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For an Ecological Enlightenment: A Critical Theory of the Modern Concept of Nature

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FOR AN ECOLOGICAL ENLIGHTENMENT: A CRITICAL THEORY OF THE MODERN CONCEPT OF NATURE[1]

abstract

In the Anthropocene, addressing climate change and environmental challenges require more than relying on technological solutions, despite what some interpretations of "sustainability" suggest. In this paper, I propose a new idea of Enlightenment, one in which nature is not simply preserved for sustainable development. First, I explore the paradoxes of a certain modern notion of Enlightenment through the lens of critical theory. This conception of Enlightenment treats nature as something to be controlled and exploited and the linear progress of humanity replaces the cyclical rhythms of nature are replaced by the linear progress of humanity. Second, I propose a new conception of Enlightenment, an ecological and truly modern notion. Foucault, in criticizing Kant's Enlightenment, thinks of modernity as an ethos: a way of life in which questioning the limits of reality is the starting point for overcoming them. This reinterpretation of modernity lays the groundwork for an Ecological Enlightenment, grounded in the relationship between humans and nature, wherein "modernity" is not simply discarded but reconceived.

keywords

critical theory, ecology, modernity, anthropocene, sustainability

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1. Introduction

COP29 (Conference of the Parties), the 29th and most recent annual meeting of the United Nations Framework Convention on Climate Change (UNFCCC), indicated that we remain far from achieving the goal of the 2010 Cancun Conference: an increase in global temperatures of no more than 1.5°C (UNFCCC, 2010). Moreover, the Intergovernmental Panel on Climate Change's Sixth Assessment Report finds that, across the scenarios studied, it is more than 50% likely that the global temperature will rise by more than 1.5°C by 2040 (IPCC, 2023). Climate models—tools that scrutinize the impacts of human activities on the climate and project future climate conditions—clearly show that the outcomes of this temperature rise will have strong consequences on both the environment and people's lives (Fernández & Blanco, 2015). Humans' industrial activities are the primary cause of the ongoing ecological and climate crisis, and these activities have fostered the emergence of a concept – the Anthropocene – that is increasingly recognized within both academic circles and public opinion (Cera, 2023).

Nobel prize atmospheric chemist Paul Crutzen and biologist Eugene F. Stoermer (2000) coined the term "Anthropocene" in 2000 to describe the current geological epoch. The contemporary import of Crutzen's term is demonstrated by almost a hundred alternative descriptors in the literature (Cera, 2023, p. 50), including "Capitalocene" (Moore, 2016), "Chthulucene" (Haraway, 1991), "Ecocene" (Tănăsescu, 2022), and "Plantationocene" (Davis *et al.*, 2019). These terms highlight the dangers that industrial activities pose to human life and the environment and emphasize humanity's ability to shape the fate of the planet through its technological superiority. The multiple meanings that "Anthropocene" conveys have sparked significant intellectual debate. Scholars from different fields interpret the term in various ways that range from referring to a geological epoch marked by human impact on Earth to being a broader cultural or political metaphor (Missiroli, 2022). These diverse interpretations foster discussions about its relevance, implications, and the very definition of the human-nature relationship. Consequently, discussion about the Anthropocene is a rich topic of debate across scientific, philosophical, and social spheres.

A key aspect of this debate involves determining the precise starting point of the Anthropocene (Gemenne & Rankovic, 2019). In his theorization, Crutzen (2002) has proposed the year 1784 so that the beginning of the Anthropocene aligns with James Watt's invention of the first steam locomotive. However, others have suggested various proposals, including setting its beginning in the Neolithic period when humans developed agriculture and animal domestication (Harari 2016); in the year 1610 because of the significant drop in atmospheric CO2 because of depopulation in Americas (Lewis & Maslin, 2018); and in 1964, which marks the

end of nuclear tests conducted in the 1940s, 1950s, and 1960s (Zalasiewicz *et al*., 2011). Some scholars point to 16 July 1945, the day of the Trinity test (Anthropocene Working Group, 2015), while others suggest the year 1945 as the start of the Great Acceleration – when rapid resource accumulation, population growth, energy consumption, ecosystem destruction, and urban expansion began in earnest (McNeil & Engelke, 2016). Another option comes from Jason Moore (2016) who has speculated, in line with his "constructivist" hypothesis, that the Anthropocene began five hundred years ago when a new way of organizing people and nature, which eventually led to the current capitalist production system, spread worldwide. Additionally, Christophe Bonneuil and Jean-Baptiste Fressoz (2013) suggest that we study the Anthropocene by dividing it into numerous stories that characterize the grand, universal history of humankind.[1] A lack of agreement about the precise starting point of the Anthropocene has meant that neither the International Commission on Stratigraphy (ICS) nor the International Union of Geological Sciences (IUGS) have approved the term as an official subdivision of geological time (Anthropocene Working Group, 2024; ICS, 2024).

