# Anthropophagic Projections for Intercultural Science Teaching on the Urban Margins of Latin America

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## Abstract

From the *interpretive perspective of the concept of culture* (Geertz) and the different postcolonial developments of cultural analysis (Bhabha; Hall; Garcia-Canclini), put in dialogue with the concept of the *arts of doing* (Certeau), discussions and a critical review of the scope, limitations and challenges of the cultural approach to the understanding and construction of science teaching processes in the urban peripheries of Latin America are generated. With this panorama, the concept of *Anthropophagic Interculturality* is projected as a dynamic that in the framework of *Epistemologies of the South*, would complement the notion of *Intercultural Translation* allowing the judicious and critical appropriation of scientific knowledge, while at the same time valuing other knowledge, communal, ancestral, hybrid and popular, putting them in contact and/or dialogue based on the desires and needs of the oppressed populations of the Global South.

*Keywords:* Latin America, Anthropophagy, intercultural science education, Epistemologies of the South, urban peripheries

## Projeções Antropofágicas Para Ensinos Interculturais de Ciências nas Margens Urbanas da América Latina

### Resumo

A partir da *perspectiva interpretativa do conceito de cultura* (Geertz) e de diferentes desdobramentos pós-coloniais da análise cultural (Bhabha; Hall; Canclini), postos em diálogo com o conceito de *artes de fazer* (Certeau), geram-se discussões e uma revisão crítica sobre o alcance, as limitações e os desafios da abordagem cultural para a compreensão e a construção de processos de ensinos de ciências nas periferias urbanas da América Latina. Com esse panorama projeta-se o conceito de *Interculturalidade Antropofágica* que, no marco das *Epistemologias do Sul*, complementaria a noção de *Tradução Intercultural* como uma dinâmica que permitiria a apropriação criteriosa e crítica dos saberes científicos ao mesmo tempo que valorizaria outros saberes, comunais, ancestrais, híbridos e populares, colocando-os em contato e/ou diálogo em função dos desejos e necessidades das populações oprimidas do Sul Global.

*Palavras-chave:* América Latina, Antropofagia, educação intercultural em ciências, Epistemologias do Sul, periferias urbanas

# Proyecciones Antropofágicas Para Enseñanzas Interculturales de Ciencias en las Periferias Urbanas de América Latina

**Resumen**

Desde la *perspectiva interpretativa del concepto de cultura* (Geertz) y diferentes desarrollos postcoloniales del análisis cultural (Bhabha; Hall; Canclini), puestos en diálogo con el concepto de *artes de hacer* (Certeau), se generan discusiones y una revisión crítica de los alcances, limitaciones y desafíos del enfoque cultural para la comprensión y construcción de procesos de enseñanza de las ciencias en las periferias urbanas de América Latina. Con este panorama, se proyecta el concepto de *Interculturalidad Antropofágica* que, en el marco de las *Epistemologías del Sur*, complementaría la noción de *Traducción Intercultural* como una dinámica que permitiría la apropiación juiciosa y crítica de los conocimientos científicos a la vez que valora otros saberes, comunitarios, ancestrales, híbridos y populares, poniéndolos en contacto y/o diálogo de acuerdo con los deseos y necesidades de las poblaciones oprimidas del Sur Global.

*Palabras clave:* América Latina, Antropofagia, educación intercultural en ciencias, Epistemologías del Sur, periferias urbanas

## Introduction

The theoretical weaving that we present results from the updating of some ideas and arguments, aligned to the field of cultural analysis, used to discuss the empirical material built in a cartographic[1] research in the field of science education, conducted in peripheral schools of Salvador, Bahia, Brazil (Sánchez Molano, 2020).

In his literature review, Gaudencio (2022) states that in addition to traditional scientism, there are three epistemological positions on science-culture relations in science education: universalism, multiculturalism, and epistemological pluralism. The universalist position (Southerland, 2000) argues that Western science is equally valid and potentially useful in all cultural contexts and should be taught without entering considerations of cultural politics. Multiculturalists (Baptista & Molina, 2021; El-Hani, Poliseli & Ludwig, 2022), from various positions, argue for cultural contact between the sciences and other knowledge. Epistemological pluralism (Cobern & Loving, 2000), on the other hand, proposes a demarcation of knowledges, claiming that, although no type of knowledge enjoys a higher hierarchical level, it is not politically wise to encompass all types of knowledge under the generic denomination of science.

We argue that in contemporary times the debate between these models tends to become circular and obsolete, mainly due to the inevitability of cultural contacts in science curricula and classrooms. We propose that the challenges of cultures in science education be approached from another angle, from a political approach that answers the following questions: 1. is the science patented as Western or hegemonic a science built solely on the symbolic and material inheritances and efforts of Western cultures?

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1 Cartographic research is understood as an unfolding and synthesis of the ethnomethodological and affective orientations of Roberto Macedo (2009) and Virgínia Kastrup (2019).

2. what kinds of sciences and knowledges are necessary to understand and act upon contemporary environmental and climate challenges? Why learn hegemonic "Western" science in the territories of the Global South? What are the socio-cultural characteristics of a given territory or community in the Global South? 5. If in contemporary societies and schools contacts between sciences and other cultures are inevitable, what style and direction should these intercultural encounters take? Reflection on these questions will give us arguments to direct cultural encounters in science education, where, without ignoring the cognitive horizons of cultural enrichment, the political values of social and epistemic justice prevail.

Proposals and discussions about intercultural education in science education have overlooked the hybrid and complex contexts of underserved communities in Latin American urban peripheries. Despite the current demographic and political representativeness of these hybrid and fluid settings, their actresses[2], their voices and practices, tend to be neglected in educational research, in the construction of public policies, and in curricular developments in science teaching and learning.

Concretely, the children, adolescents, and young people that nurture those school settings are described and understood through stories of *no future*. This understanding makes school practices generally restricted to the disciplining of bodies, which leads a majority percentage of these young people to exclusion from professional paths, ending up reproducing their daily lives of need, violence, and informality.

Marginalization, associated with hegemonic ways of organizing schools and the profound material deficiencies of public schools, hits these cultural contexts head-on, resulting in sterile contacts between knowledge historically organized into scientific disciplines and popular knowledge. The academic and social devaluation of the complexity and cultural and affective richness of these social contexts can also be reflected in the teachers' training and performance. Thus, science teachers in Latin American urban peripheries would tend to neglect and distance themselves from the necessary ethical and political considerations inherent to the pedagogical work in this context.

This textual weaving is proposed as a contribution to disturb these political and theoretical silences and thus deepen the debate on intercultural education in the teaching-learning of science in the urban peripheries of Latin America. With this perspective, we critically review some conceptual developments of cultural studies, discussing the possibilities and limits that are expressed in sociocritical, post-colonial, decolonial and post-structuralist perspectives for research and praxis in science education in the mentioned school contexts.

In this route, digging in our memories and Latin American symbolic repertoires, we developed the concept of *Anthropophagic Interculturalism*, strongly inspired by

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2  Because this article is an explicitly political academic text that considers and discusses different types of oppressions, we highlight its construction in the female gender. We know that it is the women of the Global South who bear the brunt of the different oppressions (class, gender, race, ethnicity) that are interactively generated in global capitalism.

the proposals of Epistemologies of the South and Critical Multiculturalism. We avoid falling into cultural determinisms, intercultural romanticizations and naiveté, identity essentialisms and colonialist rationalisms, to think about emancipatory possibilities from the science disciplines in urban periphery schools, and their desires and needs for social and epistemic justice. The study by Barbosa and Paulino (2021) shows us that anthropophagic approaches to science education have begun to gain notoriety and to delineate their contours, and it is pertinent to generate a careful analytical approach to the notion of anthropophagy.

