


# For a sensitive, interdisciplinary, and intercultural science: epistemological challenges to rescue wisdom in the relationship between health, society, and nature


Por uma ciência sensível, interdisciplinar e intercultural: desafios epistemológicos para resgatar a sabedoria na relação saúde, sociedade e natureza

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## Abstract

This article presents the foundations of a sensitive, interdisciplinary, and intercultural science aimed at reimagining the relationships between health, society, and nature inspired by references and authors from the social and human sciences, transcending traditional boundaries of sociology, anthropology, and collective health. This is a reflective essay on epistemological, theoretical, and methodological issues, in which empirical and experiential basis stems from conceptual discussions and research on emancipatory health promotion among vulnerable territories and social groups, particularly Indigenous peoples and those from urban peripheries. The research and methodologies employed seek to produce knowledge collaboratively, rather than solely for the communities and territories involved. The article defends a paradigmatic transition that creates conditions for the coexistence of scientific and traditional knowledge systems in addressing social issues and struggles for health, dignity, and territorial rights. To better understand and overcome the limits of modern science, with its canons and specialized disciplines, this article proposes to rescue the wisdom lost by Eurocentric modernity in facing the various ongoing crises that have been plaguing the planet, Brazil, certain territories, and various ecosystems in accelerated degradation processes.

**Keywords:** Interculturality, Interdisciplinarity, Paradigmatic transition, Traditional peoples, Health promotion.

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## Resumo

Este artigo apresenta as bases plurais de uma ciência sensível, interdisciplinar e intercultural para imaginar outras relações sobre saúde, sociedade e natureza inspirados em referenciais e autores das ciências sociais e humanas, incluindo e transcendendo a saúde coletiva, a sociologia e a antropologia. Trata-se de um ensaio reflexivo sobre questões epistemológicas, teóricas e metodológicas cuja base empírica e experiencial provém de discussões conceituais e pesquisas sobre promoção emancipatória da saúde junto a territórios e grupos sociais vulnerabilizados, em particular povos originários e de periferias urbanas. Tais pesquisas e metodologias empregadas buscam produzir conhecimentos junto com, e não apenas para, as comunidades e os territórios envolvidos. O artigo defende uma transição paradigmática que crie condições e possibilidades de encontros convivenciais de saberes envolvendo sistemas de conhecimentos científicos, tradicionais e situados em torno de problemas e lutas sociais por saúde, dignidade e direitos territoriais. Para melhor compreender e ultrapassar os limites da ciência moderna, com seus cânones e disciplinas especializadas, propõe-se o resgate da sabedoria perdida pela modernidade eurocêntrica no enfrentamento das várias crises em curso que assolam o planeta, o país, os territórios e vários ecossistemas em processos acelerados de degradação.

**Palavras-chave:** Interculturalidade, Interdisciplinaridade, Transição paradigmática, Povos tradicionais, Promoção em saúde

## Introduction: plural epistemological foundations in search of a sensitive, interdisciplinary, and intercultural science

This essay-style article proposes the epistemological foundations of a sensitive, interdisciplinary, and intercultural science—foundations that are necessarily plural and dynamic, corresponding to the numerous groups currently facing various crises both globally and nationally. Our main objective is to enhance the production of knowledge that envisions new relationships between health, society, and nature to address the ongoing crises in their multiple dimensions, particularly socio-environmental, sanitary, and democratic. Together, these crises constitute a broader crisis, considered civilizational in nature and an expression of Eurocentric modernity (Quijano, 2000).

Throughout the article, we discuss epistemological, conceptual, and methodological issues concerning the conditions, limits, and alternatives for constructing interdisciplinary and intercultural dialogues in encounters and research involving both the territories of traditional and Indigenous peoples and urban spaces and peripheries influenced by the cultural and identity characteristics of these peoples—features that are prominent in much of the Global South. Our hypothesis is that specialized approaches within specific disciplines and objects of study, whether from the social and human sciences, environmental sciences, or life sciences, will increasingly need to be accompanied by new epistemological foundations that validate the quality of knowledge production from a broader perspective of connection and dialogue among different knowledge systems.

The article's empirical and experiential basis stems from research projects conducted by a research center that, in recent years, has worked alongside vulnerable populations and territories in rural and urban areas engaged in emancipatory processes, including Indigenous peoples from the Amazon and Northeast regions. To understand these issues and develop alternatives, we have deepened our epistemological exploration of the

concept of emancipatory health promotion (EHP), which underpins our expanded vision of health beyond the social determination of health-disease processes. EHP is based on the articulation of three interdisciplinary fields of knowledge: collective health, political ecology, and postcolonial schools of thought, particularly epistemologies of the South (Santos; Meneses, 2014). These provide the conceptual foundations for us to analyze the limits of modern utopias (both liberal and socialist/communist) and the crisis of Eurocentric modernity and to propose emancipatory alternatives for paradigm and civilizational transitions by integrating four dimensions of justice: social, sanitary, environmental/territorial, and cognitive/historical (Porto, 2019).

