

THREE WORLDS AND MANY NATURES: THE “PSYCHOSPHERE AND TECNOSPHERE” IN THE ARCTIC, THE AMAZON AND PATAGONIA

ТРИ МИРА И МНОЖЕСТВО ПРИРОД: «ПСИХОСФЕРА И ТЕХНОСФЕРА» В АРКТИКЕ, АМАЗОНИИ И ПАТАГОНИИ

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ABSTRACT

The Arctic, the Amazon and Patagonia are regions of central importance to the Earth’s climate system and territories historically inhabited by Indigenous Peoples whose ways of life and cosmologies have been shaped by long-term adaptation to extreme environments. Nevertheless, these regions have recurrently been framed in state and policy discourses as “voids,” enabling their incorporation into national development strategies guided by *raison d’État*. In recent decades, this logic has been reinforced by the expansion of mining, energy projects and large-scale logistical infrastructures aimed at securing strategic minerals for high-technology industries and electromobility. This article asks which actors, processes and rationalities make a comparative analysis of these regions analytically meaningful and what governance challenges emerge from it. Drawing on Inoue and Moreira’s (2016) framework of “many worlds” and “many natures” and on Milton Santos’s (1996) concepts of psychosphere and

АННОТАЦИЯ

Арктика, Амазония и Патагония — регионы, имеющие ключевое значение для климатической системы Земли, являются территориями, исторически заселенными коренными народами, чьи образ жизни и космологии сформировались в результате длительной адаптации к экстремальным условиям. Тем не менее, в государственном и политическом дискурсе эти регионы неоднократно представлялись как «пустоты», что способствовало их включению в национальные стратегии развития, ориентированные на логику *raison d’État*.

В последние десятилетия данная логика усилилась за счет расширения добывающей промышленности, энергетических проектов и крупномасштабной логистической инфраструктуры, направленных на обеспечение стратегическими минералами высокотехнологичных отраслей и сектора электромобильности. В статье ставится вопрос о том, какие акторы и процессы делают анализ этих регионов аналитически значимым, а также какие

KEY WORDS

Arctic; Amazon; Patagonia;
Frontier Extractivism;
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Territorial Transformations.

КЛЮЧЕВЫЕ СЛОВА

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Патагония; Фронтирный
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technosphere, the analysis examines the industrialization of the Arctic, the Amazon and Patagonia as interconnected processes shaped by cryospheric change, deforestation and new extractive frontiers. Based on cases involving Inuit, Waimiri-Atroari and Mapuche communities, the article identifies convergent patterns of territorial pressure and governance asymmetries, concluding that addressing systemic climate risks requires moving beyond *raison d'État* towards and *raison de système* (Prantl & Ramasubramanian, 2025) recognizing ontological plurality.



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управленческие вызовы возникают. Опираясь на концепцию «множества миров» и «множества природ» Иноуэ и Морейры (2016), а также на понятия психосферы и техносферы Милтона Сантоса (1996), авторы анализируют индустриализацию Арктики, Амазонии и Патагонии как взаимосвязанные процессы, обусловленные изменениями криосферы, вырубкой лесов и формированием новых фронтиров ресурсной эксплуатации. На основе кейсов, связанных с сообществами инуитов, ваймири-атроари и мапуче, в статье выявляются сходные паттерны территориального давления и асимметрий управления. В заключение делается вывод о том, что для преодоления системных климатических рисков необходимо выйти за рамки логики *raison d'État* и перейти к логике *raison de système* (Prantl & Ramasubramanian, 2025), признающей онтологическое многообразие.

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Introduction

The Arctic, the Amazon, and Patagonia constitute three decisive regions for global climate equilibrium and, simultaneously, territories in which Indigenous Peoples have sustained, for generations, ways of life and forms of governance deeply rooted in their own cosmologies and territorial relations. Despite their socio-environmental and historical centrality, their lands have recurrently been framed by state policies as “empty spaces” [1], not due to the absence of inhabitants, but rather to the absence of the state as a provider of public policies adequate to the demands of the Indigenous Peoples of these regions, who correspond to the Canadian concept of First Nations. This framing has resulted in the systematic neglect of political, social, cultural, educational, and health rights by the public authorities [2], while, at the same time, the territories of these peoples – often spanning neighboring countries – have become strategic for agendas of economic exploitation and infrastructural expansion.

