



Anthropocene, Capitalocene, Plantationocene, Necrocene, or Chthulhucene.

How to interpret the Environmental crisis

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Abstract

Numerous crises that follow and intersect with each other generated the complexity of our time. Environmental, Social, and Economic effects are spread out on a local and global scale. What is the main characteristic of the crisis of our time? Is our time characterized by an invisible climate crisis accentuated by the hoarding of global natural resources, or the crisis we are experiencing is of an economic and military nature and leads us to rethink the economic and cultural models characterized by the forces of domination of our time? How do the multiple crises on social aspects manifest themselves within local communities? What can be a synthesis of the period we are experiencing under the fractures that the inhabitants of Gaia, the protagonists of this time, are called to mend? This article proposes an analysis of the main phenomena that are characterizing the twenty-first century, following the traces of the structures of domination and power inherited from the previous centuries, but which are already conducting humanity towards a new geological, the *Anthropocene*. This paper explores the interdependence between ecosystems, climate, biodiversity, and the human sciences to understand the need and urgency to stay within the relative threshold of 1.5° global temperature to ensure human survival.

Keywords: *Anthropocene; Environmental Crisis; Climate Change; Global Capitalism; Complexity; Human and Social Sciences; Chthulhucene; Climate Justice.*

1. Introduction

The complexity of our time is determined by numerous crises that follow and intersect with each other, generating multiple social and environmental effects on a local and global scale. Depending on the perspective scholars adopt, one rather than the other

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crisis emerges. For scholars of the environment, nature, and climatology, the current crisis has an environmental character; for economists, it is an economic crisis; while scholars of Humanitas read in our time a social crisis that distances us from the pursuit of Goals of the UN 2030 Agenda for Sustainable Development and the achievement of the fundamental common good of peace in our Planet. The crises that characterize our time are entangled, forming a global connection network. The reductionist culture has separated knowledge; this simplification does not allow us to understand the complexity of our time. We live in a time when the crisis of autarkic regimes intersects with the European energy crisis. This crisis in February 2021 turned into a European military crisis, generating a profound social and humanitarian crisis in Ukraine, which already has repercussions for global food. There is another silent but, at the same improvisation and violent aspect of our time that concerns the climate crisis, better known with the definition of climate change, to highlight its transformative rather than catastrophic character in terms of extinction of the human race. What is the main characteristic of the crisis of our time? Is our time characterized by an invisible climate crisis that is accentuated by the hoarding of global natural resources, or the crisis we are experiencing is of an economic and military nature and leads us to rethink the economic and cultural models characterized by the forces of domination of our time? How do the multiple crises on social aspects manifest themselves within local communities? What can be a synthesis of the period we are experiencing under the fractures that the inhabitants of Gaia, the protagonists of this time, are called to mend? Which of all the fractures best represents our time? This article proposes an analysis of the main phenomena that are characterizing the twenty-first century, following the traces of the structures of domination and power inherited from the last century, but which are already ferrying humanity towards a new geological era which can be summarized in the Anthropocene, precisely to underline man's responsibility in exercising a source of pressure on the Planet causing Climate Change, but reed against his species. This paper aims to explore the interdependence between ecosystems, climate, biodiversity, and the human sciences to understand the need and urgency to stay within the relative threshold of 1.5° global temperature and long-lasting regional ones that pursue the goal of a fairer and more just global society, having sustainability as a transformative strategy. This paper aims to explore the interdependence between ecosystems, climate, biodiversity, and the human sciences to understand the need and urgency to stay within the relative threshold of 1.5° global temperature rise over the next decades to achieve a fair, tasteful and sustainable way reducing the risk of extinction of the human species (Pörtner & Roberts, 2022).