The paradigmatic transition processes herein proposed involve what Nunes (2008) refers to as the rescue of epistemology. This entails a process of successive transformation that moves from epistemic sovereignty confined to the academic environment toward an increasing dialogue with knowledge systems rooted primarily in the experiences of the Global South. The Global South is understood as the civilizations and societies of different continents (America, Asia, Africa, and Oceania) whose knowledge and experiences have been subordinated, rendered invisible, or suppressed by colonial history—characterized by the hegemonic expansion of Western Eurocentric modernity, with its logocentric and utilitarian characteristics that have dissociated society, life, and nature.

To counter this Eurocentric trend—currently intensified by the socio-environmental crisis—we draw on epistemological, conceptual, and methodological frameworks aimed at advancing coexistence and mutual learning processes through dialogues, encounters, or ecologies of knowledge that engage both scientific knowledge systems and other knowledge forms referred to as traditional or contextually and situationally embedded, inseparable from community and everyday life. For this reason, we expand on Nunes' proposal by incorporating the notion of rescuing wisdom and epistemologies of connection, which continually seek to rebuild bridges between science and other

spheres of human knowledge, such as cosmologies, philosophies, art, and common sense.

More than a new utopia or a social and epistemic necessity, strengthening these connections is essential for the respectful construction of agendas and responses to the diverse challenges faced by different populations and territories, particularly traditional peoples such as Indigenous groups, *quilombolas*, and farmers with their various hybrid identities. These groups inhabit contexts marked by environmental conflicts, violence, racism, subordination, and vulnerability. However, their struggles and knowledge also foster hope in reclaiming lost wisdom regarding the relationship between society and nature.

A major foundation of this article lies in the convergence of collective health with the field of political ecology (Alimonda et al., 2017) and a critical socio-environmental approach that examines environmental and territorial conflicts through the lens of neoliberal capitalist development and the role of neo-extractivism in Latin America and the broader Global South. Agribusiness, mining, and associated infrastructure projects are behind numerous environmental conflicts that impact territories and populations across Brazil, most of them involving Indigenous peoples, Afro-descendants, and small farmers.

In recent years, the research center to which the authors belong has prioritized studies involving traditional populations and territories in rural areas, such as Indigenous, Afro-descendant, and small farmer communities—referred to in Brazil as the peoples and territories of forests, fields, and waters. We have also examined rural-urban relations, particularly in vulnerable urban peripheries. Our research explores how emancipatory processes in both rural and urban settings are shaped by initiatives in which care, food, and relationships with nature are strategic elements for building sustainable, inclusive, and healthy territories. Thus, be it in rural settings or the rural-urban interface, all these initiatives involve interdisciplinary and intercultural dialogues with and influenced by traditional peoples, cosmologies, and ancestral cultures, which have recently been reclaimed and revived by social movements and community organizations, including in urban spaces.

In this context, it is strategic to propose plural and dynamic epistemological foundations for producing knowledge that can transcend specific paradigms and specialized areas within the social and human sciences, such as anthropology. This is particularly relevant given that contemporary socio-environmental and health issues are complex, and various approaches and interdisciplinary fields—such as environmental sciences, health sciences, and education—are mobilized to address social struggles and concrete challenges at the community and territorial levels. This is an interspatial issue, as these problems are simultaneously local and global, reflecting both driving forces and systemic processes, whether in the social, cultural, and historical realms or at the interfaces between global risks (such as climate change) and their relationship with various ecosystems.

Following the paths outlined by Paulo Freire (2019) and Orlando Fals-Borda (2010), a central epistemological strategy of our proposal is to avoid dissociating thought from feeling to advance what we have coined decolonizing and heartening the academy. This approach has progressed by intersecting epistemological and artistic movements, which are materialized in the proposition of a sensitive science that contributes to fostering emancipatory dynamics. This process—simultaneously academic, ethical, political, and pedagogical—is embodied in the construction of what we have coined co-laborative sensitive methodologies (Fasanello; Porto, 2022), whose objective is to produce knowledge together with, rather than solely for or about, the territories, their populations, movements, and community organizations aimed at social transformation. To that end, two tasks of these methodologies are continually pursued: (i) exploring how the objectivity of knowledge can aspire to comprehend different conceptions and worldviews—an objective of cognitive justice, inter-knowledge, and otherness; and (ii) examining how the science with conscience proposed by Morin (2000) incorporates the body and emotions as integral to knowing the world in a vibrant and transformative way. One of the goals of a sensitive, interdisciplinary, and intercultural science supported by these methodologies is the

recovery of wisdom by the academy, in dialogue with knowledge and practices maintained and updated by various traditional peoples and social movements that advocate for health, dignity, and territorial rights.

The structure of the article is composed as follows. After this introduction, we discuss the world's epistemic plurality to address the challenges and gaps in interdisciplinarity and the role of interculturality. Next, we draw on several authors from the fields of collective health and the social sciences, particularly anthropology, who provide arguments for considering limits and alternatives that advance interdisciplinarity and interculturality in the production of knowledge. Then, based on knowledge exchanges and research projects developed in recent years, we present examples and experiences that seek to reflect upon and put into practice the challenges of interculturality in envisioning alternatives for producing knowledge on health, community care, and nature, which, for us, drive emancipatory processes and paradigmatic transition. We conclude the article by proposing that, to better understand and overcome the limitations of modern science—with its specialized disciplines and canons—we must, rather than deconstruct or break away, support movements that dissolve and reconnect the boundaries between science, life, society, and culture in a consistent and respectful manner.