However, in November 2021, an alternative idea presented the Anthropocene as an event and not an epoch (Bauer *et al*., 2021; Gibbard *et al*., 2022). In this article, I follow this alternative: the Anthropocene is an event that represents the point of rupture in humans' relationship with nature. I follow Crutzen and think of the Anthropocene as a "daunting task [...] towards environmentally sustainable management. [...] At this stage, however, we are still largely treading on *terra incognita*" (2002, p. 23). Consequently, the Anthropocene demands that we inquire about the type of relationship that humans have, or should have, with nature. If the purpose of this analysis of the Anthropocene is to establish a sustainable human-nature relationship, then we must inquire into what sustainability means.

The purpose of this article is to provide a critique of the modern concept of nature and use the concepts of the Anthropocene and sustainability as case studies of this critique. In the first section of the article, I demonstrate how, from the Enlightenment, a certain (modern) idea of nature has developed. In the second part, I illustrate how this modern interpretation of the human-nature relationship conceptualizes the Anthropocene and sustainability. In the third section, I show the theoretical limits of this enlightened (modern) idea of nature. In the final part, I show how, based on a different interpretation of the Enlightenment, we can envision a new modernity and a new Anthropocene that is truly sustainable because it is ecological.

2. The Modern Idea of Nature

> For twenty years or so, my friends and I have been studying these strange situations that the intellectual culture in which we live does not know how to categorize. For lack of better terms, we call ourselves sociologists, historians, economists, political scientists, philosophers, or anthropologists. But to these venerable disciplinary labels, we always add a qualifier: "of science and technology". "Science studies", as Anglo-Americans call it, or "science, technology and society". Whatever label we use, we are always attempting to retie the Gordian knot by crisscrossing, as often as we have to, the divide that separates exact knowledge and the exercise of power—let us say nature and culture. (Latour, 1993, p. 3)

In his *We Have Never Been Modern*, Bruno Latour characterizes the culture "in which we live" as having one fundamental aspect: the division between Nature and Culture. By "Nature", he refers to the realm of the "non-humans" – the environment – and by "Culture", he means the ontological domain of modern human beings.

1 For a broader analysis of various theories concerning the beginning of Anthropocene, see Cera (2023).

Although the concept of "environment" is often elusive and ambiguous and lacks "a universally shared meaning" (Barry, 2007, p. 12), as it is often associated with terms such as "nature", "planet", and "ecology" and is conceived as something separate from the moral sphere of human beings, this is not the case etymologically and scientifically (Jamieson, 2008). Etymologically, the English word "environment" (which derives from the Latin *ambiens*, *ambientis*, the present participle of the verb *ambire* "to go around"), as well as the French *environnement*, the Italian *ambiente*, and the German *Umwelt*, refers to an act of surrounding, which, as Italian scholar Serenella Iovino (2004, pp. 17–18) highlights, imparts an essentially dynamic connotation to the word. The environment is, therefore, an active system made up of various entities and processes, including human beings. From a scientific perspective, the environment cannot be reduced to a mere object or a collection of natural entities; rather, it is an ongoing relationship that involves various components and dynamics. As ecology highlights, no organism, including a human being, could survive – or perhaps even exist – if it were isolated from the relationships that define the environment to which it is intrinsically connected (Odum & Barrett, 2007). Thus, the concept environment suggests a relational way of thinking about the natural element that other notions, such as nature or Earth, do not allow.

Thus, theorizing the modern separation between human and environment, Latour argues that, since the Enlightenment, Western society has been defined in terms of the division between a human reality and the natural one. According to him, the Kantian *Ausgang* (the exit) of human being from the state of immaturity, in which everyone must have the courage to use their own intellect (Kant, 1992 [1784]), coincided with the separation – "purification" (Latour, 1993, p. 10) – of humanity from the environment. This division, which forms the core of modernity in its Western form, is so widespread that it compromises and undermines scientific research. This separation, therefore, not only undermines the relationship that modern humans have with the natural world but also jeopardizes the understanding that modern humans have of the environment, which we explain and study from a completely anthropocentric perspective.