## Scenarios of Marginalization and Hope

*It was because we never had grammars, or collections of old vegetables. And we never knew what was urban, suburban, frontier and continental. Anthropophagic Manifesto. Oswald de Andrade. Year 324 of Bishop Sardinha's Swallow (our translation).*

One condition for working with cultural analysis from a political perspective is to consider social, historical, economic, and ecological contexts. Cultural analysis is allergic to homogenizations, reductionisms, and totalizing recipes. For these reasons, we frame our proposals for insurgent interculturalities for science education in the urban peripheral contexts of Latin America. This does not mean that the conceptual tools we will develop are innocuous for other contexts. We also recognize that Latin American urban peripheries are heterogeneous, multiple, diverse, and complex. However, for theoretical purposes, it is necessary to present these contexts based on their common characteristics. Thus, it is valid to begin this textual weaving by answering the questions: what do we consider as Latin American urban peripheries? What are schools and education like in these peripheries?

Generically, we call *Latin America's Urban Peripheries* those dense, colorful, and noisy micro-geographies on whose slopes stack up little houses made of cardboard, tin, wood, and plastic, or even of masonry, where those excluded from the world live and survive, those repeatedly displaced, migrated, marginalized, and vilified (Zibechi, 2015), the damned of the earth. Sun-kissed and tragically rain-licked hillsides, full of parties and earth-colored people, located outside the abyssal lines that, according to Santos (2010), divide cities between civilized and savage zones. Rough urban zones that surround and frighten the neo-feudal castles of the elitized white zones.

These urban margins were built gradually, through chaotic processes of space occupation. There, in the opinion of Zibechi (2015, p. 51, our translation), the spatial design "is the result of an everyday practice, of those who, by inhabiting, generate the space while inhabiting it". They are territories inhabited by communities that can fit into what Hall (2016, p. 48, our translation) calls societies of "ideas out of place", separated, temporally and spatially, from anything that could place themselves, decisively, as their places of origin.

Canclini (1997) describes the population flows that originated the occupation of these margins as violent and traumatic transits from dispersed and isolated societies in rural communities, with traditional cultures and strong indigenous or African roots, to societies where a dense and heterogeneous symbolic repertoire is offered, renewed by the constant interaction with massive communication networks and technologies.

The development of capitalism, through neoliberal globalization, and the increasingly powerful penetration of social networks and information and communication technologies in the daily life of societies, would suggest, according to Sahlins (1997), that the social relations of the urban individual of the 21st century would become impersonal, utilitarian, individualized, disenchanted and destribalized. However, in the urban peripheries of Latin America we can perceive sociocultural processes of a communitarian and territorial type that prevented the constitutive migrations of these urban margins from becoming propelling vectors of the classic urban proletariat.

The forms of modernization that have thus been erected are the result of the transhistorical coexistence of different significant elements and processes in these spaces. There, processes of hegemonic or Western rationalization and ancestral styles of subjectivation have merged in a radicalized, conflicting, but at the same time expanded and expansive manner (Retondar, 2008). In this sense, Zibechi (2015) argues that the extreme complexity of cultural dynamics in popular sectors of Latin American cities allows the construction of social relations different from hegemonic ones, although not assimilable to ancestral ones.

These hybridisms, for Canclini (1997), would represent the clearest indicators of planetary postmodernity, not understood in an evolutionary and linear way, as an overcoming and deconstruction of modernity placed in European theorizations, but as the emergence of multiple vernacular modernities in postcolonial territories. The communities and territories of urban periphery "mark the end of 'modernity' defined exclusively in Western terms" (Hall, 2016, p. 57, our translation). This particularity, which makes them representative of a way of life characteristic of contemporaneity, would indicate that these trans-territories have a long history ahead of them.

Latin American urban peripheries have been almost permanently and structurally disconnected from the formal economy, leading to the dispersed development of affective and solidarity networks, built from below, with a pragmatic tendency to prioritize use values over exchange values[3] (Zibechi, 2015). This allows their communities to survive, adapt, and sometimes creatively subvert the consumerist and homogenizing demands of capitalism.

In addition to this subversive potential, peripheral urban communities preserve valuable traditional knowledge while creating 'other knowledges', fruits of intercultural encounters and the struggle for life in harsh conditions. This 'other knowledge' constitutes

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3  Marxist theory, as interpreted by Boufleur (2013), says that every labor product has an intrinsic value given by the need that this product satisfies or solves, which is its use value. The exchange value is acquired by the product when it becomes a commodity and it includes other aspects (labor, surplus value, prestige, fashion, aesthetics, supply, demand, etc.), in addition to the real need it satisfies.

the most precious wealth of the 'weak', the possibility of resistance of those hundreds of millions of human beings that have been adjectivized as 'lumpen', 'marginal', 'disposable', 'errors', 'deviations', by the classical theories that tried to explain social processes and human subjectivities.

For Certeau (2013), in the world of the oppressed the lack of means of information, economic resources, technologies, and vulnerabilities of all kinds require an addition of cunning, creativity, a sense of humor. These additions translate into knowledge that is massively produced and spread in the peripheries of the peripheries of global capitalism in the form of rage, herbs, smoke, and graffiti, of solidarities, syncretism, *samba*, *cordéis*, rap, and funk.

They are popular knowledge with significant and unexplored potentialities for the construction of school processes of science teaching thought from multicultural emancipatory perspectives. As suggested by Bhabha (2013), "it is with those who have suffered the sentencing of history, subjugation, domination, diaspora, displacement, that we learn our most enduring lessons of life and thought" (p. 276, our translation).

Zibechi (2015) states that, in contemporary times, the slums are the new strategic geopolitical scenarios, because in them some of the most important fractures that cross capitalism converge: of race, class, ethnicity, and gender. Zibechi (2015) exposes that, even for progressive and democratic political sectors, this emancipating potential of Latin American urban peripheries is still not clear:

> (…) much of critical thinking seems to be getting it wrong when trying to understand the realities of Latin America's urban peripheries. Classist categories, blind trust in the forces of progress, and the application of concepts forged for other realities have ended up distorting the reading of these spaces. There is insistence on considering poor neighborhoods as a kind of anomaly, almost always a problem, and rarely as spaces with emancipatory potentials (Zibechi, 2015, p. 26, our translation).

Santos (2009) emphasizes that, in current times, theories that wish to be considered radically critical must contemplate and seek an emancipation of "all 'disposable' populations of the Global South", because, if there are "non-citizens" in our lands, social peace will be impossible.

School institutions located in the scenarios described above add another level of complexity to cultural analysis. In contemporary times, we can perceive a growing difficulty in locating the school institution and its typically intended functions of sociocultural reproduction (conservative), cultural transition (liberal), and/or social transformation (critical-emancipatory) within a physical space confined between walls. Due to migrations and the increasing influx of information and communication technologies, and other powerful cultural artifacts, these functions, which seemed to find a privileged place in the school institution, have dissolved and are spreading to other symbolic and virtual circuits, which have become important in the play of identities and social relations.