In other words, demand for resources such as minerals conditions economic development across sectors, including technology, infrastructure, and medicine [3], thus threatening the capacity of Indigenous Peoples to maintain their traditions [4, 5]. Becker’s critique [6, 7, 8] of geopolitical and developmentalist readings of the Amazon region illuminates this paradox: territories dense with life, historicity, ancestral rights, and natural resources come to be treated as functional reserves of energy and raw materials, rendering “absence” a political artifact produced by state action itself. At the same time, the state reproduces colonial models by treating Indigenous Peoples as groups deprived of voice and with limited rights [9].

This displacement acquires renewed intensity in the present, as demand for strategic minerals associated with technological innovation and electromobility accelerates the opening of extractive frontiers and the deployment of critical energy and logistics infrastructures. This process can be read as an expression of frontier extractivism [10], that is, the rapid expansion of exploitation frontiers into ecologically sensitive and culturally dense areas, which become strategically relevant to civil and military authorities in alignment with economic interests. In the Arctic, this dynamic is often described as industrialization associated with the melting ice, the potential opening of maritime routes, and more mineral and energy extraction in environments previously considered remote [11]. In the Amazon Basin and Patagonia, the advance of mining, agricultural frontiers, tourism, and other activities poses new challenges for Indigenous Peoples. Systemically, however, the key is not merely regional: what is at stake is a connected reconfiguration of productive frontiers, in which ice, forest, and mountain ranges operate as strategic nodes within global value and infrastructure chains. From this perspective, extractive and infrastructural expansion into Indigenous territories is not simply a localized dispute over resources, but a governmental and corporate decision embedded in interdependent systems (climate–infrastructure–economy–rights–security) that amplify risks, vulnerabilities, and public costs under scenarios of extreme climatic events.

The guiding questions of this investigation are: how have states and corporations structured (or neglected) regulatory frameworks, consultation mechanisms, governance arrangements, and forms of cooperation in the face of extractive expansion in Indigenous territories located in regions of high climatic relevance, and what does a comparison between the Arctic, the Amazon, and Patagonia reveal about recurring patterns of power disconnect, vulnerability and territorial dispute? To address these questions, the article undertakes a comparative analysis based on institutional documents, technical reports, and secondary case studies, focusing on three empirical cases: the Inuit in the Arctic, the Waimiri-Atroari people in the Amazon Basin, and the Mapuche people in Patagonia. Although there is extensive literature on each region, comparative efforts articulating these three contexts within a single analytical framework remain rare, particularly those combining neo-extractivism, critical geography, and complexity-oriented strategic diplomacy.

The article is hierarchically organized into four sections. The first section presents the analytical lenses and clarifies how they operate jointly to interpret interactions between hyperconnected socioecological systems and governance regimes, creating a link for the

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Analytical Lenses and Methodological Pathway

Extractive and infrastructural expansion into Indigenous territories is not simply a localized dispute over resources

three cases (Inuit; Waimiri-Atroari; Mapuche). This is followed by the comparative analysis of the three case studies, based on institutional and technical documentation. The next section synthesizes convergences and divergences, assessing how state and corporate rationalities are articulated – through action, omission, or erasure – vis-à-vis Indigenous forms of territorial and political organization. Finally, the concluding section discusses implications for public policy, consultation mechanisms, and governance models capable of reducing systemic vulnerabilities under conditions of intensified extractivism and climate crisis.

The analysis of ongoing territorial transformations in the Arctic, the Amazon, and Patagonia requires a theoretical framework capable of capturing processes operating simultaneously at local, regional, and global scales, traversing environmental, economic, political, and ontological dimensions. In a context marked by extreme climate events, geopolitical tensions, intensified extractivism, and growing interdependence between natural and infrastructural systems, linear, sectoral, or exclusively territorial approaches prove insufficient. This article assumes that these regions must be understood as hyperconnected socioecological systems, within which development-oriented state policies generate amplified systemic effects, often unintended. Therefore, the sustainability paradigm must shift from “lands of Indigenous Peoples are the Eldorado” to “Indigenous Peoples have the rights and the means to assure sustainability”.

To grasp this phenomenon without reducing it to linear explanations, the article incorporates as an analytical lens the contributions of Prantl and Goh [12], and Prantl and Ramasubramanian [13], who propose rethinking strategy and diplomacy in a world of hyperconnectivity and high complexity. Rather than a rationality centered solely on “national interest” (*raison d’État*), these authors argue for the need to navigate and strategize hyperconnected socioecological systems (*raison de système*), in which small perturbations can generate disproportionate effects, chains of indirect impacts, and “problem nexuses” that cannot be contained within sectoral compartments.