2. Anthropocene

In 1980 the American biologist Eugene Stoermer began to use the term Anthropocene informally to denote the growing anthropic pressures on the planet, but only in 2000 did the term enter the scientific debate, in 2000 the article *Anthropocene* was published by the chemist P.J. Crutzen and E. Stoermer, marking a turning point in history in the relationship between humanity and the planet. With the term Anthropocene, the two authors intend to distinguish a new geological epoch into which humanity has entered, simultaneously determining the end of the previous epoch, the Holocene. The latter, which corresponds to the glacial era denoted as "entirely recent," began in 10,000-12,000 b.p. (before present) when man, first through the invention of agricultural systems and through the introduction of livestock farms later, began to exert a forcing action on the planet (Merchant, 2020) by overturning the dynamics between man and the environment. The

modification of the survival conditions that occurred in Ancient Egypt through the introduction of agricultural systems, allowed not only to get out of the period of deep famine in which the Egyptian population had found itself due to the drastic cold conditions that had occurred, but the introduction of agriculture was the primary condition that allowed the increase in the global population and therefore represented the first condition of anthropic impact on the planet. Secondly, agriculture has started a process of structuring lifestyles and behaviors oriented towards a sedentary lifestyle, also altering the shape and structure of the human body. The Holocene cannot simply be ascribed as the geological era prior to the Anthropocene, but it is the era in which, for the first time, the balance between man and nature is altered, favoring the emergence of the new Anthropocene epoch.

Crutzen and Stoermer, in their article, identify 1784 as the exact point of the timeline in which the Anthropocene starts, the year in which James Watt created the first steam engine causing an epochal change in the history of humanity which contributed to the industrial revolution, to the consumer society and probably also to the end of humanity.

Human activities are exerting increasing impacts on the environment on all scale, in many ways outcompeting natural processes. This includes the manufacturing of hazardous chemical compounds which are not produced by nature, such as for instance the chlorofluorocarbon gas which are responsible for the “ozone hole”. Because human activities have also grown to become more significant geological forces, for instance, through land use changes, deforestation and fossil fuel burning, it is justified to assign the term “Anthropocene” to a current geological epoch (Crutzen & Stoermer, 2000).

Anthropocene is the era in which humanity, through anthropogenic activity, has an unprecedented and direct impact on the planet, causing climate change. The chemical-environmental matrix of the two authors in arguing the Anthropocene highlights the character of the scientific disciplines in describing the new geological era, leaving aside the humanistic disciplines, which are instead fundamental in directing the socio-economic and ecological transformations towards sustainable and durable global models.

Over the course of the last fifty years, the theme of the environment has been addressed both from a political and scientific point of view in a separate way from the Human and Social sciences, directing the debate rather than on the causes acting on the environment on effects and solutions, sometimes producing Greenwashing phenomena as a result that contribute to fueling the climate and social crisis rather than relieving it. Considering the environment as an object separate from the surrounding reality and independent of the context means adopting a reductionist approach that does not allow for the interpretation of the complexity of the systems; the scientific revolution of Systems Theory by giving centrality to interconnections through a multidisciplinary and interdisciplinary approach, allows for a systemic analysis of the elements that are together within complex relationships (Angelini & Pizzuto, 2021) and can therefore be used as a tool for interpret reality and provide complex solutions.

The most serious threat comes from the climate, greenhouse gases of anthropic origin have exceeded the levels of the entire Quaternary. We are in the presence of an abrupt and very rapid change that occurred in the last 740 thousand years and the levels of carbon dioxide and methane are the highest ever recorded in the last 15 million years.

Faced with dramatic evidence - the melting of glaciers and the increasingly frequent recurrence of extreme weather events - the Abrupt Climate Change report by the

US National Research Council was published in 2002, in which it is argued that substantial evidence indicates that global warming will occur significantly during the 21st century. The Report, recalled by Massimo Scalia who, focuses attention, in the light of the indisputable elements of the theory of stability, "on the rupture, precisely, of the stability of climatic cycles as an effect of the accelerated variation of the structure of the atmosphere" (Massimo Scalia, 2008).

The cause of climate change, on which the Anthropocene theory is based, is due to the massive use of fossil fuels in the industrial age, which saw the world's energy needs increase by three and a half times in the second part of the twentieth century, generating carbon, CO₂, have gone from about 16 thousand Mton (1973) to about 27 thousand Mton (2004) with an increase of 68% with the consequent increase in concentration in the atmosphere at an altitude of 380 ppm (parts per million), increasing by 20 % in less than half a century (Scalia, 2008, p.19).