Under these contemporary pressures, which have intensified in times of the Covid-19 pandemic, the school seems to have lost its centrality as an axis of social disciplining. It takes on, instead, new challenges related to the emancipatory articulation between different dimensions of knowledge, between various disciplines, and between multiple cultural models. For Certeau (2016), the function of cultural and epistemic articulation "is a limited task, but it makes the school participate in the much broader work that today designates 'culture'" (p. 130, our translation).

Redefining the school in the contexts described above, we could consider it as a complex and fluid place where diverse cultures and expressions make contact, fight, erase, mix and multiply constantly. The Latin American urban periphery school resembles, thus, those spaces of porous and permeable borders in which, according to Canclini (1997), all the traditional categories and binarisms of modern thought crumble, making it necessary to claim alternative and hybrid epistemic looks that condense into new theoretical and methodological elements for the interpretation of its dynamics.

From a hopeful perspective, McLaren (1997) argues that contemporary schools are being permeated by decolonized memories, which emerge at the margins of Western culture and will affect the classrooms of the future. Memories being witnessed by postcolonial modernities, which constitute another wisdom coming from those who "witnessed the nightmare of racism and oppression in the banal light of everyday life" (Bhabha, 2013, p. 402, our translation).

Assuming the above, we consider the school communities in the urban peripheries of Latin America as social groups with remarkable relevance for the construction of intercultural science teaching processes with an emancipatory bias. There, in these scenarios, it is possible to perceive the presence of symbolic repertoires and diverse histories. Moreover, in the urban peripheries of Latin America, significant tensions and symbolic and economic disputes are produced between urban growth, the logic of development, the struggles for a dignified life, and the preservation of sensitive ecosystems. Therefore, we would expect to find in these schools sophisticated and insurgent linguistic and affective transits between the symbolic patrimonies of the different disciplines organized in the official curricula, the heterogeneous knowledge, originated in the traditions, struggles and creativity of the people, and a cosmopolitan urban culture.

## Identities and Cultures are Not, They are Being...

*Tupi, or not tupi that is the question.*
*Manifesto Antropófago. Oswald de Andrade. Year 324 of Bishop Sardinha's*
*Swallow.*

To develop a proposal for an emancipatory interculturality for science education in *Nuestra América*[4], it is essential to understand what culture is, how culture works, and whether we should continue to think of culture in the singular or whether it would be more appropriate to think of cultures.

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4  Cuban poet José Martí gave this name 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.

The already old modern approach to the concept of *Culture* in which it "would remain the means thanks to which a strongly hierarchized society maintained a code of defined criteria and ensured its homogeneity on the basis of a relatively stable elite" (Certeau, 2016, p. 103, our translation) began to enter crisis in the second decade of the last century. In the distinct fields of the human sciences, the foundations of monocultural epistemology were attacked. This theoretical movement became known as the *linguistic turn*, whose main thesis focused on and assumed "the impossibility of logically and ontologically grounding language outside of itself" (Veiga-Neto, 2003, p. 11, our translation). Therefore, there would be no universal metalanguage or culture, from which all other languages and cultures could be analyzed, interpreted, and evaluated. We would be hopelessly stuck in the contingency of our languages and cultures, because through them we absorb, distort, communicate, and create realities.

> Language is always contingent, and that is why there is a margin of indeterminacy in the things said, which does not compromise the possibility of meaningful discourse, but rather opens the possibility to always continue the conversation (Veiga-Neto, 2003, p. 12, our translation).

These theoretical perspectives acquired a social and planetary body in the second half of the last century. The national liberation struggles, which led to the fall of the last colonial empires; the accentuated migratory processes from the 'third world' to the 'developed countries'; and a growing and accelerated global connectivity, due to the technological development in communications, made it untenable to continue thinking about Culture in the singular. From then on, *Cultures* would appear in theoretical analyses and in political struggles.

The interpretive look at the cultural phenomenon is based, according to Geertz (2003), on the assumption that human thought is social and public, because thinking and communicating consists of a traffic of meaningful symbols that can be words, gestures, and anything that is used to impose meaning on experience. According to Geertz (2003), we are animals tied to webs of meaning that we ourselves weave. Cultures would be conformed by the complex juxtapositions of these webs of meaning, which, according to Certeau (2016), would not be the transparency of the world, but rather symbolic spaces that allow socialization.

The symbol systems that define objects, actions, processes, and structures are not intrinsic to them. These systems are historically constructed, socially maintained, and individually applied (Geertz, 2003), so that "the explanation of their properties must be sought in those who impose meaning: men living in society" (Geertz, 2003, p. 334, our translation). Objects, actions, processes, and structures do have conditions of existence and real effects outside the discursive and cultural sphere, but it is only in the realm of the symbolic and subjected to its conditions, limits, and modalities that they make sense.

It is through social interactions that the individual, in the different scenarios of life, encounters symbolic networks, articulating them and generating his cosmovisions and existential coordinates. Thus, these symbolic repertoires give individuals the most

credible and comforting explanations about themselves and the universe, justifying the expression and use of their vital energies (Willis, 1991); and, in turn, they give "each people its possible world of happiness and reality" (Sahlins, 1997, p. 48, our translation), which suggests that the experience of the world and the existential horizons are neither fixed nor homogeneous for different human communities and their individuals.

Bringing these ideas to the educational field, we can think that teachers and students are actresses in narrative plots, socially and historically constructed (Mclaren, 1997). These narrative configurations, depending on the circumstances and events that school actresses experience during their existence, are reappropriated in particular, creative, and unpredictable ways. Certeau (2016) states that the cultural dynamic, rather than in receiving, consists in exercising the action by which "each one marks what others give him to live and think" (p. 143, our translation).

The symbolic repertoires and the flow of discourse that make up cultural forms establish and make available subject positions, and identities are points of temporary attachment of the individual to these positions (Hall, 2000). Identities "are the result of a subject's successful articulation or attachment to a particular stream of discourse" (Hall, 2000, p. 112, our translation). Bhabha (2013, p. 84, our translation) expounds that the issue of identification is the production of an image and "the transformation of the subject in assuming that image".

According to Hall (2000), this process of the subject's articulation to an image is not entirely deterministic or one-sided. For him, an effective suturation of the individual to a subject position requires not only that the position be created, and the subject be summoned, but that the subject invests in that position. Therefore, we consider that, for cultural analysis, it is necessary to preserve, with appropriate updates, three emblems of modern thought: power, agency, and subject.

It is worth noting Peter McLaren's (1997, p. 6, our translation) explanation of the contemporary transformation of the category 'subject': "the heroic, self-centered subject, the fruit of modernity, has been replaced by a mobile and dislocated subject, formed by shifting combinations of discourses and a bricolage of signifiers, emerging from the incandescent palimpsests and competing currents of discourses". For Hall (2000), this decentering of the subject does not mean its destruction, since the centering on discursive practice cannot work without the constitution of subjects with apparatuses of subjectivities capable of reacting and producing responses to the positions to which they are summoned.

This characterization of the interpretive approach implies that identities and cultures, far from being monolithic, manifest a rich dynamism and diversity; and that this heterogeneity cannot be understood from metaphysical considerations or arbitrary hierarchizations.