## **The epistemic plurality of the world: challenges and gaps in interdisciplinarity and the role of interculturality**

The starting point for our epistemological reflection is to revisit the concept of interdisciplinarity and its related notions (mono-/multi-/transdisciplinarity). It was—and continues to be—important for defining the field of collective health based on the proposals of critical authors such as Michel Foucault, Pierre Bourdieu, and philosophers of science who influenced key collective health intellectuals like Paim and Almeida Filho (1998), Minayo (2010), and Madel Luz (2009). Despite some differences, these authors converge on the limits of restricted disciplinarity

(mono- and multidisciplinary) and on the advances provided by inter- or transdisciplinarity as inevitable pathways for articulating and addressing complex objects and systems.

An interesting aspect to observe is that the difference between the two modalities of disciplinarity (inter- or trans-) has not been defined in a precise or consensual manner, with at least two relevant meanings emerging. The first, accepted by the aforementioned authors, characterizes an evolutionary trajectory from interdisciplinarity to transdisciplinarity in the search for more comprehensive and totalizing analyses, thus considering the hierarchical or integrative potential that certain disciplines, theories, or concepts might possess to analyze and propose solutions to complex problems. In the second definition, a transdisciplinary approach is characterized as an opening for dialogue between academic knowledge and other forms of knowledge (traditional, situated, local) produced or mobilized by different subjects outside of scientific spaces. This dialogue would take place in collaborative networks formed by various categories of actors, with the goal of generating knowledge and developing actions around concrete problems and needs (Mertens et al., 2022). This vision of transdisciplinarity, as we shall see later, is akin to that of interculturality. However, it rarely delves into the differences, difficulties, or conditions necessary for such dialogue between distinct knowledges to occur, often assuming a primary role for scientific knowledge and academia in organizing and defining the grammars used for dialogue.

This explanation has remained relatively stable in the field of collective health since the mid-1990s, and the two meanings have coexisted without further deepening since then. However, as we shall see below, complex problems and engagement with recent epistemological discussions have redirected or produced greater conceptual and epistemological density on the subject.

Undoubtedly, the recent health crisis produced by the global COVID-19 pandemic, together with other crises of social, political, economic, environmental, and humanitarian nature, has been a catalyst for epistemological renewal in the field of collective health. This is evident in Nísia Trindade Lima's article entitled "*Pandemia e interdisciplinaridade: desafios para a saúde coletiva*" (2022), whose

virtuous performance as President of Oswaldo Cruz Foundation (FIOCRUZ) ultimately led to her appointment at the Ministry of Health in Lula's new government in 2023. In fact, the scenario prior to the pandemic already pointed to several crises that had been intensifying and were further exacerbated in the years following the coup against President Dilma Rousseff's government.

In her article, Lima (2022) revisits the idea of interdisciplinarity to advance the understanding and confrontation of the COVID pandemic and its consequences. The pandemic is considered a "total social fact" due to its capacity to mobilize and blur the distinctions across the various spheres that compose society as a whole—whether legal, economic, religious, or cultural. To address the various crises caused or exacerbated by the pandemic, the author proposes two paths to be pursued by interdisciplinarity in the field of collective health: overcoming the divisions between the natural world and society in view of the severity of the environmental crisis, and recognizing the importance of the new configuration of the field of information and communication and its impacts on contemporary society. This theme is strategic for understanding and addressing the democratic and political crisis produced, among other factors, by the manipulation of fake news and discourses that position science and various social groups—many of which hold denialist, fundamentalist, and/or fascist tendencies—on opposing sides. The model of specialized science would be an epistemological obstacle to be overcome by interdisciplinarity, a concept that the author emphasizes more than transdisciplinarity, which is mentioned only when referenced by the aforementioned collective health authors.

Referring to this important article by Nísia Lima, we would like to highlight two gaps or limitations in the discussions on interdisciplinarity in collective health. First, there is the radical absence of the term interculturality in the works on interdisciplinarity mentioned. Second, although the main authors in collective health consider social, economic, and cultural processes as fundamental for addressing social inequities and inequalities, there is a lack of epistemological concern regarding the cognitive role of non-academic subjects as knowledge producers. They are generally regarded as holders of knowledge,

values, and practices that are non-scientific in nature—political, ideological, and cultural—or as common sense or lay knowledge. Social movements of workers, feminists, environmentalists, and even traditional populations (such as Indigenous peoples and *quilombolas*) are assumed to be fundamental subjects recognized as citizens and protagonists of social transformation, yet they are distant or irrelevant when it comes to defining the quality criteria for knowledge production as determined by the scientific canons of modernity. In this sense, it falls to science and its specialized peer communities to serve as the final evaluators of the quality of valid knowledge, even within transdisciplinarity—a stance that reinforces the idea of objectivity and of methodological procedures that maintain the necessary distance between researchers, the reality being analyzed, and the subjects immersed in it.

A critical contribution to rethinking the epistemological foundations that support the project of modernity and its science is offered by Santos, Menezes, and Nunes (2004) regarding the epistemological diversity of the world. According to these authors, this plurality is expressed both internally within science and its paradigms and through the plurality of other knowledge systems. In our proposal, we assume that it is precisely these forms of knowledge—developed outside the scientific canons—that provide meaning and wise responses to existential and pragmatic issues, whether individual or collective, by connecting fundamental dimensions for understanding and solving issues that are both complex and significant, thereby rendering fact and value inseparable.