Within this framework, *raison d’État*, originating in Machiavellian thought, is understood as the rationality structuring state policies oriented toward so-called “strategic development”: mining expansion, deployment of critical infrastructures, opening of logistical corridors, and market-oriented territorial integration. This logic prioritizes the maximization of national interests, economic competitiveness, and sovereignty, and tends to operate through fragmented, sectoral, and hierarchical policies. In contrast, *raison de système* shifts analytical focus toward the governance of complex and interdependent systems, in which climate, energy, infrastructure, economy, rights, and security form inseparable nexuses. From this perspective, the exclusive persistence of *raison d’État* proves inadequate for addressing the systemic risks produced by contemporary hyperconnectivity.

The notion of hyperconnectivity, central to Prantl and Goh [14], allows us to understand how decisions taken in the name of state-led development in so-called peripheral regions return in the form of climatic, social, and institutional crises that transcend borders and sectors. Extractive and infrastructural expansion in the Arctic, the Amazon, and Patagonia, therefore, does not constitute a set of isolated phenomena, but rather expresses strategic decisions embedded in policy nexuses that articulate global value chains, climate regimes, environmental governance, and ancestral territorial rights. This lens provides the integrative axis for the other approaches mobilized in this article.

In this context, the concept of frontier extractivism, developed by Svampa [15], is fundamental to understanding the economic logic underpinning such decisions. Frontier extractivism describes the accelerated expansion of exploitation frontiers into ecologically sensitive and culturally dense areas, driven by global demand for strategic minerals associated with technological innovation and electromobility. From the perspective of *raison de système*, this extractivist regime ceases to be merely an economic model and becomes a vector for the

production of systemic vulnerabilities, intensifying environmental and social pressures that accumulate and return as climatic risks, territorial conflicts, and rising public costs.

Dodds and Nuttall's [16] analysis of Arctic industrialization deepens this reading by demonstrating how ice melt, the opening of new maritime routes, and mineral and energy exploitation reposition the region as a strategic node in the global political economy. Arctic industrialization exemplifies the limits of *raison d'État*: policies oriented toward immediate national interests generate cross-cutting effects on climate, human security, and Indigenous livelihoods, amplifying instability within the very system they seek to control. This dynamic finds direct parallels in the Amazon and Patagonia, where territorial opening and extractive intensification follow similar logics under distinct ecological conditions.

To understand how these strategic rationalities materialize territorially, the article mobilizes Milton Santos's [17] categories of *psycho-sphere* and *techno-sphere*. The *psycho-sphere* – understood as the system of ideas, values, norms, and rationalities guiding social action – and the *techno-sphere* – the system of techno-scientific objects that redefine spatial uses and functions – offer a crucial geographical key for analyzing the materialization of *raison d'État* in mining, energy, and logistics infrastructures. These infrastructures are not neutral: they are concrete expressions of strategic projects that reorganize territory, produce spatial hierarchies, and frequently clash with local forms of spatial organization and use.

This structural conflict becomes even more evident when articulated with Inoue and Moreira's [18] proposal of “many worlds” and “many natures.” By challenging the modern nature–society dichotomy, the authors show that environmental policies and development strategies generally operate from a single ontology, incapable of recognizing the legitimacy of other ways of conceiving the world. Within a hyperconnectivity framework, this critique reveals that denying epistemological parity is not merely a cultural injustice, but an additional factor of systemic fragilization, as it prevents the incorporation of knowledge systems and territorial practices that could enhance socioecological resilience, in line with Urt [19].

In this sense, the need to build adaptive capabilities based on the best available science inevitably leads to the integration of different types of technology, from scientific to traditional knowledge [20]. The sustainable use of traditional knowledge systems therefore holds potential to protect both knowledge holders and their territories. Moreover, in contexts of geopolitical tension between Arctic states and Russia, “less formal non-state diplomacy can achieve more progress than official science diplomacy” [21, p. 413].

In polar regions, this dimension is further developed through the notion of the *sociocryosphere*, proposed by Figueiredo [22], referring to the set of cultural, territorial, and practical dimensions associated with life in glacial and periglacial environments.