Thus, we can derive, according to Hall (2000), a conception of strategic, positional, hybrid and fragmented identity that does not mark a stable core of the *Self* that would pass from beginning to end, without any change, through all the eventualities of history.

Nor does it refer, thinking of culture in the singular, to the "collective or true *self* that hides within many other, more superficial *selves* (...) that a people, with a shared history, hold in common" (Hall, 2000, p. 108, our translation).

The interpretive and relational perspective of the concept of culture allows overcoming the dichotomous game of encapsulation of identities and differences, by showing how the *ego* loses its meaning when the *alter* is eliminated. For Hall (2000, p. 110, our translation), "it is only in relation to the other, from the relation to what one is not, (...), that the meaning (...) of any term, and thus its identity, can be constructed".

For Bhabha (2013), in the process of cultural self-affirmation, any culture needs to make use of foreign symbolic materials, to explain itself, to communicate. One is always in relation to something, which cannot fully be a double, but which cannot fully be an opposite either. Culture, "to be distinctive, meaningful, influential and identifiable, has to be translated, disseminated, differentiated, interdisciplinary, intertextual, international, interracial" (Bhabha, 2013, p. 223, our translation).

Cultures and identities, in this approach, are highlighted as unstable and dynamic phenomena, marked by continuous relations between discourses and significant actors amid political struggles and material conditions of existence. Viewing culture through this dynamic and relational look enables the analysis of the different forms that intercultural processes take. In this way, it makes it possible to identify and question the hegemonic meanings and senses that maintain and attempt to naturalize social hierarchies; and, furthermore, it makes it possible to perceive and strengthen the forms that give the seal of insubordination and justice to sociocultural dynamics.

The interpretive perspective of culture also favors a more complex approach to the relations between discourses, symbolic systems and other aspects of the social sphere that determine the contexture of human experience. In this sense, we can find in Canclini (1997) the analysis of the intricate networks and interrelations that have been configured between symbolic heritages and economic, historical, and political factors in Latin America.

For this reason, it is also necessary to study the cultural phenomenon as a space of material struggle between classes, ethnic groups, and other social categories (Canclini, 1997). Reinforcing this idea and bringing it into the field of education, McLaren (1997) states that a focus on material and global relations of oppression is necessary, thus avoiding the reduction of the problem of multiculturalism to simply a matter of attitude of mind, or a case of textual disagreement and discourse warfare.

In contemporary times, in the marginal zones of Nuestra América, the dense dynamism and the extreme complexity of intercultural relations are decanted into a great fluidity and dispersion of identities. Thus, we can think of the question of identity in slums and suburbs as a markedly historical problem that disperses and decentralizes the search for origins and makes it difficult to freeze identities in a foundational myth. Considering this, Hall (2016, p. 56, our translation) invites us to produce our place in space-time: "Culture (...) is a production. (...) We are always in the process of cultural formation. Culture is not a matter of ontology, of being, but of becoming".

## Interculturality, Life or Death of Cultures?

Having exposed the multiple, diverse, contingent, unstable, and dynamic nature of the cultural phenomenon, it is important to comment on the various ways in which intercultural contacts and relations occur and can be politically interpreted. For this, it is possible to highlight the Indian Hommi Bhabha as one of the main representatives of post-colonial[5] criticism, having developed in the 1980s the concept of Cultural Translation in his book "The Place of Culture" (Bhabha, 2013).

There, translation is seen as a general activity of communication between cultural groups. For Pym (2014), this concept, as worked by the Indian author, gains relevance in contemporary times, since it refers to profound problems arising from the increasingly fragmented nature of societies and the frequent cultural encounters, promoted mainly by globalization, migration, and the powerful role of information technologies.

In a celebratory reading of hybridizations and cultural encounters, Sahlins (1997, p. 133, our translation) states that in contemporary times:

> humanity, due to the cultural flows potentiated by economic and technological integration, begins to effectively coincide with the human species. But at the same time, as they inflect locally, these flows diversify according to particular schemes, producing the world culture of cultures, marked more by an organization of diversity than by a replication of uniformity.

To work the concept of Cultural Translation Hommi Bhabha is inspired by Walter Benjamin's essay "The Task of the Translator" [1923] / (2008), thus generating an analogy between the categories culture and language, through the appropriation and expansion of the concept of "linguistic translation", outlined by the German-Jewish philosopher. The concept of Cultural Translation helps us think about situations in which the points of departure and arrival of identities and symbolic systems are never stable or completely separate. Thus, the impossibility of locating an initial identity or text and fixing a final and definitive identity or text remains (Pym, 2014).

In his essay "How the new enters the world. Postmodern space, postcolonial times, and the trials of cultural translation", Bhabha (2013) wonders whether the migrant remains the same through the migration process or instead integrates fully into the new culture. Should translation promote a standardization or a diversification? Bhabha

5  Boaventura de Sousa Santos (2022) critically exposes some distinctive characteristics of postcolonial theory. The Portuguese intellectual states that post-colonial studies correspond to one of the perspectives that revolve around the consequences or repercussions of European colonialism on contemporary ways of thinking and acting, both socially, politically, and culturally. In this perspective, authors such as Gayatri Spyvak, Hommi Bhabha, Edward Said, Ramachandra Guha, Salman Rushdie, Achille Mbembe, who dealt especially with colonialism in Africa and Asia, stand out, although, due to the characteristics of their productions, Nestor García Canclini and Aimé Césaire could also be included in the group. Postcolonial authors have been strongly influenced by Eurocentric European intellectuals representing post-structuralism, deconstruction, and psychoanalysis. Postcolonial studies have developed after the independence movements of the 1960s, questioning the cultural foundations of Eurocentrism in parallel with the claim of local or national contributions to global knowledge. Postcolonial theorizations are particularly interested in the discontinuities or changes that were generated by the independence processes.

(2013) tells us that this liminality of the experience of migrants and literary texts is not resolved, as standardization and diversification are ambivalently fulfilled in the survival of migrants or artistic creations.

Cultural Translation would thus be a process that emphasizes the intermediary position of the translator or migrant, the hybridity and fragmentation that characterize this position, the problematic nature of crossing borders, the creation of an unstable and dynamic third space, and the fluid and creative tendency of languages. For Bhabha (2013, p. 359, our translation), "translation is the performative nature of cultural communication". Thus, the notion of Cultural Translation allows us to understand the triple process of standardization, mixing and fragmentation that happens in intercultural dynamics and language developments.

The concept of translation, grounded in the interpretive approach, works as a heuristic tool to think about difference, from a non-essentialist position. According to Bhabha (2013), translation leaves unsupported the assumptions of cultural supremacy. To do Cultural Translation would be to experience walking across a bridge, a bridge that represents, according to Michel de Certeau (2013, p. 196, our translation) "the transgression of the limit, disobedience to the law of the place, the departure, the injury of a state, the ambition of a conquering power, or the escape from an exile, in any case the betrayal of an order".

Therefore, it is inferred that both languages (Benjamin, 2008) and cultures (Bhabha, 2013) are multifaceted, decentralized, and open entities, with an uncontrollable tendency towards contact, cleavage, and hybridization (Graça, 2015). Thus, it is considered that a mere imitative or imposing transfer of meanings is not possible, since any attempt of transparent imposition of meaning generates resistance from the alterity, producing a third hybrid space of confrontations, estrangements, fusions, and dialogues.

