Rethinking Climate Change in Education: From Climate Coloniality to Decolonial Educational Ecologies in Comparative and International Education

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We present methods to examine the relationships between climate change and education while rethinking educational approaches that do not rely on endless economic growth, extraction, and accumulation through dispossession. At this historical moment, which is focused on transitions toward a greener future, it is essential to consider how the roles of those most affected by climate change are often overlooked in narratives about "climate solutions." The paper highlights what is absent from and erased within the United Nations Sustainable Development Goals and prevalent approaches to climate change education. It does so by focusing on a longer historical arc, as well as Black and Indigenous knowledge systems and cosmologies, alongside ongoing and historical injustices. Utilizing the framework of a decolonial educational ecology, we reimagine climate change in education within interconnected global contexts, emphasizing historically marginalized knowledge systems, confronting power imbalances, and creating alternative pathways toward more sustainable, just futures that transcend universal Western epistemic frameworks.

Keywords: Decolonial education ecology, Comparative and International Education, Climate Change Education, decolonization, climate coloniality.

Introduction

Scholars, policymakers, and practitioners worldwide have emphasized the importance of K-12 education, higher education, and informal education in responding to climate change in recent decades (United Nations [UN], 2021). Simultaneously, the epistemic foundations of the topic are often ignored. Popular models of climate education aim to provide students with an understanding of climate change, covering its causes, effects, and remedial strategies, such as transitions to "green energy" (Rousell & Cutter-Mackenzie-Knowles, 2020). This knowledge is assumed to enable students to respond effectively to climate-related challenges while promoting environmental stewardship and sustainable development. In curriculum and policy, climate education focuses on the scientific understanding of the mechanisms underlying changing atmospheric conditions, empowering students to reduce carbon emissions, and raising awareness of the impacts of intensifying weather patterns (Bhattacharya et al., 2020;

Stein, 2020; Stein et al., 2023). However, we argue that what is missing from how climate education is currently taught is a focus on discussing the longer interconnected historical arc of the past, explaining the erasures of Black and Indigenous knowledge systems and cosmologies (other ways of living and being in the world), and addressing historical injustices through reparative projects (Acabado & Kuan, 2021; Emeagwali & Shizha, 2016; Estes 2019; Scherrer et al., 2024). We put forth that such a reorientation in the way we teach about climate education allows us to re/center a multiplicity of 'pluriversal thinking' (Escobar, 2018) through what we call *decolonial educational ecologies* (discussed below). Building on Ferdinand (2021), a decolonial educational ecological approach involves more than just incorporating Black and Indigenous viewpoints. It requires reimagining education to center historically marginalized knowledge systems and cosmologies while confronting existing human and more-than-human power imbalances as humans seek to address the current climate crisis.

In the field of Comparative and International Education (CIE), the topic of climate change is commonly addressed through the framework of education for sustainable development (ESD). ESD is premised upon "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (Gavrila, 2023, p. 47). ESD emerged as a global framework following the publication of the Brundtland Report (UN, 1987), which was released after the Decade of Education for Sustainable Development (2005-2014). When this occurred, climate education or climate change education became a top priority, highlighted by the UN and the UN Educational, Scientific, and Cultural Organization (UNESCO), which laid the groundwork for future initiatives during two major global events: Agenda 2030 and the UN Climate Conference in Paris. In September 2015, the United Nations adopted the 2030 Agenda, which codified 17 Sustainable Development Goals (SDGs). The three SDGs most pertinent to climate education are: ensuring access to affordable, reliable, sustainable and modern energy for all (SDG 7), taking urgent action to combat climate change and its impacts (SDG 13); and ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all (SDG 4).

We break from the UN SDGs' approach of 'developing' and 'modernizing' our way out of the climate crisis while asking those living in the Global South (Global Majority) and other locations of disproportionate precarity to become more 'resilient.' It is within this context that marginalized and racialized communities and more-than-human beings have borne witness to a climate of colonial change over the last 500 years, resulting in massive shifts in human relations, ecologies, and earth systems (Whyte 2018; Scherrer et al., 2024). For example, colonialism's adaptive and assimilative methods showed little interest in developing existing education and knowledge systems and instead reshaped them to reflect the colonizers' culture and language (jules et al., 2021). Such modes of colonial assimilation can arguably be seen influencing 'Western technological fixes,' reproducing and escalating the relational inequities and forms of accumulation through dispossession. As in the case of lithium mining and the extraction of other rare earth

metals, massive amounts of land (and water) are destroyed, fuelling regional (and global) conflicts. Such approaches to wicked problems overlook the rest of the world, which resides on the 'other side' of global capital flows. Continuing to deny such relational shifts perpetuates the problems central to the broader climate crisis.