There has been a vast epistemological contribution in recent decades that has explored new perspectives, paving the way for the construction of interdisciplinary and intercultural approaches. Drawing from the life sciences, Tesser and Luz (2002) highlight the relevance of authors such as Thomas Kuhn, Ludwik Fleck, Imre Lakatos, Paul Feyerabend, Humberto Maturana, and Francisco Varela, among others, who produced a broad critique of the representationalist illusion of positivism. For the contemporary epistemology represented by these authors, every cognitive movement renders fact and value inseparable—a separation that is one of the foundations of normal science in the Kuhnian sense, overcome by a new

connection that places the inseparability of culture, values, and uncertainties at the center of any form of knowledge. As an epistemological alternative, Funtowicz and Ravetz (1993) proposed a new approach, the Post-Normal Science, to address complex issues by dealing with uncertain facts and high-stake values.

Returning to Tesser and Luz (2002), “the interests, the values, the traditions, the paradigms, the styles of thought, the training, and the learning that all people carry” (p. 368; our translation) make it unfeasible to achieve purely objective knowledge. This is one of the foundations for the new epistemological challenge to be based not only on scientific knowledge and approaches internal to science but rather on the broadest possible epistemological plurality made possible by intercultural dialogues.

While scientific plurality is addressed by interdisciplinarity, the plurality of dialogue among multiple knowledge systems has been referred to, for lack of a better term, such as interculturality, or even transdisciplinarity, although we avoid using that term to maintain the epistemic superiority of scientific disciplines. The plurality external to scientific knowledge inevitably includes cosmological, spiritual, philosophical, metaphysical, cultural, artistic, practical, and common-sense dimensions, with the recovery of the latter understood by Stengers (2022) as a strategic philosophical mission in contemporary times. For us, the challenge for contemporary science to reclaim wisdom lies in constructing and practicing with quality three strategic attributes: being sensitive by connecting reason with emotion, art, and intuition; being interdisciplinary by recognizing and enabling the internal plurality of science and supporting paradigmatic transition; and being intercultural by recognizing and expanding epistemological plurality beyond modern science.

In a certain way, interculturality emerges as a response to consider the limits and alternatives of epistemological proposals to the dilemmas of specialized science and even of interdisciplinarity. The proposal for a critical interculturality to push the boundaries of modern science has been made explicit in various postcolonial schools in their multiple strands and on continents outside Europe—be it in Asia, Africa, America, or Oceania. Due to our trajectory, we are particularly close to what are known as the

epistemologies of the South (Santos & Meneses, 2014). Although its main author is the Portuguese sociologist Boaventura de Sousa Santos, this approach makes a permanent effort to produce a more independent way of thinking about the Global South. For example, by organically engaging with social movements and intellectuals from several continents of the Global South, as in the case of the Mozambican anthropologist Maria Paula Meneses, co-organizer of the book mentioned in our study. For these two authors, the epistemologies of the South can be defined as:

[...] a set of epistemological interventions that denounce the suppression of knowledge carried out over the past centuries by the dominant epistemological norm, value the knowledge that has successfully resisted and the reflections it has produced, and investigate the conditions for a horizontal dialogue between different forms of knowledge. We call this dialogue between knowledge 'ecologies of knowledge' (Santos; Meneses, 2014, p. 13; our translation).

A critical objective of the epistemologies of the South is to promote a paradigmatic transition that confronts the radical hierarchical separation between scientific knowledge and the knowledge pejoratively labeled by the dominant epistemologies of the Global North as vulgar or lay, such as popular, situated, traditional, and religious. In this sense, interdisciplinarity would be tasked with addressing the internal plurality of science, while interculturality faces the epistemological challenge of broadening the connection between science and the plurality of knowledge produced within society and community life, which provide meaning and dignity to human existence in the contexts in which they flourish. The array of conceptual proposals and methodological procedures associated with the epistemologies of the South moves in this direction, including cognitive justice, ecology of knowledge, sociologies of absence and emergence, translation and intercultural dialogue, craftsmanship of practices, and, more recently, non-extractive collaborative methodologies (Santos, 2018).

## Some conceptual and anthropological inspirations for interdisciplinary and intercultural dialogues in the field of collective health

Even interdisciplinary approaches can fall into inflexibilities that hinder paradigmatic transition when they restrict themselves to recognizing as valid only the internal plurality of science with its disciplines and paradigms. Such a perspective assigns anthropology the primary responsibility for intercultural dialogue as a disciplinary specialty that studies the knowledge and practices of traditional peoples, such as Indigenous peoples—regarded merely as culture or, at best, as ethnohistory—with a differentiated and often inferior status relative to modern science. The idea of dialogues, encounters, or ecologies of knowledge broadens the horizon of this conception by taking on the challenge of our era's knowledge in the quest to create conditions for a fruitful, respectful, communal, and contextual dialogue across various knowledge systems. These interactions between academic spaces and traditional and situated ones are produced and updated by extended communities of peers that include other subjects and forms of knowledge linked to territories, communities, and social movements—whose struggles for recognition and survival are deeply interwoven with nature and with the processes of producing and defending life.