In the act of translation, when one tries to objectify a cultural meaning, there is always a creative alienation from the original. The original is inevitably modified. From these transformations arise third spaces full of instability and uncertainty where the possibilities of the new are expressed.

> A work exists precisely because of the interstice or the margin it opens, without ceasing to be dependent on social, psychological, or linguistic laws. It insinuates an addition, an excess, and therefore also a fracture in the systems from which it receives its support and its conditions of possibilities. A light is produced in a constructed space. It shifts its balance, without, however, escaping from it (Certeau, 2016, p. 244, our translation).

A space of possibility and hope is generated from the positions of the marginalized, which results in political and discursive strategies that produce networks of subaltern signification (Bhabha, 2013). The unfathomable nature of this third space could be understood from the perspective of Kastrup and Passos (2013), for whom translating is "getting in touch with the affective, intensive, intuited, and non-verbal dimension of the text" (p. 275, our translation).

Translating, then, would be a *becoming*, understanding *becoming* as "a capture, a possession, a surplus, never a reproduction or an imitation" (Deleuze & Guattari, 1990, p. 25, our translation). Contact or translation thus becomes a condition for the existence of languages and cultures as transitory entities that continuously escape from a fixed and static representation.

In intercultural contacts there remains a historical, affective, and experiential specificity of the sign as a repertoire of meaning that has no equivalent in another language or symbolic system. This permanence is referred to in Benjamin (2008, p. 78, our translation) as follows: "in all languages and their constructions there remains, in addition to the communicable element, a non-communicable element". Without this condition, the process would be reduced to simple appropriation or mixture, in which difference would be dissolved, erasing any sign of creation.

From the above we infer that Cultural Translation is the phenomenon resulting from cultural contacts in which each cultural system tries to measure, evaluate, and understand the practices and meanings of other systems; and, in turn, tries to show, explain, and compare itself in other symbolic coordinates. When translated, concepts and human experiences are transformed into equivalents in other linguistic systems, with inevitable losses, continuities, mixtures, and gains of meaning.

Thus, the product of Cultural Translation is a hybrid and fragmented subject. In this new plural subject, there are marks or traces that do not blend, that are incommensurable in other languages or cultures; there are also other fragments that blend, like milk and coffee, and finally there are other fragments that are acquired from the new culture, from the new language and that do not make sense in the original culture.

In this way, the migrant is never the same, but also never completely the other. From the defendant we can understand that culture is always created and emerges as a problem in the areas of symbolic and epistemic borders, there where "meanings and values are misread or signs are misappropriated" (Bhabha, 2013, p. 69, our translation). Cultures proliferate at their margins (Certeau, 2016).

From the interpretative approach to the concept of culture, it is possible to refer to the urban periphery school in Latin America as a third hybrid space of intercultural encounters and relations, where the concept of cultural translation, according to Bhabha (2013), would make sense to describe and explain the contacts between the sciences disciplined in institutionalized curricula, the sparse cultures of ancestry and popular knowledge, and also a cosmopolitan urban matrix. The peripheral schools could be understood as laboratories of cultural translation, and science teachers and their students, in the teaching-learning processes, would experience the same dilemmas as the translators and the migrants.

The possibility of effective cultural translation requires a basic substratum of shared knowledge. In this sense, because of her life experience and professional-disciplinary training, it is up to the science teacher to be the engineer or cartographer who finds

or builds the bridges from the beaches of the knowledge of the cultures in which her students participate to the shores of historically disciplined scientific knowledge and, through these bridges, promote sophisticated translations.

Moving away from the celebratory and perhaps naturalizing readings of intercultural contacts that characterize some strands of the postcolonial perspective, Hall (2016) assumes a more critical and militant reading, close to a decolonial[6] perspective. In Hall's (2016)[7] view, cultural translation is a forced, unfair, and painful process that does not guarantee a happy ending, nor utopias of social and epistemic justice, nor the harmonious and peaceful coexistence between cultures.

Similarly, Boaventura de Sousa Santos (2010) and his politico-cognitive proposal of *Epistemologies of the South*[8] distance himself from the understanding and scope of the postcolonial concept of cultural translation. For him, an intercultural dialogue must begin with the assumption that cultures have always been intercultural and with the understanding that exchanges and interpenetrations have always been unjust, highly unequal, and inherently hostile to an intercultural dialogue with emancipatory and decolonial pretensions.

Santos (2004), in his *Epistemologies of the South*, works on the concept of *intercultural translation*, which in this text we will call *solidarity*, concerned with the contemporary dynamics of homogenization and domination promoted by neoliberal globalization. In this sense, he also seeks a global response or resistance, searching for an ethical foundation that promotes intercultural, political, and epistemic contacts between social movements and different categories of oppressed people from the Global South. However, in the Portuguese author's theorization, we consider that it is still unclear how the cultural contacts between the popular knowledges of the Global South and the progressive aspects of Western modernity should be projected.

We argue, therefore, that *Cultural Translation*, as constructed by Bhabha (2013), as a general activity of communication between cultural groups, works best as a descriptive and explanatory category of established intercultural relations. However, although it

6  From Santos (2022), we can rescue the following characterization of decolonial studies. They, to some extent, respond to what is perceived as the shortcomings of postcolonial studies. Decolonial studies emerged in Latin America during the 1990s, with authors such as Aníbal Quijano, Silvia Rivera Cusicanqui, Enrique Dussel, Walter Mignolo, Arturo Escobar, Catherine Walsh, Ramón Grosfoguel, and Nelson Maldonado. According to these authors, colonialism is the logic behind the establishment and development of Western civilization from the Renaissance (16th century) to the present day. For this reason, their analyses emphasize the continuities or mutations of colonialism after the independence struggles. Decoloniality highlights the fact that culture and political economy are intertwined, keeping a predominant focus on colonialism in the Americas, promoting the expression of subaltern voices, which is why its epistemological critique of Eurocentric modernity seems more forceful than postcolonial critique. Decolonial studies have been heavily influenced by Marxism (dependency theory or world-system theory), even though these studies claim to decolonize it.

7  There is a group of authors, including Stuart Hall, Frantz Fanon, and Boaventura de Sousa Santos, who in some classifications are identified as postcolonial, while in others they are referred to as decolonial. For this reason, we infer that the boundary between the two perspectives is blurred and fluid, and that each perspective is internally diverse.

8  According to Santos and Meneses (2009) "*Epistemologies of the South* are the epistemological interventions that denounce the suppression of many forms of knowledge belonging to colonized peoples and nations, valuing those knowledges that have successfully resisted and investigating the conditions of a fair dialogue between knowledges" (p. 13, our translation). They are also "an invitation to a broad recognition of the knowledge experiences of the world, including, once reconfigured, the knowledge experiences of the Global North" (p. 18, our translation).

offers possibilities for the creation of third spaces, we consider that the Indian author does not propose horizons for the use of these spaces in the construction of kinder futures.

Thus, cultural translation, in an approach that overcomes its post-colonial limitations, could be understood as an emancipatory political device, if guided by a new kind of ethics that moves away from liberal, playful, nihilistic, or celebratory perspectives that reduce the cultural question to games of discourses; or that perceive the teaching-learning processes of the sciences under the logic of *knowledge for knowledge's* sake, removing political considerations from the process.