Identifying the limits of the existing system of climate solutionism, it is essential to rethink the climate and nature emergency (CNE) in education. Rousell and Cutter-Mackenzie-Knowles (2020) draw attention to how it is "widely acknowledged that innovative and effective forms of climate change education are needed for children and young people worldwide who will be forced to grapple with the uncertain effects of climate change brought forth by previous generations" (p. 192). Our current educational approaches, which are grounded in Western scientific innovations and policy change to anthropogenic challenges, are ahistorical and erase any sense of responsibility. These approaches do not adequately address the underlying issues of the problems at hand. Instead, they focus on providing students with scientific information and knowledge awareness, devoid of context (Scherrer, 2023).

In this historical moment, centered on the transition to a "greener future," markets continue to push communities in the Global South, including their children, into pits and tunnels, destroying landscapes and sources of clean water. At the same time, American corporations and nation-states are reported to have become legally immune to child labor as well as health and safety laws in the areas where these minerals are being extracted (Amnesty International, September 11, 2023). Meanwhile, forms of climate justice are being integrated into the fold of sustainable development. The events of the 2024 Conference of the Parties (COP) in Baku, within the oil-rich state of Azerbaijan, unfolded against a backdrop of corporate energy logos and active oil rigs. This should serve as a warning about the dangers of pursuing universalized development goals that suggest a need for incorporating self-interest. Furthermore, in the last three global climate summits, spaces for community advocates, Indigenous groups, and social organizations—the seeds of a better future—were replaced by corporate groups seeking to promote their interests within the same framework, albeit toward a more greenwashed future (Scherrer and jules, 2023). In light of this, scholars and practitioners in the fields should consider how the erasure of the roles of those most impacted and engaged highlights the work of CIE: How can the seeds of Otherwise worlds, generated in place and community, be nourished and storied into being, even (and especially) when they do not "belong" in the world as it exists?

We introduce a method of critical engagement with the topic through specific counter-reading practices inspired by Said (1994). The following section examines the concept of coloniality concerning climate change and education, highlighting the shifting spatial and temporal boundaries in the process. The paper then addresses decolonial ecologies and how such approaches might disrupt the field's status quo. The paper engages more specifically with deciphering practices (Wynter, 1992), or methods of

thinking critically about specific educational practices and policies. This sets the stage for discussing just educational futures and reimagining climate change education within decolonial educational ecologies.

Revealing Counterpoints (and Otherwise Worlds): A Contrapuntal Analytical Approach

This paper employs a 'contrapuntal reading' (Said, 1994) of climate change in education. In *Culture and Imperialism*, Said (1994) conceptualized contrapuntal reading as a method of analyzing texts by considering the intertwined narratives from both dominant and marginalized perspectives, thereby uncovering the complex and interrelated relationships between them. Inspired by the musical concept of 'counterpoint,' which refers to the simultaneous interaction of independent melodies, Said (1994) applied this idea in literary and cultural analysis to explore the connection between colonialism and cultural formations. Such practice offers opportunities for deciphering existing grammars while building different modes of relational and justice-centered knowledge production that refuse the individuated logics of racialized extraction and dispossession (Rashid, 2024). Contrapuntal readings encourage readers to challenge established narratives.

In CIE, contrapuntal readings serve as key reference points for analyzing how knowledge is produced, circulated, and legitimized across various national educational contexts. This approach is especially significant when examining the effects of colonial legacies (i.e., coloniality), global power dynamics, and epistemic hierarchies in education. For instance, when analyzing a colonial text, it is crucial to consider not only the colonizer's perspective but also the voices and viewpoints of those who were colonized or silenced within the text. This method uncovers hidden power dynamics and neglected histories of the oppressed context. In conducting a contrapuntal reading of the climate education discourse, texts, and ecologies, we focus on which voices are amplified and which are marginalized.