According to Latour, the author who most deeply theorized this distance between humans and nature was Thomas Hobbes. Reflecting on the English Civil War, the author of *The Leviathan* (Hobbes, 2017 [1651]) considers a possible end of the war through the creation of a perfect state entirely based on rationality. But what does this have to do with the modern way of thinking about nature? The premise of Hobbes's theoretical proposal is that it is possible to completely control the irrational (unenlightened, natural) part of humans being, which can be treated as non-human. Through the elimination of every possible "[appeal] to entities higher than civil authority" on the behalf of the people and combined with an idea of human nature as totally "inert and mechanical" (Latour, 1993, p. 19), Hobbes was convinced that it was possible to avoid all future civil wars. In his conception, Enlightened reason not only ontologically distinguishes human beings from non-human animals but is also the only way out of the chaos of the natural environment; humans can build a perfect society precisely because they are entirely rational. Thus, Hobbes regards the natural environment as the emblem of irrationality. Although Hobbes considers rationality as natural and intrinsic to the human beings – rendering them "inert and mechanical" – and necessary for a human society – a natural evolution from the state of nature, the state of *bellum omnium contra omnes* – one must not conflate this "natural" feature of humans with the chaos of the natural environment, which is precisely what modernity seeks to escape both internally and externally.

The distancing from the natural environment is particularly evident in the other author who, according to Latour, has embodied the modern way of thinking: Robert Boyle, the inventor of the air pump. Latour considers this invention emblematic of the Enlightened way of thinking about the natural environment because of Boyle's method. Boyle had been the

first to use the "empirical style" (Latour, 1993, p. 18) of modern science, a style in which the criterion of truth is the observation of an artificially produced phenomenon (in this case, the level of mercury in Torricelli's tube) in the closed and controlled context of the laboratory. For Boyle, it is possible to know only the facts that are worked out under entirely controlled circumstances precisely because "these facts will never be modified, whatever may happen elsewhere in theory, metaphysics, religion, politics, or logic [...]" (Latour, 1993, p.18).

Boyle, just as does Hobbes, extends "God's 'constructivism' to man" (Latour, 1993, p.18). Things, states, and air pumps are known by man only because human begins "construct" them. Even in Boyle's case, the natural environment is completely excluded and perceived as an object that moderns do not need for their lives: "The Leviathan is made only of citizens, calculations, agreements or disputes" (Latour, 1993, p. 28) just as Boyle's laboratory is made only of artificial machines. Boyle, the scientist, invents the air pump, and Hobbes, the political theorist, creates the social contract. From this perspective, the idea that humans and nature have a relationship is completely ignored: modern humans create and know only what is non-natural and exclude themselves from their own natural dimension.

Alexandre Kojève (1969), one of Hegel's most important commentators, has conceptualized a view similar to Latour's but offers a stronger proposal. In his perspective, modernity represents not only the separation between humans and the natural environment but also the dominance of the former over the latter. This idea is echoed in the Judeo-Christian tradition (White, 1967) and in Heidegger's (2013 [1977]) notion of "standing reserve", both of which depict humanity as distinct from nature and entrusted with its dominion. According to the Russian philosopher, every human action is a negation of the natural world and, consequently, every aspect of our internal and external "naturalness" is merely a residue that will be gradually eliminated as the historical process unfolds. For Kojève, history – at least, since the French Revolution, which, like Latour, he believes is the start of modernity – is the continuous opposition between modern human beings and the natural environment (see Kojève, 1969, pp. 34–40). Every human institution, language, social form, and technology relies on the annulment of the natural for its existence. Kojève, as an antecedent to Fukuyama's (2006 [1989]) conceptualization, sees the "end of history" as consisting of the realization of a world where nature will cease to exist as an autonomous space and becomes entirely absorbed by the (modern) technically reconstructed world (Kojève, 1969, pp. 95–100).[2] Referring to human actions, he writes:

[The aim is to] transform the (natural) world in which [the human] is not recognized into a world in which this recognition takes place. This transformation of the world that is hostile to a human project into a world in harmony with this project is called "action", "activity". This action – essentially human, because humanizing and anthropogenetic – will begin with the act of imposing oneself. (Kojève, 1969, p. 11)

Since the French Enlightenment, humans have become the lords of natural environment and their (modern) function is nothing more than the negation of nature.[3] In his *Eros and Civilization*, Herbert Marcuse (1955) articulates a similar sentiment and defines "modern" and "enlightened" as synonyms of "promethean", human beings' inclination to technically dominate and transform everything that is not human.