The *sociocryosphere* highlights that ice is not merely a physical element, but an ontological infrastructure organizing mobility, economy, knowledge, and cosmology. Integrated into *raison de système*, this lens allows us to understand how the disruption of ice-based life – caused by accelerated melting, extractivism, and industrialization – represents not only the loss of local ways of life, but the destabilization of socioecological systems with regional and global implications. A similar process is observed in another segment of the planetary cryosphere, the Andes, where Patagonian peoples – especially the Mapuche and Tehuelche – experience the impacts of global warming on their territories, glaciers, and formerly permanent snowcaps. River flows that were once perennial are now compromised, as is the vegetation along the mountain chain, increasingly consumed by uncontrolled wildfires.

Finally, dialogue with Bertha Becker's work on the Amazon helps elucidate how these territories were historically produced as “empties” through selective state action. With the advent of their relevance to mineral resources for twenty-first-century electromobility and

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Arctic, Cryosphere, and Inuit Peoples: territory, sociocryosphere, and the expansion of *raison d'État*

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high-technology value chains, they are now rebranded as “strategic” [23]. Far from signifying absence, emptiness expresses the paradoxical coexistence of deliberate absence of public policies for recognition and protection with the intense presence of policies oriented toward economic exploitation. Under the lens of *raison de système*, this production of emptiness appears deeply contradictory: by neglecting rights, knowledge, and local governance forms, states undermine their own capacity to manage systemic risks under conditions of climate crisis and hyperconnectivity .

By articulating *raison d'État* and *raison de système*, frontier extractivism, regional industrialization, psycho-sphere and techno-sphere, many worlds, and sociocryosphere, this article constructs an integrated analytical framework to examine how state-led strategic development policies reconfigure Indigenous territories in the Arctic, the Amazon, and Patagonia. This approach allows these processes to be understood not as isolated local impacts, but as expressions of a single global system of interdependencies, in which the persistence of inadequate state rationalities amplifies social, environmental, and political vulnerabilities – including for the very states that promote them. In other words, improving the agency of Indigenous Peoples in the political architectures of the three cases is the necessary pathway for the “safe operating space” proposed by Rockström and others [24].

The Arctic accounts for approximately 0.1 % of the global population, covers about 6 % of the Earth's surface, and hosts 25 % of the world's largest marine ecosystems [25]. The cryosphere comprises the planet's frozen waters, including glaciers, continental ice sheets, polar ice caps, permafrost, seasonal snow, and sea ice, constituting one of the main regulators of the Earth's climate system [26, 27, 28, 29]. Far from representing an inert or marginal domain, the cryosphere plays a central role in atmospheric and oceanic circulation, freshwater storage, planetary albedo, and the stability of ecosystems across different latitudes. It connects polar regions to global hydrological, climatic, and socioeconomic systems that sustain life on Earth. Changes in its dynamics generate systemic effects that transcend national borders and local scales, directly affecting human livelihoods, production chains, and regimes of environmental governance [30].

In the Arctic, the cryosphere is not merely a biophysical component, but the material, symbolic, and territorial foundation of Inuit life . Over millennia, Indigenous Peoples have developed highly sophisticated forms of adaptation to the extreme conditions of ice, sea, and polar climate, structuring systems of mobility, subsistence, ecological knowledge, and social organization that are deeply intertwined with the seasonality and stability of sea ice and permafrost [31, 32]. This relationship constitutes what Figueiredo [33] terms the sociocryosphere: a system in which cultural practices, territorialities, knowledge systems, and cosmologies emerge from the persistent interaction between human groups and glacial and periglacial environments.

Historically, however, the Arctic has been progressively incorporated into projects of territorial expansion, geopolitics, and development of modern states through a rationality characteristic of *raison d'État*. Since the colonial period, state policies have treated the region as a remote, empty space functionally subordinated to national interests, rendering Indigenous forms of territorial occupation and governance invisible [34, 35, 36, 37, 38]. This framing enabled the imposition of resettlement programs, forced schooling, dependent economic integration, and natural resource exploitation, often without adequate consultation with local communities.