In thinking about the processes of finding counterpoints as part of a practice of reinventing approaches to education, we are reminded how the human species is shaped both biologically, through genetic and environmental predeterminants like other living organisms, and a form of hybridity, as a storied being (Wynter, 2003; Wynter & McKittrick, 2015). This formulation gestures toward the idea that, unlike other species, the rhythms/patterns/narratives that are told and practiced can determine the nature of our being. The narratives (that is, independent yet intertwined counterpoints) selected/deselected over time produce new stories or truths (Wynter, 2003). The power of which narratives are selected reinforces different neurological responses or connections that create (and reshape) our renewed understanding of both the historical origins and futures of, in this case, the meaning of climate change in education.

A Grammar of Climate Coloniality

> Students are not only raising questions about the relevance of their education, but also bringing attention to the fact that education itself is entangled with and dependent on the same unsustainable political-economic system that has led to climate change in the first place. (Stein, 2024, p. 1).

The epigraph above speaks to the contradictions, growing consensus, and sobering assessments climate education faces because of 'climate coloniality' and the fact that climate change has ontological, onto-epistemological, and axiological dimensions in that "it alerts us to questions of being (who we are and how we relate to the natural world), of knowledge (whose version of events should we trust) and value (what might be a fair distribution of the burdens of change)" (McCowan, 2023, p. 935). Colonialism, "often defined as the conquest and subjugation of other people's land and goods" (jules et al., 2021, p. 49), had two primary objectives in education that were about gaining "mental control" (wa Thiong'o, 1986) through: the destruction of culture and consciousness, and (training an elite class of subordinate servants (jules et al., 2021). Anuar and colleagues (2020) remind us that in CIE, a growing body of scholarship on "post-colonialism highlights and problematizes modern colonialism as a vehicle of capitalist expansion through the exploitation of the colonies, coupled with an ideological rhetoric of modernity and progress" (p. 110, as cited by Bhambra, 2014; Sinha &Varma, 2017). It is generally understood that in terms of relation in CIE, the field primarily relies on ideals, targets, standards, and goals emanating from concepts of growth grounded within an invented place (or concept) that is often referred to as the West (Takayama et al., 2017). Foundations across the field are predicated on the logic of infinite growth and the disproven assumption that Western education develops citizens who will solve today's problems (Scherrer, 2023). This section continues this conversation and reviews how this colonial nature has extended to complicity in modernization, capitalism, and slavery, which are not escaping climate change education efforts.

Building on the scholarship of coloniality emerging from decolonial thinkers like Aníbal Quijano (2000; 2007) and Walter Mignolo (2011; 2017), which describes the ongoing power structures, inequalities, and epistemologies that arose from European colonialism and continue to shape the modern world, climate coloniality refers to how these historical and persistent colonial frameworks influence the distribution of climate impacts, adaptation strategies, and environmental governance. Coloniality is premised on racial domination and hierarchical power structures that were established during colonialism and continue in post-colonial contexts, where the colonial matrix of power persists (Mignolo & Walsh, 2018; Quijano, 2007). Whether called 'climate coloniality,' 'green colonialism,' 'carbon colonialism,' or 'fossil capitalism,' it arose when Eurocentric dominance, neocolonial practices, racial capitalism, unequal consumption, and military power combined to shape the climate effects encountered by racially marginalized groups, rendering them particularly vulnerable and expendable (Sultana, 2022). For us, climate coloniality is demonstrated by the unequal ways in which former colonies in the

Global South bear the heaviest impacts of climate change, such as rising sea levels, extreme weather, and biodiversity loss, despite contributing the least to greenhouse gas emissions (Khan et al., 2022). Climate solutions, such as lithium mining for batteries and land grabs for carbon offset initiatives, continue to perpetuate colonial resource extraction patterns. For example, when considering how new battery technologies are central to technological solutions to the current crisis, how does solving the world's wicked problems downplay the ramifications of the shifts from fossil fuel extraction to mineral extraction?