2 Francis Fukuyama suggests that liberal democracy represents the endpoint of humanity's sociocultural evolution. However, Fukuyama's conceptualization is preceded by several key intellectual currents and historical events that contributed to discussions about the trajectory of human history and the nature of political ideology. For a historical analysis of the concept of End of History, see Cooper (1984).

3 For a deeper discussion of authors who have defined modern ways of understanding nature on the basis of the division between human and natural dimensions, see Missiroli (2021).

This modern way of conceptualizing nature as separate from humanity is also reflected in how our understanding of time has shifted. Reinhart Koselleck, in his *Futures Past*, argues that, since the Enlightenment, we conceive time differently. In modernity, time is the horizon of expectation – *Erwartsungshorizont* – and extends enormously beyond the space of experience – *Erfahrungsraum* (Koselleck & Tribe, 2004, p. 168) such that, for modern individuals, what happens in the future is much more important than what has happened in the past. Put another way: modern people imagine experiences that are not linked to and do not derive from those that came before. According to Koselleck, modernity replaces natural, circular time that Aristotle (2018) describes in Book IV of *Physics* with the linear time of *Geschichte*. The alternation of the seasons' circular time is now substituted by the linear time of progress (Gould, 1987). Natural time is quantified and subordinated to the minutes and seconds of clocks, which set the pace for human events (Mumford, 2010). Human time is projected to the future, and thereby supplants nature's cyclical, unchanging time. I am not arguing that a natural conception of time is true and the modern one false. The idea of an immutable, cyclical time is itself a metaphor, one that evokes a historical, almost mythical era of complete harmony between humans and nature, in which the former adapts to the natural environment's rhythms (Rousseau, 2009 [1755]). However, Koselleck aims to show that, with modernity, humans have ceased to seek harmony between the temporal structures that shape their lives and those of nature. Instead, we now live according to our own temporal framework and impose our needs on nature rather than strive to be in balance with nature. In this sense, how human industrial activities disrupt the regular cycle of the seasons across the entire planet is emblematic of the modern way of thinking the natural environment (IPCC, 2023). In the modern linearization of history, even the term "revolution" is no longer understood as a circular motion but as a moment of historical discontinuity (Condorcet, 1793), as an epochal rupture that marks the transition towards an unknown future and is not reducible to any experience. But what does this modern separation from nature have to do with the concepts of Anthropocene and sustainability?

3. Anthropocene and Sustainability: Expressions of Modern Thought

Among the many interpretations of Anthropocene, the most common is that of the "Good Anthropocene" (Ellis, 2020). Scholars (see Rockström & Klum, 2015; Steinmetz & Revkin, 2020) use this term to demonstrate the current geological event as being definitive proof that humanity's fate is to dominate nature. Thus, the Anthropocene is the demonstration of the progressive "purification" of humanity from the natural environment. For instance, in their *Break Through: From the Death of Environmentalism to the Politics of Possibility*, Michael Schellenberger and Ted Nordhaus (2007) consider the Anthropocene event as the moment of a total transposition of values pertaining to the relationship between humans and nature. They undertake a unique interpretation of Nietzsche's philosophy, in which the concept of the Anthropocene in conjunction with further technological advancement within the capitalist mode of production, is a substantial opportunity for humankind to redefine its relationship with nature. Schellenberger and Nordhaus assert that the Anthropocene represents not only the evidence of the (modern) ontological separation between Earth and humanity but also humanity's capacity to dominate and control the natural world. Their solution to current environmental challenges and ongoing ecological crisis is to accelerate the divergence between humans and nature. In their view, the more humans become separated from the natural environment through technological advancements, the more they will dominate it and mitigate the detrimental effects of climate change. According to their interpretation of Nietzsche, humanity will progressively reach a state of complete separation from nature and evolve into an artificial "singularity" (Broderick, 2001; Kurzweil, 2005; Bostrom, 2014; Leonhard, 2016). This idea comes from posthumanism, a human-centric intellectual movement

that explores the implications of new technologies, ecological concerns, and cultural changes on how we conceive the relationship between humanity and the world (see Haraway, 1991; Braidotti, 1993; Wolfe, 2009). This transformed state of human existence aligns with TESCREAL: a set of ideologies centred on transcending human limitations and controlling the future through technology and rational planning, in which human intelligence ultimately creates a wholly human reality that "codifies" and "manages" the natural world.[4] As with Kojève's concept of the end of history or with Koselleck's perspective of modern time, this vision is projected into an unrealized temporal realm. It envisages the Anthropocene as the embodiment of an era superior to the present – one depicted in Christopher Nolan's film *Interstellar* – grounded in an unwavering faith in technology (Lino, 2015).