From the late twentieth century onward, and especially in the first decades of the twenty-first century, the intensification of Arctic melting has profoundly reconfigured this dynamic. The accelerated retreat of sea ice and glaciers has been interpreted by states and corporations as a strategic opportunity, enabling the opening of new maritime routes, access to previously inaccessible mineral deposits, and the expansion of large-scale energy and logistical projects [39, 40, 41]. In this context, a process of Arctic industrialization has consolidated, linking mining, transport, port infrastructure, hydrocarbon exploitation, and

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military presence, reinscribing the region at the center of global value chains associated with technological innovation and the energy transition.

This territorial reconfiguration can be interpreted, in Milton Santos's [42] terms, as the expansion of an Arctic technosphere, materialized through a system of techno-scientific objects that redefines spatial uses and subordinates territory to global productive rationale. This technosphere is sustained by a dominant psychosphere, composed of discourses of economic development, security, and progress, which legitimize the intensive extraction of natural resources in the name of national interest. However, the concept of psychosphere allows the recognition of the existence of other rationalities, rooted in Inuit cosmologies and traditional knowledge systems, which orient distinct ways of relating to territory, ice, animals, and environmental cycles.

It is at this point that the contribution by Inoue and Moreira [43] becomes fundamental. By proposing the many worlds, many natures framework, the authors challenge the nature–society dichotomy and advocate epistemological parity among different forms of knowledge. In the Inuit case, territory is not conceived as a resource to be exploited, but as a relational space in which humans, non-humans, ice, sea, and atmosphere integrate a single system of life. The imposition of policies guided exclusively by *raison d'État* ignores these plural ontologies, producing deep fractures between state governance systems and Indigenous modes of territorial organization. Indigenous peoples, who should be treated as allies in the sustainable management of space, are instead considered adversaries in projects of commercial resource exploitation.

The sociocultural consequences of this process are widely documented. Ice instability compromises traditional hunting and travel routes, increases accident risks, affects food security, and weakens the intergenerational transmission of knowledge associated with cryogenic environments [44, 45, 46]. Mining and other industrial activities introduce environmental contamination, demographic pressures, and economic dependency, while simultaneously reconfiguring power relations within communities. Although institutional mechanisms such as land claims agreements and co-management regimes have been implemented in some contexts, they often operate within narrow limits defined by the state, functioning more as instruments of conflict management than as full recognition of Inuit self-determination [47].

In this sense, the Inuit case illustrates with particular clarity the limits of state strategies anchored in *raison d'État* in contexts of hyperconnected socioecological systems. The degradation of the Arctic cryosphere produces not only local impacts, but also triggers global systemic effects, affecting climate patterns, sea levels, and the stability of ecosystems in other regions of the planet [48, 49, 50]. By ignoring the plurality of worlds and natures that coexist in the Arctic, such policies deepen vulnerabilities that, paradoxically, will require increasing public investment to address extreme climatic events, coastal erosion, and the collapse of cryospheric ecosystems.

Thus, the Inuit experience reveals that the Arctic cannot be understood merely as an emerging frontier of the global economy, but as a strategic space where tensions between *raison d'État* and the need for governance oriented by *raison de système* become visible. The failure to integrate Indigenous cosmologies, traditional knowledge, and the systemic dynamics of the cryosphere into political decision-making undermines not only socio-environmental justice, but also the very effectiveness of state strategies in the face of the complexity of the Anthropocene.

The Waimiri-Atroari People: *raison d'État*, strategic emptiness, and the expansion of technospheres

The Brazilian Amazon constitutes one of the most emblematic cases of territorial production oriented by *raison d'État*, understood as a state rationality that subordinates territory to strategic objectives of sovereignty, security, and economic development. In Brazil, from the mid-twentieth century onward – and with particular intensity during the military dictatorship (1964–1985) – the region was conceived as a frontier to be integrated into the national project through large-scale infrastructure works, mining, and energy expansion, regardless of the historical presence of Indigenous Peoples and their own systems of territorial organization [51, 52].

The Waimiri-Atroari psychosphere is structured around a relational ontology in which territory, humans, rivers, forests, and spiritual entities form a single system of life

Bertha Becker consistently demonstrated that the notion of the “Amazonian void” never signified the absence of life, but rather the selective absence of the state as guarantor of social rights, combined with the active presence of policies oriented toward resource extraction and the implementation of large strategic projects [51, 52]. These voids – now reclassified as strategic [53] – have become privileged platforms for the expansion of mineral extractivism and the logistical infrastructure required to insert Brazil into global value chains associated with technological innovation and electromobility.