The challenges for deeper dialogues with Indigenous peoples and traditional communities appear in various Latin American sociological and anthropological studies that inspire counter-hegemonic—or, as we prefer, anti-hegemonic—practices of interdisciplinarity and interculturality that contribute to paradigmatic transition. While the notion of counter-hegemony implies a struggle and eventual seizure of power within a hegemonic socio-political system, our understanding of anti-hegemony is as a strategy to broaden and strengthen convergences in emancipatory processes of freedom, self-organization, autonomy, and self-determination involving diverse movements and social actors who fight for dignity.

In studies on the Maya Tzeltal and Tzotzil peoples of Chiapas (Mexico) and the Mapuche of

La Araucanía (Chile), Indigenous epistemological and contextual pluralism is expressed via a profound respect for diverse beings—whether human, vegetal, animal, mineral, or spiritual (Quilaqueo; Sartorello, 2018). These beings underlie the territory in which each person lives and where community activities are carried out to achieve “being well” and “living well,” attained via experiential guided wanderings (or *guianças*, as the Brazilian sage Iran Xukuru of the eponymous ethnic group calls them) and via the counsel of masters and sages—men and women who do not separate formal schooling from the school of life. This is also evident in the work of Guerrero Arias, Ferraro, and Hermosa (2016), who propose heartening and decolonizing science for the production of knowledge that incorporates ethics and politics rooted in Andean wisdom on understanding the meaning of being, feeling, thinking, speaking, and doing in the cosmos, in the world, and in life.

Another reference is that of the Mexican anthropologist Eduardo Menéndez (2016), a keen critic of the challenges of intercultural health with his proposals, actions, and failures. He warns that intercultural dialogue must acknowledge reality, social relationships, asymmetries, and biomedical power. Issues with restricted interculturality arise when we fail to recognize the dangers of disregarding racism or linking it to a “culturalism” that omits structural domination, or when we underestimate the capacity for agency and negotiation among traditional populations by associating their vulnerability with a need for guardianship that diminishes or prevents their agency. In this way, what Menéndez (2016) calls ‘transacting’ as a condition for more effective and equitable healthcare and promotion policies and practices is devalued. Such transacting involves the ability to make reciprocal concessions between parties and negotiate—taking asymmetries into account—to resolve or mitigate certain conflicts in a just and effective manner, a skill that is fundamental for learning in contexts of intolerance and violence in the pursuit of democracy and peace, a strategic mission of intercultural dialogues as an objective of historical justice. Otherwise, even official institutions and well-intentioned public policies can, in the name of interculturality, for example, undermine the important role of traditional curators, incite inter- or intra-ethnic conflicts, or even contribute

to what are known as epistemicides—a term coined by the epistemologies of the South to understand and denounce processes of erasure and annihilation of Global South knowledge systems, such as those of numerous Indigenous peoples.

We also recall the work of some contemporary anthropologists who have been innovative in breaking boundaries to face the interdisciplinary challenge proposed by Nísia Lima (2022), aimed at dissolving the boundaries between Nature, Culture, and Society. This occurs both within the more classical anthropological tradition that continues Lévi-Strauss’s work on studying “non-modern” peoples who still live in the present and among those who engage with everyday life in the contemporary West. For example, Viveiros de Castro (2016), by inventing Amerindian perspectivism to understand Amazonian cosmologies—how humans, animals, and spirits see themselves and other beings in the world(s)—contributes to new interdisciplinary and intercultural possibilities that construct epistemological alternatives beyond anthropology, whether academic, political, artistic, or ethical.

Another contemporary anthropologist contributing to interdisciplinary and intercultural possibilities in building a new “ecological paradigm” in the social sciences is Tim Ingold (2015). His work discusses the relationships among perception, movement, creativity, and skill, exploring these concepts at the intersections of anthropology, biology, art, architecture, and design. Ingold helps to break with the major divisions of modernity and dominant epistemology—such as nature and culture, subject and object, and mind and world, as well as among bodily senses, such as hands-heels, vision, and other senses. Thus, for Ingold “...to move, to know, and to describe are not separate operations that follow one another in series, but rather parallel facets of the same process—that of life itself” (2021, p. 13). Reality is understood as a network of intertwined threads and lines of movement among the various beings that constitute and co-produce life—whether human or non-human, vegetal, or even mineral. In the specific case of humans, as reflective and speaking beings, we generate narratives, meanings, and histories that mark our trajectories. In a way, the Ingoldian proposal resonates with both Félix



Guattari's (1990) Three Ecologies and Amerindian perspectivism, as well as with the wisdom we seek to evoke via the paradigmatic transition toward the emancipatory potentials of an interdisciplinary and intercultural science supported by sensitive and co-laborative methodologies.

## Recent research experiences with Indigenous peoples: interculturalities and encounters of sages in the production of meaningful narratives

To discuss the desired path of the paradigmatic transition via interdisciplinary and intercultural dialogues, this section synthesizes several lines of work that illustrate experiences from research projects in Indigenous territories and ethnic groups involving the authors, as well as an activity we refer to as Encounters of Knowledge<sup>1</sup>.

