos' (2004) notion of Intercultural Translation represents solidary identifications and contacts between non-hegemonic cultures. Santos describes it as "a nonconformist attitude, on the part of the subject, towards the limits of his own knowledge or practice and the openness to be surprised and to learn from the practice and knowledge of others" (p. 86, our translation).

12 According to Bouffleur (2013, p. 7), gambiarra is the "act of improvising material solutions for utilitarian purposes from industrialized artifacts". It could also be defined as those cunning practices in which consumers creatively modify the uses designed for standardized product.

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