Others have argued that the proposed solutions to climate change only perpetuate colonialism since it often involves land grabs, extraction, displacement, and dispossession (Ajap, 2024; Ferdinand, 2021; Sultana, 2022). This is because:

> Climate colonialism forces a re-embodiment and relocation of how, why, and who is at fault/responsible. The climate is failing to change. It is being colonized and forced to alter, modify, and—as catastrophes indicate—it is rebelling and resisting the assault upon it. (Martinez, 2014, p. 79).

Climate coloniality is becoming ubiquitous, and post-colonial countries continue to be pushed aside (and out altogether) in international negotiations and the decisions leading to narratives on climate change (Sultana, 2022). Climate coloniality serves as a way to highlight what has been called the ' anthropo-obscene' (Ernstson & Swyngedouw, 2019) by unearthing the technocratic discourse that depoliticizes and coexists with excessive capitalist accumulation.

The challenge of climate change cannot be meaningfully addressed without addressing historical, underlying systemic issues that caused this in the first place. Sultana (2022) highlights that meetings such as COP and other climate negotiations are merely 'global theaters' of discursive proforma that are premised upon "depoliticized techno-economist utopias that never deliver" and are grounded on the "performance of diversion, delay, co-optation, and performativity without substance is repeated almost annually" (p. 2). The sense of coloniality that still permeates the discussions around climate change creates embodied colonial wounds that are steeped in both material and epistemological colonial and imperial violence and have subsequently been engraved in the bodies and minds of those who are most affected by anthropogenic changes in the Global South. Educating about climate change should begin by accounting for the spatialization of colonialism's historical extension into the present. This is because anthropogenic changes bring to the forefront not only the efficacy of historical colonialism but also the ongoing effects of coloniality, which have come to govern the structures of life and are indoctrinated through the processes of capital accumulation, international development, and coloniality.

When discussing climate coloniality, the colonial logic of extractivism has persisted through neocolonial and development interventions since World War II and through the

Bretton Woods Institutions. The unequal ecological exchange between the Global South and the Global North, the ongoing practices of extractive capitalism, and the imperial frameworks of global trade and policymaking all contribute to the persistence of climate coloniality's multidimensional nature. The legacies of colonial violence and the use of human capital to drive overdevelopment have created environmental harm in the name of modernity. Education and its linkage to economic theories, such as the rates of return (Psacharopoulos, 1972), have been at the forefront of engendering capitalist extraction. In the post-colonial period, countries in the Global South were told that development was linear (citing Rostow [1960]'s five stages of development) and that Western modernization could be achieved by moving from agrarian to manufacturing to industrial to scientific modernity. What was not made clear was that Western modernization would come at a price to be paid later in the form of climate-fueled natural hazards and ecological degradation. The spillover effects and hidden costs of modernization, pollution, toxic waste, disasters, desertification, deforestation, and land erosion were not revealed to Southern countries, and the fact that they would suffer more from these knock-on effects than those who caused them. Modernization has fallen short of its promises, producing an ideological concoction of global capitalism, economic growth ideologies, and climate disasters that are dependent on degradation, displacement, denomination, dispossession, and extractivism that benefit a few and make vulnerable and disposable millions. Development logics focusing on shareholder profit maximization and hierarchies of power relations only highlight the continuity of colonial dispossession.

The rise of what has been called climate apartheid, where the affluent shield themselves from the harshest impacts of climate change, leaving the global poor to endure the consequences, exists at the intersection of race, gender, and class, impacted by ecological harms and toxic environments. This demonstrates how the West is unwilling to take responsibility for its historical actions and that epistemic injustice abounds (Tuana, 2019; Williams, 2021). Climate apartheid results from modernist extractivist capitalism, which is based on the rates of return and unfettered by climate coloniality. If the consequences of these inequalities go unrecognized, they influence how we approach climate education. Instead of centering people as part of the solution, climate coloniality thrives on the racialization of the Other and has disproportional consequences for the poor, marginalized, and most vulnerable. In the rise of eco-apartheid between the Global South and the Global North, epistemic violence persists as the status quo due to the Western dominance in climate discourse and, in turn, how the topic is constructed in education. This has consequences for national educational systems because we have come to normalize Eurocentric knowledge production through "methodological whiteness" (Bhambra, 2017) and have attuned the colonial white gaze upon the non-white Other in the Global South and expounded white saviorism around climate solutions (Sultana, 2022). However, all is not lost. Education can offer us a path toward "ontological disobedience" (Burman, 2017) by disrupting the epistemologically and ontologically deficient (Mignolo, 2017) that comes with Othering. Such displacement

allows us to reconceptualize what it means to be human (Wynter, 2003; Wynter & McKittrick, 2015). Addressing epistemic violence necessitates transcending colonial power structures by embracing epistemological and ontological changes that promote what have been called forms of pluriversality instead (Escobar, 2020), and this is where decoloniality comes into play.