It is within this context that the territory of the Waimiri-Atroari people is situated, located between the states of Amazonas (AM) and Roraima (RR), encompassing areas of the municipalities of Presidente Figueiredo, Rio Preto da Eva, and Manaus (AM), as well as Rorainópolis (RR). The Waimiri-Atroari are a Karib-speaking Indigenous people whose territorial occupation is historically documented and deeply intertwined with forest dynamics, river systems, and Amazonian ecological cycles.

Their territory was severely impacted throughout the twentieth century by successive waves of state expansion, resulting in episodes of extreme violence, population decline, and social disintegration, particularly during the construction of the BR-174 highway and the implementation of energy (Balbina Hydroelectric Plant) and mining projects (Mineração Tabocas).

From the 1970s onward, the Waimiri-Atroari territory became crossed by linear technospheres – roads, transmission lines, and dams – conceived as vectors of national integration and regional development. These systems of techno-scientific objects, in Milton Santos’s [54] terms, redefined the uses of Amazonian space by subordinating it to external productive circuits, without promoting effective connectivity with local psychospheres, understood here both as state systems of ideas, values, and rationalities and as Indigenous knowledge systems, cosmologies, and ways of conceiving territory.

The dominant psychosphere sustaining these interventions is marked by developmentalist narratives that associate the Amazon with resource abundance and the need for its mobilization in the name of national interest. In contrast, the Waimiri-Atroari psychosphere is structured around a relational ontology in which territory, humans, rivers, forests, and spiritual entities form a single system of life. This ontological dissociation becomes particularly visible when public policies and extractive enterprises are implemented without substantive consideration of Indigenous forms of territorial governance, thus depriving Indigenous Peoples of their constitutional rights.

Although Brazil is a signatory to the International Labour Organization’s Convention 169, which establishes the right to free, prior, and informed consultation, the history of its implementation in Waimiri-Atroari territory reveals recurring patterns of omission, delayed consultations, or decision-making processes that precede any effective dialogue. Consultation, when it occurs, tends to be treated as a formal procedure rather than as a mechanism of co-decision, reinforcing power asymmetries between the state authorities, corporations, and Indigenous Peoples.

This dynamic is embedded in the regime described by Svampa [55] as frontier extractivism, characterized by the accelerated expansion of exploitation frontiers into ecologically sensitive and culturally dense territories. In the Amazon, this process is intensified by the growing valuation of deposits associated with strategic minerals, repositioning the region as a global mining frontier oriented toward high-technology industries, while simultaneously deepening territorial conflicts and socio-environmental impacts.

The approach of many worlds, many natures by Inoue and Moreira [56] offers a crucial lens for interpreting this process. By challenging the nature–society dichotomy and defending epistemological parity among different knowledge systems, the authors demonstrate how policies anchored exclusively in *raison d’État* generate ontological clashes by denying the legitimacy of Indigenous cosmologies. In the Waimiri-Atroari case, this denial manifests

both in the invisibilization of Indigenous ways of life and in the undermining of their own mechanisms of territorial governance.

Paradoxically, the same territories treated as strategic voids for mining and infrastructure purposes remain neglected in public policies related to health, education, food security, and cultural protection. This asymmetry reveals the persistence of a state rationality that privileges the economic value of territory over its socio-cultural dimensions, reproducing historical patterns of marginalization that become even more problematic in the face of intensifying extreme climatic events and mounting pressure on Amazonian ecosystems.

As in the Inuit case, Waimiri-Atroari territory exposes the limits of development strategies guided by *raison d'État* in contexts of high socioecological complexity. Far from constituting an empty space, the Amazon emerges as a key arena for rethinking the articulation between territorial governance, ontological recognition, and public policy under conditions of growing systemic interdependence, like the Arctic [57].

Patagonia and Tierra del Fuego: Indigenous peoples, “desert campaigns”, and the state fabrication of demographic emptiness

Patagonia and Tierra del Fuego were historically constructed – both in the imagination and in state practice – as extreme, inhospitable, and supposedly empty spaces, suitable for incorporation into the national projects of Argentina and Chile through territorial occupation, economic exploitation, and the consolidation of sovereignty. This representation, however, deliberately obscured the millennia-long presence of Indigenous Peoples highly adapted to regional environmental conditions, including the Tehuelche, Yámana/Yaghan, Kawésqar, Ona, and, most emblematic of all, the Selk'nam of Tierra del Fuego, as well as the Mapuche, who historically occupied and continue to inhabit extensive areas of Andean and trans-Andean Patagonia [58].