Intrinsic to this vision of a Good Anthropocene is an unwavering confidence in geoengineering, the scientific project of making large-scale interventions in Earth's natural systems to counteract climate change and its effects (IPCC, 2011). These interventions encompass a wide range of techniques aimed at either removing greenhouse gases from the atmosphere (Brand, 2009) or modifying Earth's radiation balance to counteract the warming effects of greenhouse gases (Keith, 2013; Morton, 2016). Clive Hamilton writes that

> As the effects of global warming begin to frighten us, geoengineering will come to dominate global politics. Scientists and engineers are now investigating methods to manipulate the Earth's cloud cover, change the oceans' chemical composition, and blanket the planet with a layer of sunlight-reflecting particles. (2014, p. 11)

Scientists, as well as governments and major figures in the global economy put their trust in geoengineering. That such trust exists is evident from recent events. For example, the Mexican government has initiated cloud seeding, an operation in which tiny particles of iodide are injected into clouds to produce artificial rain to mitigate drought (Tesla, 2023). The same is true in Dubai, where for several years, drones have created artificial rains to reduce heatwaves that increasingly affect the desert region (Lewis, 2021). Bill Gates, co-founder of Microsoft Corporation, reflects this confidence in his book, *How to Avoid a Climate Disaster* (2021), and in his establishment of the Breakthrough Energy investment fund. This initiative financially supports various geoengineering projects around the world. Similarly, Elon Musk, CEO and lead designer of SpaceX, CEO and product architect of Tesla, Inc., and current head of the U.S. Department of Government Efficiency, has invested $100 million into the development of technologies that capture CO2; these types of "green" actions form the basis of many investments from Jeff Bezos, founder and chairman of Amazon, and Steve Huffman, co-founder and CEO of Reddit (Tanuro, 2012).

This modern way of seeing the natural environment, a conception that underlies geoengineers' techniques, appears to underpin a certain interpretation of sustainability in which adaptation and mitigation practices for addressing climate change are simply reduced to technological solutions (Royal Society, 2009; Fleming, 2010; Hamilton, 2014). These solutions range from renewable energy technologies, such as solar panels and wind turbines, to various geoengineering techniques that aim to reduce greenhouse gas emissions. Additionally, advancements in agricultural practices, such as precision farming and agroforestry, offer promising avenues for mitigating the environmental impact of food production while enhancing resilience to climate variability (Giller *et al*., 2015). By harnessing innovation and

4 TESCREAL is the acronym for Transhumanism, Extropianism, Singularitarianism, Cosmism, Rationalism, Effective Altruism, and Longtermism. For an introduction to and a critical analysis of this debate, see Gebru and Torres (2024).

scientific knowledge, these technological approaches aim to contribute to a more sustainable future by promoting resource efficiency and reducing environmental harm (UN Environment, 2019).

However, since its first formulation in the Brundtland Report, sustainability has never been presented merely as the application of technology to the problem of climate change (Brundtland, 1987). Instead, this concept encompasses four pillars (Purvis *et al*., 2019; Sedita *et al*., 2022) – economic, social, environmental, and cultural – because it does not concern exclusively environmental issues; rather, it aims to ensure social equity, address economic demands (UN, 2005), and establish a new ecological relationship with nature.

All of this, therefore, prompts critical questions: can sustainability truly be achieved by relying solely on technical solutions? Does the promise of technological solutions to the climate crisis mask the need for more profound cultural, ethical, and political transformations? Are these technological strategies effective in addressing the root causes of climate crisis? Will the Anthropocene truly lead to a "Good Anthropocene", or are we placing too much faith in technology alone?

4. Critique of the Modern Idea of Nature

Max Horkheimer and Theodor Adorno, two prominent figures of the Frankfurt School of critical theory, delve into the paradoxes inherent in modern thought of nature in their seminal work *Dialectic of Enlightenment* (2002). One of the central themes of their analysis is the notion of Enlightenment itself. According to them, the Enlightenment did not begin with the French Revolution, the historical period that Latour an Kojève mark as the beginning of modernity but began in classical Greek antiquity of the 5th century. They argue that the Enlightenment, which promised liberation from superstition and irrationality through reason and science, has instead led to new forms of domination and oppression. The instrumental rationality of modern society, which seeks efficiency and control through the application of scientific knowledge and technology, ultimately dehumanizes individuals and reduces them to mere objects, de-naturalized and completely manipulated for the sake of productivity and profit. This rationalization, they argue, paradoxically results in the loss of genuine human autonomy and natural agency. The very tools that were meant to liberate humanity have instead entrapped it in a system that erodes both individual freedom (their internal nature) and the connection to the external natural environment.