At the St. Petersburg summit (2006), the Academies of Sciences of the G8 countries, plus those of China, India, Brazil, and South Africa, presented a Statement that began with these words: "Last year we indicated the greatest challenges posed by climate changes. They are predominantly related to energy and its use". In maintaining that the primary cause of Global Warming is "human activity," the Statement affirms that "anthropic" cause, which until then had been denied by American technicians accredited to the Intergovernmental Panel on Climate Change (IPCC, table" of experts appointed by governments adhering to the United Nations to address the issue of climate change).

3. Capitalocene

In 2014, the writer and activist Naomi Klein railed against the World Trade Organization, "an intricate global system that regulates the flow of goods and services around the planet, under which rules are clear, and violation are harshly penalized" (Klein, 2014, p. 16), proposes an explicit reading of our time, as an intricate global system that regulates the flow of goods and services through forms of neo-capitalism, the real antagonist of the climate crisis and not the whole of humanity, as Crutzen had identified in *Anthropos*. Klein's interpretation redefines the causes of the climate crisis after fifteen years by shifting the center of gravity of the study from anthropocentrism to capitalism.

Klein shifts the focus from *Anthropos* to capitalism and, in particular, to the Global North, on the economically most prosperous and advanced nations that contribute the central portion of greenhouse gases.

Shifting the responsibilities of the climate crisis from humanity to neo-capitalism may allow us to identify strategies for changing the fate of humanity thanks to social movements.

According to Klein, the environmental question only entered the full international political agenda at the end of the 1980s, just as policies of deregulation and globalization started, causing an acceleration in the global capitalist system and thus also an acceleration in the wear and tear of natural systems and going beyond the limits that nature itself indicates to us (Bologna, 2007). The recurring economic crises of the global system show that there is a need for continuing global economic growth to avoid the collapse of the economy - grow or die; this economic growth, based on the rhetoric of developmentalism - *Sviluppismo*-(Angelini & Pizzuto, 2021) determines from on the other hand, a growing process of spoliation of the Earth's resources by strengthening and accelerating climate change; to be fed, the capitalist system requires a growing

consumption of natural resources. Therefore it is possible to state that the economic system, dependent on natural systems and resources and the plundering of natural resources, has an environmental matrix. Similarly, the economic system determines the environmental crisis since each anthropic activity contributes to the consumption of natural resources and the production of waste and pollutants, including the production of CO₂, accelerating Global Warming and climate instability (Angelini et al., 2015).

Capitalism can be considered a crucial factor in the fracture between the environmental crisis and the Planet. Pursuing decoupling policies between economic growth and the consumption of natural resources is necessary to initiate a radical change so that we can return within the limits of the Planet by re-establishing the physical-chemical and biological balances that the Earth performs in its self-regulation functions "The Earth system behaves as a single, self-regulating system, comprised of physical, chemical, biological and human components. The interaction and feedbacks between the components part are complex and exhibit multi-scale temporal and spatial variability" (Lovelock, 2006), a balance that is not purely scientific but also human as regards the survival of our human and non-human species on the Earth. It is possible to subvert the order of power and the global equilibria used by the capitalist world-economy, which reinforce and structure global inequalities (Wallerstein, 1989).

We will have to wait for 2017 for a more precise definition of our time by starting a process of historicizing the Anthropocene. Jason Moore introduces the concept of the Capitalocene by referring to the power and profit system of the networks of life. Moore defines, "The Anthropocene is a comforting story with uncomfortable facts" (Moore, 2017) Moore's Critique moves on two different levels, on the one hand on the epistemological level of the Anthropocene and on the other on the identification era. While Crutzen identifies the origin of the new age in the discovery of the steam engine, Moore places the accent on capital and the system of domination, arguing that the Anthropocene is not determined by a simple abstract and one-to-one relationship between humanity and nature according to the narrative that man impacts the environment, but the current ecological crisis affects many factors that make reality complex. Secondly, Moore makes a deep capitalism analysis, identifying 1492, the year of the discovery of America, as the starting point of global capitalism through the proliferation of global trade and the consolidation of systems of colonial power and the trade of slaves, in this sense, according to Moore it would be more appropriate to speak of "the age of capital" instead of "the age of man"- "Are we really living in the Anthropocene – the 'age of man' – with its Eurocentric and techno- determinist views? Or are we living in the Capitalocene – the 'age of capital' – the historical era shaped by the endless accumulation of capital?" (Moore, 2017) the concept of Anthropocene identifies the causes of climate change in the anthropic impact exerted on the planet, or to a generic human category, flattening, making equal and democratic the environmental and social impact on the planet of each man, diluting the dynamics of power and global domination in an equal way. Moore rejecting Crutzen's Eurocentric perspective, recognizes the diversity of individuals, in the exercise of power and the production systems categories and, at the same time, confers dignity and role to different social and geographical groups: the countries of the Global South, indigenous peoples and of the oppressed living in the Global North laying the foundations for the empowerment of global human lives in the age of capitalism. Capitalocene names capitalism a system of power, profit, and re/production in the web of life. It thinks capitalism as if human relations form through the geographies of life." (Moore, 2017).