Transcending the Limits of Coloniality: Decolonial Educational Ecologies

In advancing an ecological approach to climate coloniality in education through the conceptualization of decolonial educational ecologies, we build on Malcolm Ferdinand's concept of decolonial ecology. Decolonial ecological frameworks suggest that a break from hegemonic spatial, temporal, and epistemological frames can occur through subversive connections and reconnections within the contextualities of landscapes that offer material and epistemological shifts that extend beyond Western anthropocentric frames and social/environmental fractures, including the use of the Anthropocene and what it obscures. Following existing critiques from Black and Indigenous perspectives (Davis & Todd, 2017; J. Davis et al., 2019; Ferdinand, 2021; Nxumalo, 2021; Whyte, 2018), we suggest that using the Anthropocene as a conceptual tool for addressing climate change in education is a critique that comes up short, erasing and obscuring Black and Indigenous relations, perspectives, and modes of living that are not in line with hegemonic colonial order. Ferdinand (2021) interrogates Anthropocene approaches to thinking about climate and singular ecological conceptualizations by asking:

> Could it really be that the global enterprise, which from the fifteenth to the twentieth century was predicated upon the exploitation of humans and non-humans, including the decimation of millions of Indigenous people in the Americas, Africa, Asia, and Oceania, the forced transportation of millions of Africans, and centuries-long slavery, has no material or philosophical relationship with ecological thinking today? Are the ecological crisis and the Anthropocene new expressions of the 'White man's burden' to have 'Humanity' from itself?' (p. 10)

Ferdinand's (2021) double fracture underscores the rift between environmentalism, rooted in white utopias, and social and colonial struggles. The epistemological conditions of modernity silence those excluded from the world. Both land and marginalized human experiences are redefined through colonial logic. Spatial relations in the modern world are perpetuated and regenerated through what Ferdinand (2021) describes as forms of colonial inhabitation that are 'off-earth' concerning the designation of Indigenous land as terra nullius, a place devoid of history. In colonial ecologies, place is reimagined through the distorted logic inherent in the (re)ordering of the plantation worldview (Scherrer, 2023). The colonial nature of educational structures and their consequences provide lessons similar to how books and texts guide approaches to decolonial education, offering prompts or reminders during the process of rereading and

reconstructing worldviews while also reminding ourselves that other ways of being–other worlds–are already present and have always existed.

The double fracture reveals the epistemological conditions of modernity that silence those excluded from the world. Both land and the marginalized 'less civilized' human experience are redefined through colonial logic. By inhabiting the earth through colonial ecologies, place is reimagined through the twisted logic inherent in the plantation worldview, in which the nature of educational structures mirrors economic frameworks. The aftermaths of such derangements provide lessons similar to how books and texts teach approaches to decolonial education, offering prompts or reminders during the process of rereading and reconstructing worldviews (McKittrick, 2022). A fundamental aspect of a decolonial educational ecology in climate education involves incorporating decolonial, anti-colonial, feminist, anti-racist, and anti-capitalist critiques and movements into climate education discussions and practices. This integration aims to address ongoing oppression and marginalization, in addition to the plurality of historical and contemporary movements (many emerging from the Global South) that can serve as guides and the foundation for lessons.