From the nineteenth century onward, Patagonia became the target of an explicit *raison d'État* project, in which effective territorial occupation was understood as a prerequisite for national consolidation, containment of border disputes, and integration into global economic circuits. This project materialized violently in the so-called “Desert Campaigns”, led by Julio Argentino Roca between 1878 and 1885, which combined systematic military operations, forced deportations, confinement in concentration camps, and the direct extermination of Indigenous Populations [59, 60].

In Tierra del Fuego, territorial occupation assumed even more brutal forms. The Selk'nam – a hunter-gatherer people deeply adapted to cold steppes and periglacial Fuegian ecosystems – were subjected to an explicit policy of ethnic cleansing, carried out by both state agents and private militias hired by landowners and companies interested in expanding sheep ranching and appropriating land [61]. Historical and iconographic records document massacres, paid human hunting, the exhibition of Indigenous Peoples in European human zoos, and forced confinement in religious missions, where infectious diseases led to the demographic collapse of the Selk'nam population within a few decades, between 1880 and 1905.

This process was not an aberration but a constitutive element of the state strategy of producing territory as “desert”, a political category that justified the elimination of Indigenous Peoples in the name of civilization, progress, and national security. As contemporary official discourses reveal, “desert” did not signify absence of life, but rather the perceived need to eliminate what was seen as an obstacle to economic appropriation and territorial ordering according to European and capitalist standards [62, 63].

The imposition of this rationality produced a profound rupture between Indigenous psychospheres – grounded in relational cosmologies, territorial mobility, and cyclical resource use – and the state-colonial psychosphere, marked by private property, enclosure, productivity, and intensive exploitation. The technospheres accompanying this process – railways, estancias, fences, ports, and later energy and extractive infrastructure – materialized

in space the temporary victory of this hegemonic rationality, redefining territorial uses and subordinating Patagonia to global economic circuits [64, 65].

Unlike the Selk'nam, whose annihilation was nearly total, the Mapuche managed to remain territorially present and politically active in Argentine and Chilean Patagonia. Archaeological, linguistic, and historical evidence demonstrates continuous Mapuche occupation over centuries, articulated through their own systems of governance, land use, and social organization, deeply connected to rivers, valleys, and Andean massifs, and dependent on the Cordillera and cryogenic cycles for the maintenance of bio-oceanic lifeways (Atlantic and Pacific slopes of the Andes) [66, 67]. Nevertheless, the Mapuche were also subjected to dispossession, criminalization, and territorial fragmentation, both during nineteenth-century military campaigns and subsequent phases of productive modernization.

In the twenty-first century, Patagonia has once again been repositioned as a strategic frontier within the context of neo-extractivism and the expansion of mining, energy, and large-scale logistical projects. Retreating glaciers, steppes, and Andean ranges are reconfigured as economic assets, while Indigenous cosmologies remain marginalized in decision-making processes. This pattern reveals the persistence of *raison d'État* as the structuring logic of territorial policies, now combined with the demands of global value chains linked to technological innovation and energy transition.

As in the Arctic and Amazon cases, Patagonia demonstrates how the historical production of “emptiness” – whether demographic, political, or epistemological – constitutes a precondition for extractive expansion and the future development of critical infrastructure. The elimination of the Selk'nam and the ongoing pressure on the Mapuche are not merely past events, but foundational elements of a territorial order that continues to operate through the denial of the many natures and many worlds that structure Indigenous relationships with territory [68]. By rendering these ontologies invisible, the state reinforces paradoxes that weaken both socio-environmental justice and governance capacity under conditions of growing climatic and geopolitical complexity.

Comparative synthesis: strategic emptiness, *raison d'État*, and systemic tensions in extreme territories

The comparative analysis of the Inuit (Arctic), Waimiri-Atroari (Amazon), and Mapuche (Patagonia) cases reveals recurring structural patterns in how national states and corporate actors produce, occupy, and exploit territories deemed strategic. Despite their distinct environmental contexts – polar regions, tropical forest, and sub-Antarctic environments – these territories share a common logic of subordinated insertion into global value chains, sustained by development policies anchored in *raison d'État* and materialized through extractive and logistical infrastructures. Table 1 (below) demonstrates that “emptiness” is not a natural condition, but a political product, created to legitimize the expansion of technospheres and neutralize ontological resistance.