It is necessary to move towards a type of intercultural translation in science education that promotes pleasurable, enriching, and subversive contacts between cultures in social sectors where there is intense traffic of meanings, needs, shortages, and affections. There, where "our 'lands and peoples' are characterized by the indelible mark of colonization and slavery" (Hall, 2016, p. 50, our translation).

## The People, Creator of Culture

*Culture is a dark night in which the revolutions of a moment ago sleep, invisible, enclosed in practices, but fireflies, and sometimes great night birds, cross it; appearances and creations that outline the chance of another day (Certeau, 2016, p. 239, our translation).*

Certeau (2013) reinforces us that the consumption or appropriation of symbols, values, ideas, and discourses by social actresses are not passive actions to adapt to the idealized orientations of institutionalized or traditional powers and symbolic patterns. On the contrary, they constitute a signifying weaving, heterogeneous on the symbolic and affective planes, which allows them to create other indeterminate practices. These practices express themselves in tactics, murmurs, accents, and ways of doing, offering hopes that through the cracks of imposed codes, through the syncretism of symbolic repertoires, a variety of underground activities and clandestine subjects put in check the established "truths" (Certeau, 2013).

Some of these popular creations could be described as a set of practices that assume a character of resistance by the dominated ones, in an attempt not to lose their existential references, even if they are not aware of the meanings of these untamed practices and do not structure them through a public and coherent discourse. They represent the space of dignity and humanity where the oppressed, the mad, the witches have taken refuge after losing their jobs, their religions, their lands, their voices, in short, their most cherished material sources and symbolic coordinates. There, according to Sahlins (1997), the dreams and desires of the oppressed for better times are expressed.

The *Arts of Doing* or everyday tactics could be defined as those cunning practices in which consumers creatively and pragmatically modify the uses designed for products, models, or norms. They make a new production under their own logics with materials

produced and brought in from outside. They function "in the way the colonizers' language was learned by the colonized, in another register, with ironic or distorted meanings" (Certeau, 2016, p. 111, our translation).

Examples can be found in abundance in our urban peripheries, where products that are designed or projected according to a certain standard or objective, when they reach the hands of the people, are creatively reappropriated. Every law, norm, curriculum, merchandise, official language, discipline, religion, music, can be reappropriated by the people, enabling them to use it for their own purposes, following their own physiology, and not the molds of hegemonic rationality.

Ingenious practices or *gambiarras*[9] are made from the creative reappropriation of designs or articles designed for supposedly homogeneous and passive consumers, in a supposedly seamless social system. But realities are not transparent, they are chaotic and murky, and capitalism is neither harmonious nor fair, it is full of interstices and holes. The weak, the silenced, the oppressed, in the impossibility of producing hegemonic meanings, also have their own forms of productivity and resistance, which are more visible at the margins of a strongly excluding social cartography.

On the side of the weak and oppressed, it is possible to perceive the exercise of capillary resistances and productivities, which are not strategic, but tactical. These resistances emerge from below, with a communal flavor, without guiding teleologies, reusing apparently disposable materials, remnants of knowledge from other times and geographies that, if accompanied by emancipatory horizons and axiologies, could make a cunning bricolage with the best products of modernity. Hall (2016) asserts that these other trends have the capacity to subvert "the global cultural onslaught perpetrated against weaker cultures" (p. 57).

Here, however, is a challenge for the analysis of popular daily life. These Arts of Doing or *gambiarras*, in Certeau's (2013) perspective, have neither an ethic nor a guiding teleology and are not directed to some predetermined or established a priori end. They respond to the instant to solve needs and problems, with the logic of surprise and opportunity. They do not intend to standardize and structure themselves into a long-term strategy. They are unsubmissive to any institutional or theoretical construction. They oppose even the progressive and humanistic developments of modernity and post-modernity, which have been incorporated into institutions, public policies, constitutions, and legislations that generate breaches of resistance and opposition to the different oppressions. The *gambiarras* and Arts of Doing, by generating oppositions or ambiguous appropriations of these progressive policies and institutions, often succeed only in reproducing or reinforcing the hegemonic system.

Therefore, the importance of a detailed, analytical, and questioning look at these everyday tactics in educational research and practice. Recognizing their transformative and counter-hegemonic potential implies establishing an ethical link that offers criteria for their political use. Thus, to distinguish, in school settings, the behaviors and

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9  According to Boufleur (2013, p. 7, our translation), *gambiarra* is the "act of improvising material solutions for utilitarian purposes from industrialized artifacts".

knowledge that effectively constitute resistance to hegemonic systems is one of the great challenges of researchers and practitioners of everyday school life. Willis (1991, p. 235, our translation), taking this precaution, warns: "(...) at best, everyday life, like art, is revolutionary. At worst, it is a prison (...)".

If we glorify the everyday for its own sake, if we reverence, devoid of all ethics, the knowledges of experience on an altar of demagogies and populisms, if we celebrate a conservative and paralyzing multiculturalism in which everything remains the same, there is a serious risk that our energies and good intentions will be easily manipulated by the hegemonic powers. In Canclini's (1997) view, recognizing the relatively independent role of everyday practices and their authors, and therefore their specificity as an object of study, does not imply forgetting their subordinate position. Romanticizing and essentializing the everyday and the popular would produce the imprisonment of the social margins in their realities of oppression, permanently separating them from progressive aspects of humanity.

Canclini (1997) states that the popular is never pure, nor is it always good, progressive, or revolutionary. He comments on how in the popular classes it is possible to find extraordinary imagination to build their houses with waste in a suburb and provide technical solutions suitable to their lifestyle. However, he emphasizes that these results hardly compete with those practices that use historically validated and disciplined knowledge, employ certified professionals, and have vast material resources. The challenges of popular, ancestral, and everyday knowledge lie in making their products, arts, and techniques sophisticated; expanding them through institutional education; and refining them through systematic research (Canclini, 1997).

Continuing this deconstruction of the popular, Reigota (2011) comments that popular cultures are characterized by hybrid processes, and their daily lives are full of harmful presences, such as drug trafficking, dogmatic religious attitudes, or renunciation, etc., which tend to become representative ingredients for the reproduction of the hegemonic. For Bhabha, the analysis of representation strategies in marginalization scenarios is deeply challenging, because they express themselves in conflicts that go far beyond the simple oppressor-oppressed dichotomy. According to this author, in these sectors, "despite common histories of deprivation and discrimination, the exchange of values, meanings, and priorities may not always be collaborative and dialogical, but may be deeply antagonistic" (Bhabha, 2013, p. 20, our translation).

From a different perspective, Hall (2016) is critical of the political inconvenience of naturalizing, essentializing, or idealizing cultural contact and hybridity. He states that cultural criticism cannot forget that syncretism, hybridity, or transculturation from the margins and peripheries have always taken place and continue to be delimited by radically asymmetrical power relations. For this author, while we hold on to the slippage of meaning, differentiation, and specificity, we cannot forget the defining moments of conquest, colonization, and slavery, and their overwhelming and painful force in the proliferation of cultural difference.

McLaren (1997) helps us to synthesize the complexity, the paradoxes, and the challenges of these discussions about interculturality, bringing them to the field of education, warning us not to fall into essentialisms and idealizations of both cultural contacts and hybridizations and teleological narratives of cultural purity and celebrations of virginal origins. The challenge, for the cultural researcher and/or the engaged science teacher, is to try to see, as recommended by Santos (2006) and pedagogue Catherine Walsh (2017), what are the small hopes, the clues and possibilities that exist at the margins, that are signs of the future and that are discredited because they are not very visible.