Another paradox they explore is the dialectical relationship between Enlightenment and Myth. While the Enlightenment sought to dispel myths and superstitions through reason and empirical inquiry, Horkheimer and Adorno argue that modern society has generated new myths and new forms of irrationality, such as a blind trust in science and technology. The modern total control over nature and non-technical (mythical) thought, in their conception, has only led humanity to an even more degenerated state, one in which the attempt to manage the natural world paradoxically becomes a weapon for controlling and dominating humanity itself.

However, instrumental reason is not unnatural insofar as it distances humans from their internal and external nature (environment). Instrumental reason, as a product of evolution, is itself an expression of nature, not something external to or opposed to it (Dewey, 2008 [1925]). On this conception of Enlightenment, instrumental reason implies a technical-mathematical control over the environment and, in some way, over our more irrational aspects. This perspective reflects the approach that Romantic criticism criticized: the reduction of nature (both external and internal) to a mechanism to be measured, predicted, and controlled and that strips it of those aspects of spontaneity and vitality that would constitute its essence. In this sense, instrumental rationality not only transforms the external world but also conforms

human experience to the logic of calculation and efficiency. As Friedrich Schiller, in his *Letter on Aesthetic Education of Man,* writes

> Eternally chained to only one single little fragment of the whole, Man himself grew to be only a fragment; with the monotonous noise of the wheel he drives everlastingly in his ears, he never develops the harmony of his being, and instead of imprinting humanity upon his nature he becomes merely the imprint of his occupation, of his science. (1954 [1795], p. 74)

Similarly, Latour also shows the paradoxes into which modern thought of nature falls. In *We Have Never Been Modern*, he not only points to the origin of modern thought but criticizes the two thinkers of modernity, Hobbes and Boyle. Despite the efforts of the former to postulate a model of a state that would end civil wars, another form of non-rational (natural) knowledge developed: that of the Levellers and the Diggers, members of the Royal Society, who proposed different ideas that contrasted with Hobbes' model. While the Levellers championed democratic reforms and individual rights, the Diggers focused on agrarian communalism and equitable access to lands. In other words, the Levellers and Diggers established a political space that Hobbes's state could not reach. Similarly, Boyle's science does not control external nature and, therefore, the criterion he uses to create the air pump seems to have very limited validity, as it primarily relies on empirical observations that do not account for the complexities and nuances of natural phenomena. Nonetheless, modernity's inability to control the natural environment is evident from the current data about climate change.

Despite global efforts and discussions at international forums, the ambitious sustainable goals set a decade ago remain elusive. According to NASA, Earth's average surface temperature in 2024 was the warmest on record (GISS, 2024). Global temperatures last year were approximately 1.47°C (2.1°F) higher than the average temperature in the late 19th century and 1.5°C above the pre-industrial average; these averages indicate a significant increase above NASA's baseline period (1951–1980). Analyses conducted by the National Oceanic and Atmospheric Administration (NOAA) and the Hadley Centre, part of the United Kingdom's Met Office, corroborate the same discovery: the global surface temperatures for 2024 reached unprecedented levels, the highest since the beginning of modern recordkeeping (NOAA, 2024). As these data indicate, something continues to elude the enlightened and sustainable technological control of nature.

Similarly, the promises of geoengineering to create a Good Anthropocene seem uncertain. As shown in J. R. Fleming's *Fixing the Sky*, our current geological epoch may become a "sinking Titanic" (Fleming, 2010). Data from Mexican cloudseeding has shown that, instead of rain, the country experienced a dangerous hailstorm that damaged many agricultural fields. Furthermore, scientists argue that we lack evidence that cloud seeding techniques increase precipitation in economically important areas and that we are uncertain about its side effects (Paddison, 2023). The same applies to other geoengineering techniques that have been developed, which, much like the concept of the Good Anthropocene, seem more like hopeful – mostly driven by economic interests (Robock, 2008) – rather than effective measures. However, these failed experiments are not in themselves problematic, insofar as they advance scientific knowledge. Their limitations, rather, are their underlying theoretical assumptions, which fail to account for scientific discoveries about the human-nature relationship.