Education, particularly in the realms of climate education and sustainable development, remains intertwined with and heavily reliant on an unsustainable political-economic system that drives Western human-induced destruction. Today, climate education is framed as a challenge that can be addressed through the swift adoption of technological innovations, leveraging individuals with new forms of scientific expertise and tech-based knowledge to facilitate our return to a "business as usual, but greener" model (Baskin, 2019). Present approaches to climate education are rooted in a deficit language that represents the climate crisis as something recent, solvable through access to and application of Western knowledge, while coexisting with existing consumption patterns. These mainstream methods highlight the historical harm that has been inflicted and continues to occur, pointing out that these complex injustices and ecological violence tend to disproportionately affect communities that have played the smallest role in the current crisis. When discussing the crisis, existing approaches to climate education do not regard the current anthropogenic situation as a 'crisis' in the traditional sense, but rather as the cost of doing business; like any effective business model, climate challenges are seen as solvable through "renewable energy technologies [which] presume unfettered access to metal, minerals, concrete, land, and water, which can lead to political conflict, environmental degradation, and the intensification of land and water grabs" (Stein et al., 2023, p. 990). Such strategies are commonly perceived as beneficial and are not seen as contributing to coloniality, even though they further marginalize vulnerable groups, displace people, and extract finite, nonrenewable resources.

Grounding Decolonial Education Ecology in Critical Inquiry
To remedy these deficiencies, decolonial educational ecology helps us rethink climate solutionism, which must work in and beyond Western onto-epistemological knowledge

frameworks. Identifying a concealed contradiction in the current approaches to climate education, the primary focus on 'green' solutions remains. Referring back to the battery example mentioned earlier, students often overlook the link between extraction, dispossession, and exploitation, which is essential to understanding the rationale behind renewable energy. A decolonial educational ecology is motivated by a profound understanding of the geopolitics of knowledge production, including who gets invited to the conversation, who is cited, which epistemologies are considered, whose ontologies are recognized, as well as who is invited to speak, who is listened to, and who participates in setting agendas. It asks students to recognize and concede that the constitutive of modernity (e.g., colonial/colonizing ecologies), which emerged through European colonization and is grounded in white/male/Christian supremacy (Grosfoguel 2007; Mignolo 2011; Quijano 2000), has been engendered through colonial actions (genocide, ecocide, epistemicide, dispossession, subjugation, extraction, exploitation). Since modernity/coloniality go hand-in-hand, a decolonial educational ecology does not promote or reproduce white/settler saviorism and advances white/settler colonial futures (Stein et al., 2023). For example, what right do Western corporations and leaders have in telling the Global South how to develop their way out of climate problems when, for example, the entire continent of Africa, nearly 20% of the global population, only contributes between 2 to 4% of global greenhouse gases (World Meteorological Organization, 2023)?

Instead, decolonial educational ecologies are based on critical inquiries that encourage students to ask questions, engage with contextualized phenomena, dismantle histories and hierarchies, and reconstruct the fixed, growth-based boundaries accepted as part of Western scientific modernity. Ecological violence is intergenerational, and the modus operandi of unchecked capitalist accumulation—whether 'green' or not—is driven by humans' demand for cheap land, labor, and resources. A decolonial educational ecology urges us to consider the hidden ecological costs of modernity. Attempts to mitigate anthropogenic changes are most often addressed through superficial solutions and quick fixes. Indigenous communities have been experiencing the consequences of climate change for some time. As Whyte (2018) succinctly stated, "the harms many non-Indigenous persons dread most of the climate crisis are ones that Indigenous peoples have endured already due to different forms of colonialism: ecosystem collapse, species loss, economic crash, drastic relocation, and cultural disintegration" (pp. 296-297). Decolonial educational ecologies highlight the importance of identifying human-induced challenges, questioning the normalization of universal truths, addressing technological impositions, and re-centering Eurocentric dualisms, hegemonies, and modernity—elements inherent in colonial ecologies. This approach aims to address these issues through distributive justice, reparations, and restitution (Táiwò, 2022).

A decolonial educational ecology is interconnected with the initiative of decolonizing climate education. This is urgently necessary due to the disconnect between what

students are prepared for and the specific situated realities they face now and in the future (Scherrer, 2022). Patel (2015) urges scholars to conceive of "oneself as part of colonial history and present is hard, that a reclamation and refusal of research is unsettling, and learning about research is cultural practice" (p. 85). Such cultural practices, including finding oneself in history, are inherently decolonial, challenging hegemonic notions that position scientific and historical knowledge as objective, neutral, and detached from personal or cultural influences (Patel, 2015). The concept and practice of decolonizing can be anti-colonial as long as the approach addresses the root cause, which involves confronting the ingrained colonial nature of systemic change. Climate change education necessitates specific liberating and renewing decolonial approaches that acknowledge the colonial nature of intertwined social and ecological issues, dismantle them, and move beyond surface-level problems by avoiding what we view as new policies through a singular critical lens.