## Anthropophagic Interculturality

We aim at a perspective that, within Epistemologies of the South, complements and enriches Boaventura de Sousa Santos' (2004) notion of *solidarity intercultural translation* (dialogues between knowledges and cultures of the South), in the sense of also establishing an orientation for intercultural contacts between hegemonic and popular cultures. And, in this way, it may inspire school practices and processes of science teaching that allow us to build knowledge considering our historical particularities and taking advantage of the political potential and symbolic richness of the peripheries of the cities of *Nuestra América*.

In this sense, we are aware of the need to present a justification that challenges educational praxis and research and inspires marginalized populations to promote reorganizations in social relations. Thus, we set our political plot in 1492, considering, according to Hall (2016), that it was at that time that our peoples were forcibly inserted into a deeply unequal, albeit global, business, becoming recruits to the modern world. At that time, economic, racial, ethnic, epistemic, and gender oppressions were articulated, marking a new global way of life whose impacts are felt ostensibly to this day, especially in the peripheries of the peripheries of global capitalism.

We chose this political and historical justification following the reflections of Candau (2013), for whom the strengthening of the identity of the oppressed is considered a condition for the development of intercultural processes. Otherwise, cultural contacts could favor the violent dilution or erasure of the most cherished existential coordinates of marginalized social groups.

For Carvalho (2001), the paths of humanity can be seen "as the constant incorporation, by the dominators, of signs, with an exchanged sign, coming from the symbolic expression of the dominated" (p. 130, our translation). Then, in contrast, we can trigger Certeau's theorization, showing that the people make "a bricolage with and in the dominant cultural economy, using countless and infinitesimal metamorphoses of the law, according to their own interests and their own rules" (Certeau, 2013, p. 40, our translation). These bricolages allow us to think of Arts of Doing that tease out an agency coming from the oppressed, which would perform a constant cannibalization, swallowing or incorporation, in their own terms, of the most valuable symbolic repertoires patented by the West.

In this path and appropriating what McLaren (1997) calls revolutionary multiculturalism or postmodernism of resistance, we propose an *Anthropophagic Interculturality* that is not satisfied with just contemplating the cultural and epistemological diversity of the world and promoting respect for difference. It also enables "a form of materialist intervention, since it is not only grounded in a textual theory of difference, but instead in a theory that is social and historical" (p. 68, our translation).

Oswald de Andrade (1928), representing the *Brazilian Modernist Movement*, exposes, as a totem, that the *Anthropophagy*[10], as an "indigenous ritual celebrated for the strengthening of the tribe from the virtues of the defeated and dead enemy, was the example of the opposition, resistance and impassivity of the aborigine faced with the colonial invasion" (Queiroz, 2011, p. 2, our translation). Eating, and no longer being eaten, would place Latin America within the world scene from which it had always been excluded by the different imperialisms (Queiroz, 2011).

The fact that the '*Caraíba* Revolution', advocated by the Manifesto, was considered greater than the 'French Revolution', insofar as it unified 'all effective revolts towards the human being', shows us an intersectional emancipatory perspective that links and articulates the struggles against all types of oppression suffered by black, indigenous, working, crazy, LGBTQIA+[11]. It is thus up to the Third World to "restart a history of the human being that takes into account at the same time the theses, sometimes prodigious, defended by Europe, but also the crimes of Europe" (Fanon, 1983, p. 160, our translation).

We see, therefore, that the anthropophagic interculturality is a powerful tool to promote intercultural relations in science teaching with an emancipatory perspective, contrary to other intercultural contacts that produce dynamics of erosion, appropriation, erasure, and cultural palimpsest, in which who takes advantage, swallows and feeds are the hegemonic cultures of the Global North. In anthropophagy who devours and cannibalizes are the popular cultures; in it, the powerful scientific culture, seen as foreign from the popular point of view, would not be "a model to be followed or copied, but an opponent, reference, mirror or interlocutor to be devoured" (Reigota, 2011, p. 60, our translation).

*Anthropophagic interculturality* is opposed, in the case of *science education*, to imperialist and colonialist *scientisms*, and, in turn, differs from naive, celebratory, or conservative multiculturalisms, which promote a naturalization of differences, an essentialization of identities, a static and rigid look at the cultural phenomenon, or a blind and apolitical idealization and reification of cultural hybridisms and contacts. Thus, anthropophagy is creative, strategic, and situational. Different symbolic and material repertoires can be devoured, in different circumstances, with different spices and in different ways of preparation.

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10  In May 1928, Oswald de Andrade published, in the first issue of *Revista de Antropofagia*, the *Manifesto Antropófago* (or *Antropofágico*). The anthropophagic proposal advocated the 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 scene until then (Queiroz, 2011, p. 1, our translation).

11 Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual, + (other gender identities and sexual orientations).

It devours all the best that humanity has produced and inserts it into the physiology and desires of the oppressed and marginalized peoples of the Global South. Therefore, in this perspective, the organization of the ingredients and symbolic repertoires is transitory, contextual, relative, axiologically oriented under the sole criteria that the resulting delicacy be nutritious, healthy, and tasty for the oppressed peoples of Latin America.

In highlighting the hidden face of the coloniality-modernity binomial, the modern cosmology is not despised and a new hegemony of the peoples of the South against the North is not proposed. It is necessary, on the one hand, to contextualize the categories naturalized as absolute, bringing the need for a translation to the new scenarios, whose agents, with other repertoires, will re-signify their contents. On the other hand, it is necessary to verify in the modern hegemonic cosmovision its contradictions, perceiving in them the operations of exclusion and dehumanization in the face of the production of cultural difference (Dutra; Castro & Monteiro, 2019, p. 5, our translation).

Anthropophagic Interculturality, following the recommendation of Hall (2016), offers insurgent horizons to the logic of *différance*, of *cultural translation*, in the context of colonization, slavery and racialization. It therefore moves cultural analyses in science teaching and learning processes away from those readings that promote a forgetting of the factors of race, gender, class, and power.

In this way, our proposal of *Anthropophagic Interculturality* is complemented with Santos' notion of *Solidarity Intercultural Translation* (2004) and, together, they overcome the postcolonial assumptions of Bhabha (2013), author who tends to describe in a pacifying and resigned logic the asymmetric translations or cultural contacts produced from colonization. *Epistemologies of the South*, understanding asymmetries as part of the internal dynamics of distinct oppressions against the peoples of the South, attempts to subvert them permanently (Menezes et al., 2019).

The anthropophagic interculturality allows understanding science teaching as an opportunity for cultural enrichment of the school actresses, implying a problematization, deconstruction and digestion of a diversity of knowledge and symbolic repertoires. Here the struggle for meaning is expressed and emphasized, and one takes sides in favor of the oppressed, of the epistemes and cultures that have suffered processes of extermination and material and symbolic usurpation. In addition to taking sides, anthropophagy promotes broad spaces of political agency to confront these realities of oppression that are present on the margins of Latin America, empowering the oppressed, epistemes and cultures that have historically been considered inferior (Candau, 2013).