The contributions to biology, ecology, and ethology from three key figures – Charles Darwin, Ernst Haeckel, and Konrad Lorenz – inaugurated a new understanding of nature (Andreozzi, 2012, pp. 27–28). Darwin's theories, for the first time, removed the human species from the pinnacle of any conceivable hierarchy of life; humans are just one of many

evolutionary possibilities. In doing so, he eliminated all forms of hierarchy between species and the perceived division between the human and natural worlds (1970 [1859]). As Thomas Huxley has written, the consequence of Darwin's theory is "that man, physical, intellectual and moral is as much a part of nature, as purely a product of the cosmic process, as the humblest weed" (1947 [1893], p. 39). Haeckel (1866) founded ecology and demonstrated that humans are not separate from nature. On the contrary, all of reality consists of interconnected systems that depend on these relationships for survival. Humans, as with all living beings, are not isolated entities but parts of a complex yet unified web of relationships that interconnect subjects, entities, objects, processes, and natural systems Finally, Lorenz, through his work in ethology, indisputably showed the complexity of non-human life and the striking mental, behavioural, and social similarities between humans and other organisms in nature (1966; 1982). Even less complex, non-human animals have been observed as displaying behaviours remarkably like those of humans. Each organism operates as an integrated system of processes that sustain its well-being and survival. These discoveries stand in stark contrast to the ontological separation between humans and natural environment that the Good Anthropocene implies and that is perpetuated through geoengineering technologies.

However, is another conception of modernity possible? Are the only possible critiques of modernity those of the Frankfurt School and Latour? Is another idea of nature possible, one that is not simply an object of human domination? Are there other notions of sustainability and the Anthropocene?

5. A New Enlightenment: Towards an Ecological Modernity

As Roberto Mordacci (2007) has emphasized, we cannot resign ourselves to a post-modern narrative precisely because the reality we live in is full of continuous paradoxes, such as the simultaneous advancement of technology and escalating environmental crises, which compel us to critically engage with our circumstances and seek solutions that address the complexities of our world. At the same time, it is nonsensical to propose a return to the non-modern because, given its scope, climate change requires human and technological intervention to mitigate its effects. But then, can we conceive a modernity that is not based on domination? Is It possible to rethink modernity without exiting it? Is a neo-modernity possible?

Michel Foucault (1984), in the last phase of his thought, questions the notion of Enlightenment. Foucault arrives at his critique by analysing Kant's 1784 response to the question "what is Enlightenment?" in the German newspaper *Berlinische Monatsschrift*. In his analysis, Kant defined the Enlightenment as an *Ausgang* (an exit), an exit of man from the state of minority. Thus, Kant understood the Enlightenment as a process and as a task: that of always having the courage to use one's intellect freely. Foucault is quite satisfied with Kant's response at this point. However, the German philosopher uses the term *räzonieren*, which can be understood as the private, not public, exercise of reason. But Foucault wonders how the free use of public reason would be guaranteed. The French thinker redefines the concept of Enlightenment, of modernity, as an "attitude", a way of relating to the present, a way of thinking and feeling like the Greeks' "ethos". What does this modern attitude consist of? A double operation, one negative and the other positive: negative in the sense of a permanent critique of the forms that enlightened (modern) thought has taken throughout history – as the Frankfurt School thinkers and Latour have done; positive in the sense of being experimental and assuming a constructive value toward the present. In the case of the Anthropocene and sustainability, we ought to recognize the paradoxes that a certain modern and sustainable interpretation of nature has created and try to rethink the relation between humans and nature rather than dominate nature technologically. However, what does rethinking sustainability from a practical point of view require? How can we have a (truly) modern attitude towards the problem of climate change?

In *We Have Never Been Modern*, Latour proposes an alternative to the classical notion of modernity. According to him, truly modern thought will only emerge from a recognition of the inevitable contact between Nature and Culture, between modernity and the natural environment. He calls this process, which is the opposite of "purification" from nature, "translation", in part because of the contact between the two. Translation occurs when the natural environment and humans mix to produce hybrids of Nature and Culture. If, in classical modern thought, hybrids were gradually eliminated through the imposition of human technological superiority, then, in Latour's interpretation, hybrids ought to be the starting point for thinking about one's own time. His proposal neither excludes human technological progress and activity nor reduces the natural environment to be an object of technological dominance. Instead, two elements are part of the same system: Gaia (Lovelock, 1979; Latour, 2017). "Gaia" refers to all the powers, natural or otherwise, that inhabit Earth during the Anthropocene and are continuously in relationship with each other. In this sense, the Anthropocene is not an epoch of human domination of natural environment but an epoch of the maximum relationship between the two, especially given climate change: a hybrid among hybrids. In overcoming the dualism between Nature and Culture, the Anthropocene will no longer be a geological event prior to the final technical dominance over nature but a starting point for rethinking the relationship between the two sides in an ecological way (see Merleau-Ponty, 1996).