Rejecting Climate Solutionism

With the rise of social media highlighting ecological destruction from climate disasters in previously protected areas, such as the extreme fires in Los Angeles in 2025 and severe weather in the southern United States, students are advocating for stronger "justice-oriented institutional commitments to socio-ecological change" (Stein et al., 2023, p. 988). They urge us to avoid 'climate solutionism,' which tends to emphasize solutions that focus solely on scientific and technological fixes. Moving away from solutions-oriented climate education requires asking educators different questions that target the fundamental aspects of Western modernity. Growing movements of student activists (e.g., Sunrise Movement) demand not seeing climate change merely as a 'problem' to solve but as something that must be tackled and eradicated, addressing the embedded nature of technological and late-stage capitalist systems that uphold and perpetuate it. We propose that decolonial educational ecologies, which highlight coloniality as the foundational aspect of modernity, offer an alternative approach. To be clear, we are not suggesting decoloniality as a cure-all to resolve the solutions-oriented culture surrounding climate education. Decolonizing involves a process of conceptual refinement. Some have adopted the term 'anti-colonial,' similar to decolonizing in its goal of dismantling colonial structures and embracing Black and Indigenous ways of knowing, rejecting colonialism by practicing differently, beyond its spatial and temporal frameworks. For instance, it must tackle how the land is contaminated by colonial concepts (i.e., patriarchy, imperialism). Approaches aimed at such deconstruction should incorporate Indigenous perspectives on land by dismantling these colonial concepts. They argue that 'quick fixes' fail to address the root causes, resulting in insufficient outcomes. This, in turn, suggests that the agents delivering these solutions operate with limited perspectives.

Ajap (2024) reviews how human-centeredness, epistemic inequity, globalization, neoliberalism, pedagogical incompatibility, and social inequality are inhibitors to

realigning justice-based environmental efforts toward sustainable ecocentric pedagogy and practices in higher education. Consequently, Stein et al. (2023) remind us that:

> Any climate education is likely to reproduce colonial patterns if it relies on the same intellectual, affective, and relational infrastructures of our current (modern/colonial) system, and if we remain (consciously and unconsciously) invested in the promises this system has offered to those it was designed to benefit. (p. 992).

However, this is easier said than done, as faculty have reported significant challenges (educational backgrounds, individual and psychological barriers to change, systemic and institutional barriers to change, and the need for effective strategies, resources, and actions) in attempting to challenge colonial logics within a Western university context (Bills & Klinsky, 2023).

Several scholars have called for critical climate education (CCE) (Stein, 2024; Svarstad, 2021; Svarstad et al., 2023), as an alternative to mainstream climate education that recognizes the historical wrong of colonialism and the current ecological crisis and the systematic nature of European colonial violence and chattel slaves that emerged in the fifteenth century stem from the same point of origin (Whyte, 2020; Wynter & McKittrick, 2015). We argue that this is similar to the decolonial educational ecology because CCE and the decolonial educational ecology that is put forward above begin from the premise that (i) they recognize that there were other forms of colonialism but single out European colonialism because of its shared brutality, scale, and lasting effects (racialization, extraction, domination, exploitation, and dispossession) that are embedded within capitalism accumulation; (ii) the current political-economic system is organized around *anthropocentrism*, which is the belief that man and nature are separate; and (iii) the reinforcement of scientific racism that espouses the idea that racialized peoples are subservient to "white" people. Although the Intergovernmental Panel on Climate Change (IPCC) report (2022) acknowledged colonialism as a factor influencing climate change and a recent report from the UN Special Rapporteur suggests that "there can be no meaningful mitigation or resolution of the global ecological crisis without specific action to address systemic racism, in particular, the historic and contemporary racial legacies of colonialism and slavery" (Achiume, 2022, p. 2), skepticism around the ecological foundations of climate change abound.