In this way, from the critical understanding and judicious use of the diversity of epistemological paths through which the human being has decanted and built its cultures, the actresses from schools in the urban periphery could acquire a rich repertoire of conceptual and affective tools, enabling them a more pleasant navigation in the unpredictable dynamics of social transformation and in the chaotic fluctuations

of the permanent constitution of subjectivities. In human life, and especially in the peripheries of the peripheries, living with dignity is a challenging issue that requires skillful and courageous navigations amidst colorful and diverse repertoires of sensations, experiences, and thoughts.

An anthropophagic science teacher, besides considering herself, in Bhabha's (2013) perspective, a promoter of efficient cultural translations, would also allow herself a sentimental and political engagement with the territories of the margins, with the life of the oppressed, which would require her a commitment to border identities, to those subjects hungry for justice, voice and future. In anthropophagy, cultural translations would not only be sophisticated, but also epistemologically just and socially relevant.

It is expected, thus, that the anthropophagic science teacher socializes with her students not so much the always transitory and highly unstable products of cultural translations and swallowing, but, fundamentally, the very art of anthropophagy. Masterly skill and aptitude that would promote Certeau's (2016, p. 115, our translation) desire for educational institutions where "teaching would have as its principle less a common content than a style", not incompatible with the heterogeneity of the knowledge and experiences of the distinctive school actresses.

Therefore, from this perspective, militant science teachers are desirable, armed with anthropological lenses, who create an everyday education by detecting and interpreting the needs, dreams, and languages of their students, thus facilitating school-world connections and the relevant and responsible socialization, in peripheral communities, of the conceptual collections historically constructed, validated, and selected by humanity. We want science teachers to activate their frontier identities, identities that, according to McLaren (1997, p. 152, our translation), constitute

> a courageous violation of normality, of the canons of bourgeois decorum, producing a cannibalization of the traces of narrative repression, engaging critically through the practice of cultural translation, creating a multidimensional reality whose signifiers and meanings sustain the force of historical agency.

In asking about the spaces and experiences through which science teachers acquire these tools of anthropophagy and solidarity intercultural translation, it is possible to mention two complementary paths in the training of science teachers. A first path, more theoretical, involves an emphasis on historical components that make explicit the entanglements and connections between different types of oppression. The second path, more empirical, involves the construction of knowledge through experiential training. This formation would be triggered by processes of non-formal subjectivation of future teachers, in the form of political and organizational work within poor and/or peripheral communities of the Global South.

Specifically in Latin American urban periphery schools, the environmental issue, understood in an expanded and insurgent way, as it has been woven by social movements and Latin American theoreticians, can function as a potent device of Anthropophagic Interculturality and Solidarity Intercultural Translation. These weavings[12] coherently

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12  Sánchez Molano & Almeida (2022) detail and explain the characteristics of an environmental paradigm with a Latin American bias, which they call environmental weavings. By way of summary, they say: 1. It is based on an

understand how current environmental challenges and ecological imbalances are inextricably linked to old societal debts of colonial origin, in the economic and epistemic realms.

Because of the anthropophagic processes of science teaching and learning, it could be expected that popular cultures will be qualified, systematized, and expanded, and scientific cultures will be socialized, democratized, and popularized; thus, both cultures will be transformed and acquire new contours. According to Fanon: "The emancipatory struggle (…) can leave intact neither the forms nor the cultural contents of the people. After the struggle, not only does colonialism disappear, but also the colonized" (1983, p. 123, our translation).

## Openings

The sociocultural characteristics of the urban peripheries of a Latin America that vibrates, cries, burns, and dances show us that these hybrid and dense spaces, where all kinds of oppression mingle, are the new strategic scenarios for all those who, like us, bet on emancipatory horizons. Because we understand public education as a tool for social transformation, we believe that the science teaching produced in the school settings located in those territories can play a fundamental role in the search for the realization of these emancipatory desires.

We argue that cultural analysis oriented towards these contexts is a potent tool for finding, exploring, and empowering interstices within institutions and regulatory structures. As an example, the empirical research (Sánchez Molano, 2020) of which this theoretical fabric was one of the analytical axes found that School Science Fairs, if constructed from a Latin American environmental perspective, represent institutional cracks through which Southern Epistemologies can infiltrate the school curriculum.

In this research, it was verified that the School Science Fairs promote inter and transdisciplinary spaces, stimulating meetings between teachers from different disciplines and areas, bringing into dialogue methodologies and qualitative and quantitative approaches and a broadened conception of science. At the same time, they stimulated the participation and empowerment of the students through research on current issues arising from media agendas and the desires and needs of the communities to which they belonged. Popular knowledge, *gambiarras*, and ancestral knowledge are also activated, problematized, and worked on in different ways during the construction of the School Fairs. In this way, the boundaries between scientific disciplines, school institutions, communities, and territories tend to blur in a hopeful way.

The cultural approach to science education cannot fall into colonialist rationalisms, because in the peripheries of the peripheries murmuring ancestral and popular knowledge survives, which can give us clues for understanding and praxis in

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expanded and complex conception of the environment, understood as networks of interactions between ecological, social, and psychological aspects of realities. 2. It is developed through strategies of fair, respectful, and solidary intercultural dialogues. 3. The concept of territory and the communal vision are derived from it as the axes of its socio-economic, technological, and theoretical constructions.

relation to the great societal challenges that different types of environmental problems pose us. Cultural analysis also cannot fall into nationalism and identity essentialism, since, ontologically, our symbolic repertoires, especially in the contexts of the urban periphery, are hopelessly plural, extremely hybrid. Moreover, it would be neither prudent nor fair to renounce much of the gigantic scientific, political, and philosophical constructions that the elites of the West have arbitrarily patented as their own. Without peripheries, without the popular, without the ancestral, without women, without Latin America, without Africa, these supposedly pure constructions would not exist.

Nor is it viable to look at cultural phenomena that romanticize and naturalize contacts and hybridisms, because, as we have pointed out, these cultural hybridisms in Latin America would explain in part the different tragedies and miseries of our peoples. Built with gunpowder, cross and sword, these hybridisms gave birth to the millions of Damned of the Earth that inhabit our urban peripheries. Paradoxically, in the third spaces, products of these hybridisms, we could find the foundations of a more solidary, just, and dignified Latin America.

In addition, we must avoid the perverse asepsis of science education that promotes the apolitical logic of *knowledge for knowledge's sake*. Likewise, it is valid to be on guard against the idea that struggles for cultural justice are reduced exclusively to the field of the symbolic, and it is necessary to recognize that it interacts inextricably with the historical, ecological, economic, psychological, and political fields.

Considering these warnings and projecting them a contextualization to the increasingly fluid school scenarios of urban periphery, we can postulate emancipatory intercultural science teachings. Teaching-learning that allows us to anthropophagize the disciplined knowledge of the school curriculum, removing what is useless, leaving only the healthy, nutritious, and tasty portions, placing it carefully and creatively in the physiology of the urban peripheries, according to their desires, needs and problems. Likewise, intercultural science teachings that allow contacts between the multicolored ancestral knowledge remaining in the peoples of the Global South and, through intercultural solidarity translation, infuse them with coherence and insurgent strength. Anthropophagic interculturality is thus a dynamic and positional strategy that pragmatically swallows up all symbolic repertoires and epistemes that contribute to nurturing our future on our own terms.

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No potential conflict of interest was reported by the authors.

**Compliance with Ethical Standards**

The authors declare this study was conducted following ethical principles.