The novelty of this critique is not so much that the Enlightenment (modernity) introduces a way of understanding the environment that separates humans from it – this was Romantism's critique (Paine, 2004 [1807]). Instead, the critique focuses on how, during the Anthropocene, we have interpreted the human-nature relationship through a modern lens. Rather than push environmental crises to their extremes by negating the natural environment, Latour's translation notion of modernity demonstrates that we can find solutions to the crises through our technological capacity by cooperating with the natural environment. For example, bioremediation, a process that employs living organisms such as bacteria and plants, can help degrade or remove contaminants from the environment. Here, human technology plays a supportive role by integrating advanced techniques, such as sensor monitoring and the optimisation of biological processes, to enhance the treatment's rate and effectiveness without replacing natural organisms' role (Haraway, 1991). Alternatively, ecological restoration, which involves assisting the recovery of degraded, damaged, or destroyed ecosystems through active human intervention, embraces a cooperative relationship between humans and nature. Techniques such as controlled reforestation, wetland rehabilitation, and soil regeneration integrate human expertise with natural processes, fostering resilience and biodiversity rather than imposing artificial substitutes. Human technology can facilitate, rather than override, natural dynamics by providing tools for ecosystem monitoring, adaptive management, and species conservation (Higgs, 2003).

This different attitude, which recognizes all dimensions of the interconnection between humans and the natural world, also seems the best at regarding various dimensions of the concept of sustainability, which is not only about a technical solution to environmental problems. The eco-modernist perspective, while certainly the most widespread, does not truly express what "sustainability" is (Nijhuis, 2015). The current situation has inevitably hindered a comprehensive investigation of fundamental principles that underlie sustainable development. This mistaken approach has had some important theoretical consequences, such as the exclusion of the perspective of some climate movements (Moellendorf, 2022). Instead of simplifying the concept of sustainability and making it clearer, this "technical reduction" of climate change has distanced it from the concerns of younger generations (McGimpsey *et al.*, 2023) as well as those of feminism, which, despite being one of the foundational elements

of sustainability (UNESCO, 2017), is currently absent from the ongoing discourse on the topic (Saeed, 2020). A focus on the technical aspect, rather than on facilitating communication and education about sustainability, has merely complicated the reception of sustainability. In a volume on sustainable education, Arjen Wals writes that "it seems that most, if not all, contributing authors agree that we do not and cannot know what the most sustainable way of living is" (2010, p. 144). Similarly, Helge Kminek (2020) argues that the technical reduction of the concept of Anthropocene poses a significant problem. As a result, sustainability has become an almost unattainable utopia (Berg, 2020) that will be achieved in the future with the realization of the Good Anthropocene and the complete modernization of the natural world. Sustainability is indeed a more complex concept precisely because it is based on the deep relationship between humans and natural environment. It is not just a concept through which to express technical solutions to environmental problems but also through which to articulate the cultural, social, economic dimension of humans-nature's relationship, as outlined in its original theoretical formulation. As is evident from all UNESCO's 17 Sustainable Development Goals, sustainability was elaborated for reasons that go beyond technical solutions to global warming. A different attitude, based on the relationship with nature and not on its progressive exclusion, seems to be the real scope of this concept. A new sustainability, one that is truly enlightened because it is ecological seems to be the starting point for a new modernity, one no longer based on excluding nature.

6. Conclusion

This paper has explored the limit of the classical modern perspective on the natural environment. According to the Bruno Latour's definition, modernity is not only an historical period but also a way of thinking about the human-nature relationship.

I have shown that modern thought has determined our way of thinking about nature, as is evident in current interpretations of the Anthropocene and sustainability. However, starting from Foucault's reflection on the Enlightenment, we can not only reveal the paradoxes of this modern idea of nature but also reconceptualize the human-nature relationship for a new modernity. This relationship does not separate humans from the natural environment or permit human dominance of nature. Instead, it focuses on the interconnectedness of the two realities.

Unfortunately, today, we have not yet reconceptualized the concepts of the Anthropocene and sustainability. The purpose of this paper was not to investigate why our inaction persists but rather to demonstrate that, by rethinking modernity, we can establish a truly ecological relationship with nature.

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