Conclusion: Deciphering and Practicing Decolonial Epistemic Futures
The issue with climate education is that it reinforces "the normalization and naturalization of colonial hierarchies and capitalist imperatives have led us to neglect our responsibilities to each other and to 'nature'/the Earth as a living entity (a metabolic system) that we are also part of" (Ferdinand, 2021; Stein, 2024, p. 4). Decolonial educational ecologies grounded in decolonial and Indigenous practices, cosmologies, and futurities challenge the consideration of alternatives to the current

political-economic static binary, embrace more-than-human elements, and avoid further exacerbating current climate *in*justices (e.g., under the guise of developing future 'green' or 'resilient' solutions). Decolonial educational ecologies do not aim for universalism but is based upon context and the specificities of local adaptation (e.g., see indigenization in Ferdinand, 2021) because they must recognize that while modernity claims to speak in universal truths, it treats economic growth and development as linear and assigns no sense of agency to the current climate crisis. Decolonial educational ecologies prioritize human well-being, while at the same time recognizing the relational obligations with more-than-human kin (living and nonliving). Decolonial educational ecologies should be aware of not reproducing colonial dynamics and coloniality, and failing to identify the specificities obscured by labeling the situation as the Anthropocene. Disentangling decolonizing approaches from the historical roots of colonization is critical, as superficial "dismantling" sometimes fails to unlearn the deeply rooted, perpetuated colonial natures in decision-making and the related patterns and rhythms that govern educational landscapes (Mbengue, Diame, & Scherrer, 2024). The concern is that representations of Black and/or Indigenous people provide forms of "verifiable truth" through negative portrayals of individuals and places.

Returning explicitly to our practice of contrapuntal reading (Said, 1994), in this article, we offered a series of 'counterpoints' interactions that largely remain illegible within dominant discourse. The 'independent melodies' within decolonial educational ecologies reveal the connections between modes of colonialism and related cultural formations. In offering something different from existing grammars, while building alternative modes of knowledge production grounded in place, our contrapuntal reading practice challenges you, the reader, to establish narratives and new stories beyond the 'comforting' ways of knowing and being within universal Western patterns of modernity. New practices and their logics can be uncovered and renewed through rereading and deciphering solutions to take into account multiple forms of social reality. Such practices offer opportunities to reconsider different ways of seeing and feeling the world, rupturing existing patterns and rhythms of the dominant social order, ways that can initiate new forms of psychological response reinforced by decolonial ecologies and their ways of knowing and being. McKittrick (2022) suggests that practices of deciphering dominant narrative (e.g. climate policy and education in this case) can be done in the work of exploring and uncovering the ways Black and Indigenous (and Black-Indigenous) communities have continuously innovated and creatively practiced new social realities, navigating not only extractive systems of racism but living Otherwise, and by envisioning alternative futures. Everyday forms of lived Black and Indigenous praxis expose the limits of white supremacy and Western colonization of land and people that continue to be reinscribed within hegemonic traditions of knowledge production (Scherrer, 2023). In this way, creative forms of anti-colonial life involve living differently, reinventing and reimagining that world through different stories (Alagraa, 2021).

Turning to Carter's recent book review of *Maroon Choreography* in Comparative Education Review—a book that speculates on the long (im)material, ecological, and aesthetic afterlives of black fugitivity and the practices that might lead us out of social-ecological collapse— "reminded (as if one could forget) that our compulsory education systems are colonially choreographed" (p. 373). The wayward figure of the Black/Indigenous maroon resisting colonial domination gestures toward historical and future methods for reorienting and repairing the earth, both internally and practically, entangled within the complexities of shifting diasporic and ecological relationalities (Ferdinand, 2021). This leads us to ask ourselves: What lessons am I telling and how am I telling them? It is in the process of exploring deeper modes of social and ecological relations that the possibility of decolonial thought (and practice) emerges, where spaces are created for imagining otherwise, rather than the other way around. Such a decolonial orientation counters paradigms that assume thinking comes before being. In this counterpoint, a new rhythm emerges; the Western episteme should be reexamined, involving a remapping of genealogies. It is within this possibility, towards a different set of lessons, stories, and ecological relations, that other worlds emerge.

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