The first line of work involves discussions with the Munduruku people of the Médio Tapajós region, since 2017, regarding strategies and actions to confront various problems caused by economic ventures, particularly Illegal gold mining. The project's area of operation is the Tapajós River Basin—specifically the Médio Tapajós—where a portion of the Munduruku and other traditional social groups, such as the *beiradeiros*, reside. This territory has been the scene of numerous environmental conflicts resulting from the prevailing neoliberal, developmentalist, and neo-extractive model in the Amazon, including the construction of hydroelectric dams; infrastructures such as waterways, highways, and ports for the transportation of agribusiness grains; logging operations; cattle ranches; and both legal and illegal gold mining. To build alternatives for food security and sovereignty in territories impacted by mercury contamination from illegal gold mining, we have advanced in intercultural dialogues via research projects with the Munduruku, developing a sociotechnical network of action-research in agroecology with the support of the *Articulação Nacional de Agroecologia* (ANA - Brazilian Agroecology Articulation), *Associação Brasileira de Agroecologia*

(ABA - Brazilian Agroecology Association), universities, non-governmental organizations (NGOs), and research institutions, notably EMBRAPA Amazônia Oriental (Brazilian Agricultural Research Corporation - Eastern Amazon unit).

The second line considers interculturality in agriculture and traditional care in conjunction with environmental preservation, via the sensitive perspective of Indigenous audiovisual collectives from two ethnic groups in the Northeast—the Tingui-Botó in Alagoas and the Xukuru do Ororubá in Pernambuco. They initiated contact with the authors' research center by questioning the existence of documentaries about Indigenous peoples that disregarded these populations' protagonism in constructing their own narratives, records, and histories based on their knowledge and struggles. Drawing on a proposal of cinema as a contemporary storyteller (Fasanello and Porto, 2022), grounded in the Sociology of Images (Cusicanqui, 2015), the sensitivity of Indigenous filmmakers assumed a strategic role in the intercultural dialogue between academic researchers and the territories engaged in social struggles. In this way, a project was built in partnership with two Oswaldo Cruz Foundation (FIOCRUZ) research groups experienced in documentary production and the organization of audiovisual screenings.

A third line links the previous two with an ongoing project entitled *Promoção Emancipatória da Saúde e Agroecologia para a Defesa de Territórios Indígenas e Biomas Ameaçados* (Emancipatory Promotion of Health and Agroecology for the Defense of Indigenous Territories and Threatened Biomes; our translation). The overall objective is to promote food security and sovereignty via the systematization and sharing of experiences regarding traditional agricultures and agroecology in Indigenous territories, with workshops held in three biomes and regions of the country—the Northeast, the Amazon, and the Central-West. The results will be disseminated via audiovisual materials produced in collaboration with Indigenous filmmakers, as well as via intercultural booklets, reports, and scientific articles.

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1 For more information, please visit <https://neepes.ensp.fiocruz.br/>.

Finally, there is a fourth line of work that we refer to as Encounters of Knowledge. These encounters represent a practical strategy for the co-construction of agendas, research questions, systematization of experiences, learning, and future work perspectives. The Encounters seek to advance the construction of interdisciplinary and intercultural dialogues by bringing together academic intellectuals and organic members of social movements and vulnerable territories, including Indigenous peoples, farmers, Afro-descendant populations, urban peripheries, feminist, anti-racist, and agroecological movements, as well as those engaged in communal, holistic, and traditional care practices. From 2018 to 2023, three Encounters have already been held—the most recent focusing on co-laborative sensitive methodologies and the conditions for more effective processes of interaction and dialogue that bridge scientific languages with non-logocentric ones, such as artistic, graphic-imagistic, poetic-musical, audiovisual, and popular forms. Another theme that accompanies all the Encounters is the strengthening of sociotechnical networks of cooperation that support concrete demands and struggles in the territories.

In all lines of work involving Indigenous and other traditional populations, the first aspect to highlight is the dedication given to building trustful relationships in the conduct of intercultural dialogues. With the onset of the pandemic in 2020, various meetings, workshops, and seminars were held in hybrid and virtual formats for academic researchers and in person for Indigenous participants. We assumed the role of territory-based research fellow as a strategic figure to undertake and organize various project activities during the pandemic period, following the preventive measures outlined in the research protocols. Throughout the projects, the organization of questionnaires and semi-structured interviews was always discussed by the team of academic researchers and territorial subjects, and conducted by the Indigenous people themselves in their territories. In the case of the Indigenous filmmakers from the Northeast, the collaborative experience of co-construction and co-presence went further by incorporating two indigenous individuals into the project's coordination alongside two academic researchers, jointly making decisions about the various phases and actions of the project.

The proposal for co-laborative sensitive methodologies has been implemented in various ways since the inception of the work, with particular emphasis on guided conversations in the territories led by traditional leaders with whom we have engaged. This is an exercise in deep listening and the production of what we call “meaningful narratives,” in which oral histories are recounted and translated—for example, in the case of the Munduruku, who have a native language used in the daily life of non-urban villages. Discussion circles and spaces created for storytelling and drawing, along with guided wanderings in the territories, have marked the interdisciplinary and intercultural dialogues in processes of inter- and self-learning in our communal and contextual relationships with the subjects in their territories, whether Indigenous or other social groups.