The comparison shows that the persistence of *raison d'État* in extreme territories produces structural paradoxes: by treating the Arctic, the Amazon, and Patagonia as empty spaces, states amplify risks that escape their own capacity for control. The lack of integration between technospheres and psychospheres, combined with the denial of many worlds and many natures, undermines both socio-environmental justice and the effectiveness of national strategies under conditions of climatic and economic hyperconnectivity. This finding reinforces the need to shift the axis of governance toward a logic of *raison de système*, capable of recognizing interdependencies, planetary limits, and ontological plurality.

Conclusions

The comparative analysis of the Arctic, Amazon, and Patagonia demonstrates that the persistence of development policies oriented by *raison d'État* constitutes a common structuring factor across all three contexts, despite their environmental, historical, and institutional differences. By being framed as “empties” – demographic, productive, or strategic – these territories were systematically incorporated into state projects of industrialization,

TABLE 1 – STRUCTURAL COMPARISON BETWEEN THE ARCTIC, THE AMAZON AND PATAGONIA

Analytical Dimension	Arctic (Inuit)	Amazon (Waimiri-Atroari)	Tierra del Fuego and Patagonia (Selk'nam/ Mapuche)
Production of "emptiness"	Icy, remote, and unproductive space	Underoccupied, backward space	Desert, uninhabitable
Predominant politics	Raison d'État (security, energy, sovereignty)	Raison d'État (frontiers, integration, development, energy)	Raison d'État (Sovereignty, occupation, progress)
Technospheres/critical infrastructure	Ports, mining, maritime routes, energy, cities	Highways, bioceanic route, dams, transmission lines, mining	Estancias, railways, mining, energy
Hegemonic psychospheres	Industrialization	National development	Civilization/progress
Indigenous psychospheres	Cryosphere-related cosmologies	Forest and territorial cosmologies	Andean, cryospheric and territorial cosmologies
Participative instruments of previous consultation	Partial and asymmetrical	Formal and generally inadequate	Historically inexistente
Historical result	Structural vulnerabilization	Territorial fragmentation	Extermination/criminalization

Source: the authors

mining, and infrastructure that prioritize objectives of sovereignty, security, and economic competitiveness, often in disregard of the cosmologies, ways of life, and governance systems of the Indigenous peoples who inhabit them.

The cases analyzed show, however, that this state rationality is increasingly inadequate in the face of hyperconnected socioecological systems. Ice melt in the Arctic and the Andes, Amazonian deforestation, and the intensification of extreme climatic events generate cascading effects that transcend national borders, economic sectors, and temporal scales. Under such conditions, decisions taken within a strictly national and sectoral logic tend to produce systemic vulnerabilities, amplifying social, environmental, and fiscal costs that paradoxically fall upon the very states that promote these strategies, but also engender deleterious impacts on a global scale.

It is at this juncture that the notion of *raison de système* acquires both analytical and normative centrality. Unlike *raison d'État*, *raison de système* shifts the focus from the maximization of immediate national interests to the governance of complex, interdependent, and non-linear systems in which climate, territory, infrastructure, economy, and ontological diversity are deeply intertwined. The comparison across the Arctic, the Amazon, and Patagonia reveals that failure to recognize these interdependencies undermines not only socio-environmental justice, but also the effectiveness of development and security policies themselves.

Furthermore, it hampers the efforts for collaboration and leads to increasing risks of appropriation and military confrontation, as it is already the case in the Arctic region.

In this sense, strategic diplomacy emerges as a key vector for reconfiguring governance practices. By articulating multiple levels – local, national, regional, and global – and integrating diverse knowledge systems, strategic diplomacy provides tools to mediate ontological conflicts, align sectoral policies, and anticipate systemic risks. Beyond traditional interstate cooperation, it presupposes recognition of Indigenous Peoples as relevant political actors in the governance of territories that are central to global climate stability [69].

Addressing the challenges posed by extractive expansion and intensified climate change in extreme territories requires a conceptual and political shift: from *raison d'État* to *raison de système*. Such a shift entails rethinking the role of the state, redefining development criteria, and incorporating the plurality of worlds and natures that structure these territories. Only through this transformation will it be possible to build forms of governance capable of responding to the complexity of the Anthropocene and sustaining strategies that are genuinely resilient, legitimate, and sustainable.

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