Given the space limitations of the article, we present here only one of the numerous examples that illustrate the power of intercultural dialogues and the ecology of knowledge we seek to deepen in our projects. This example is a narrative provided by two traditional Munduruku authorities, both village chiefs—Juarez Saw (village Sawré Muybu) and Jairo Saw (village Sawré Aboy). They presented what they consider to be successful cases in the relationship between the Munduruku and Pariwati (White men) scientists. During the licensing process for the construction of a hydroelectric dam on the Tapajós, the Greenpeace organization brought some biologists and ecologists from prominent Brazilian universities specializing in birds and fish to discuss with the Munduruku the impacts of the flooding in certain parts of the river, including the reduction or disappearance of certain species. The traditional leaders referred to this activity as an Encounter of the Wise (Munduruku and those from Pariwati science), as both parties shared knowledge about what they knew regarding the rocky outcrops in the river—which would be flooded by the dams but which the Munduruku considered fundamental for the survival and reproduction of fish and birds. The outcome of this Encounter of the Wise was strategic for the subsequent decision by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) at the time to deny the license for the construction of the hydroelectric dam.

At a later stage, during the Encontro de Saberes promoted by Neepes in 2018, Chief Jairo reflected on the three types of Pariwati scientists with whom the

Munduruku had interacted in recent years. The first would be a selfish individual who only thinks of himself—and of the money and prestige that his research might generate. The second corresponds to the competent and more honest scientist, yet one who is arrogant in not recognizing the validity of the traditional knowledge of the Munduruku and other indigenous peoples. The third, and most rarely encountered, would be the wise scientist, competent and humble, who respects and acknowledges the knowledge of the Munduruku and their traditional leaders as visionary sages who see and communicate with the beings that inhabit rivers, forests, and the various visible and invisible worlds with which they are in constant dialogue. He asserts that the Encounter of the Wise, held at that time between the Munduruku and the researchers brought by Greenpeace, was a fortunate experience featuring this type of wise scientist, as everyone honestly embraced collaboration to exchange knowledge and ignorance for the complementarity of knowledges in making wise decisions. As Chief Jairo states, *“one who knows teaches those who do not know, and every person can always teach and learn something.”* According to Chief Jairo, the future of humanity will largely depend on encounters among such sages in various parts of the world, including Pariwati scientists who are willing to engage in respectful dialogue with traditional sages and their visionary power. He also asserts that Indigenous sages can attain various forms of legitimate knowledge—some revealed as a gift, others stemming from experiences with nature and their cultures, and still others derived from logical thought and scientific experimentation learned from the sages of science. What defines a visionary sage is not an immediate interest in resources and power but, above all, a sensitivity in respecting the knowledge and life of other created beings—whether plants or animals that inhabit forests and waters, as well as everything that comprises and connects life. This respect is manifested, among other things, in the way permission is sought to enter other realms and realities that are inhabited by spirits or beings exercising a more legitimate dominion, as these are their homes. Hence, the request for permission that the Munduruku make to the spirits of the rivers, forests, and *terra preta* (black soil)—often in the form of rituals and traditional songs—for fishing, hunting, or planting.

In the traditional Munduruku view, as in many indigenous cosmologies, the modern tragedy—and that of Pariwati science—represents, above all, a profound disrespect for life and for the knowledge that exists in other cultures and worlds, many of which we do not know or can only access intuitively via a gift of vision that transcends rational thought. For Chief Jairo, the malady of the Pariwati, of capitalism, modern science, and modernity—with its powerful and pretentious rulers, businessmen, economists, scientists, and their technologies—lies in a destructive arrogance that despises and obliterates other experiences and knowledges, especially those that stand as obstacles to their selfish aspiration to control nature. Therefore, Chief Jairo perceives a profound and ignorant inversion in the modern maxim of the Pariwati, according to which the most civilized and superior are the scientists, economists, governments, and businesspeople, while Indigenous people like him are considered primitive, ignorant, and barbaric. Encounters of Sages, he suggests, would serve as remedies for this affliction of humanity in an era marked by such ignorance and destruction.

## Final considerations

There are two objectives for an sensitive, interdisciplinary, and intercultural science. First, to analyze and promote emancipatory processes aimed at what we have termed decolonizing and heartening the academy to recover wisdom. Second, to advance paradigmatic transition processes that envision new society-nature-health configurations via the production of knowledge in collaboration with territories, communities, and social movements engaged in struggles for health, dignity, and territorial rights.

We believe that the contribution of a sensitive, interdisciplinary, and intercultural science will be even more fruitful if it helps to transform and expand the role of specialized science—whether in the social and human sciences, health, or environmental fields—with its disciplines, paradigms, and canons. This is not about abandoning the relevance of specialized normal science—whether oriented toward the physical world, the life sciences, or the humanities. Rather, it is about overcoming misunderstandings of so-called radical epistemological and political positions that,

in our view, end up compromising or rendering intercultural dialogues unfeasible due to dogmatic stances. The issue is not to disregard the evident contributions of the Global North's epistemologies, built over the last centuries of Eurocentric modernity. The epistemological challenge for a sensitive, interdisciplinary, and intercultural science is to create conditions for respectful dialogues across different knowledge systems. Understanding these limits and transcending them by dissolving boundaries between life, science, and society/culture is strategic for intercultural dialogue with Indigenous peoples and traditional communities—especially at a time when numerous crises on the planet demand that we recover the wisdom lost by modernity and its utilitarian perspective, which has ultimately reduced and destroyed nature (both human and non-human) by controlling it to serve isolated, short-term interests.

We believe that the recovery of wisdom by modern science will involve enhancing communal processes between the so-called epistemologies of the North and the South, via encounters and synergies between traditional sages—both Indigenous and non-Indigenous—and groups of academic scientists open to processes of inter- and self-knowledge, thereby being recognized as wise scientists by Indigenous leaders such as Jairo and Juarez Munduruku. In this perspective, “good” scientists are characterized by being both competent and humble, capable of respecting and acknowledging traditional knowledge and wisdom. In this way, everyone shares both knowledge and ignorance for the sake of complementarity between those who know and those who do not in the pursuit of wise decisions. Respectful interdisciplinary and intercultural dialogues have flourished in research projects and in Encounters of Knowledge between traditional masters and academia, such as those held at the University of Brasília (UNB) over the past 20 years (Carvalho, 2021). The fruits and seeds of these dialogues are strategic steps to overcome the civilizational, paradigmatic, socio-environmental, and health crises we face. Incorporating and interacting with sages who carry traditional and situated knowledge is a very important task and was recently the subject of a doctoral dissertation that incorporated the contributions of two organic intellectuals—one Indigenous (Ailton Krenak) and one *quilombola* (Nego

Bispo)—in their relationship with collective health (Aguilar, 2023).

It is important to note that we have observed an increasingly important role for Indigenous peoples, *quilombolas*, and leaders of social movements, such as the Brazilian Landless Workers' Movement (MST) and the *Movimento Sem Teto da Bahia* (MSTB - Homeless Movement of Bahia), who navigate academia and play an important role in the processes of intercultural translation between traditional, situated, and scientific knowledge. Several Indigenous individuals today have assumed this role, with Ailton Krenak, Davi Kopenawa, and Daniel Munduruku serving as examples of Indigenous organic intellectuals who have been influencing the current public debate on the present and future of humanity from Brazil. Another example is the author of the book “*O mundo em mim: uma teoria indígena sobre o corpo no Alto Rio Negro*” (The world within me: an Indigenous theory of the body in the Upper Negro River) (Barreto, 2022), from the Tukano people and winner of the 2022 CAPES thesis award. He has singularly expressed his cosmovision by confronting it with academic anthropological knowledge in a theory of the body and care. Some Indigenous individuals with whom we have worked in research projects have begun working in the recently created Brazilian Ministry of Indigenous Peoples, an extremely important and delicate challenge regarding interculturality in politics and the state.

A sensitive, interdisciplinary, and intercultural science must always remain open and attentive to incorporating a plurality of perspectives and dynamics that contribute to exercises in interculturality, encounters, and ecologies of knowledge. For example, we have engaged with Indigenous feminist intellectuals, such as Elisa Pankararu, who presents a perspective that differs from predominantly White, Eurocentric feminism. At the most recent Encounter, Elisa presented herself as an Indigenous woman, *sertaneja*, Northeastern, from Pernambuco, originating from the Caatinga Biome, and as an anthropologist. Thus, her identity is inextricably linked with her cosmovision and with nature in a biome that is simultaneously characterized by beauty and enchantment, as well as by conflicts and struggles. Elisa emphasizes the Caatinga as a unique biome that is thus of great importance to climatic balance, both in Brazil and globally; consequently, her struggles and knowledge transcend her territory

and ethnicity. This relates to what Fasanello and Porto (2024) term *interlutas* (intersecting struggles) as a central strategy for building intercultural dialogues that bring together and connect different movements and territories on increasingly larger scales. Dogmatic positions and closed paradigms hinder this approach, and radical contradictions between different groups—such as in the case of Indigenous feminisms or Muslim women—may present incommensurable differences that impede dialogues on these topics. In such cases, wisdom calls for recognizing challenging terrain that must be navigated with care, pauses, and pragmatic silences so that, without sacrificing dignity or important values, intercultural dialogues and the articulation of intersecting struggles among territories and vulnerable groups can be maintained. The idea of a pluriverse and interculturality implies embracing diversity within unity and unity within diversity, as a strategic motto for constructing plural and respectful dynamics to produce knowledge.

The presence of Indigenous intellectuals, *negritude* (Afro-Brazilian cultural expressions), Indigenous feminism, and many other traditional knowledge systems express a seed of a promising future for the flourishing of interdisciplinary and intercultural dialogues that are crucial for, as Ailton Krenak tells us, postponing the end of the world in dark times with the light of their wisdom about society and nature.

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### Authors' contribution

MFS Porto participated in all stages of the article; MT Fasanello reviewed the entire article and contributed to the theme of co-laborative sensitive methodologies and projects involving Indigenous peoples; Juliano Palm reviewed the entire article and contributed to discussions on agroecology and interculturality concerning traditional peoples, urban peripheries, food security, and sovereignty. All three co-authors participated in the analysis and final revision of the submitted version of the essay.

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