The term Capitalocene identifies underpaid work and slavery-cheap labor and the depreciation of natural resources -cheap nature- the two factors which, intertwining and through colonial policies, determine environmental consequences which are not simply linked to systems of distribution of opportunities and global justice. Still they concern a system moving towards extinction. With the term Capitalocene Moore does not intend to deny the current climate crisis nor the harmful role of fossil fuels on the Planet, his is rather an invitation to reconnect with nature and with ecological systems by rethinking the capitalist economic system that spread with civilization, his theory on the Capitalocene, incorporating aspects such as the web of life, is therefore complementary to the Anthropocene. McBrien (2016) with the term Necrocene refers to socio-environmental and political systems that lead our Planet towards oblivion and, in particular, towards the 7th mass extinction through capital accumulation policies that have a violent and necrotic character, to define the new era as "New Death", a capitalist expansion that produces a biological process capable of leading to extinction (McBrien, 2016).

4. Plantationocene

Plantationocene may be an alternative to renaming the current age, recently called the Anthropocene. The concept of Plantationocene takes us back to the origins of the relationship between humans and the environment, with the relationship with the Earth, at the same time, brings us closer to modern forms of agriculture, made up of large-scale intensive cultivation using labor slavery that spread on a global scale proposing structures of domination and global power in which the poorest and most vulnerable social and geographical groups became slaves in the global market. The Plantationocene concept dates back to the origins of colonial plantations when Europeans colonized the New World. Plantationocene also refers to large-scale crops that rely on cheap labor to serve international trade. The plantations are systems of production of consumer goods such as palm oil and sugar cane; due to global food consumption increasing, also global plantations are growing. These systems of production are located in poorer countries such as Liberia, Sierra Leone, and South Sudan and which are rooted in the growing demand for global food; in Malaysia, for example, 220,000 hectares of land are cultivated to serve the global palm oil market, including tropical fruit crops in Brazil and Latin America. Growing global food demand requires growing crops that impoverish the land and contribute to structuring systems of forced labor and slavery by large companies or multinationals. At the same time, these become a source of attraction for immigrants; on the other hand, it is a migration push factor due to land-grabbing practices or policies. In this territory, the government requires local inhabitants to move and abandon the lands with which they have developed an ancestral relationship, thus contributing to increasing social inequalities and global migrant flows.

According to this social perspective, environmental problems cannot be decoupled from history, from the dynamics of colonialism, capitalism, and racism reverberating in the present on our planet in the form of Climate Change. The great acceleration of the twenty-first century puts humanity at risk not only from an environmental point of view but also from the point of view of global justice and climate justice.

5. Chthulucene

A notable contributor to this debate is Donna Haraway, inspiring generations of authors to critically rethink the most pressing issues of the present through the Humanities perspective. Haraway wonders how the simultaneous planetary crises of the present that

intertwine with each other can be depicted and visualized and through which figures of the current age can be thought. Haraway identifies an extravagant Californian jellyfish Cthulhu that weaves her tentacles, the shape of the present. This non-human figure of the *Pimoa cthulhu*, indigenous to Northern California, leads us to the essence of Donna Haraway's thought that Nothing is connected to everything; everything is connected to something (Haraway, 2016)

The author is a thought that bypasses anthropocentric logic and seeks a different way of living within a connection network in which the lives and experiences of each element reconnect with those of the others in an environment in which different human and non-human species interact simultaneously with each other. Taking up J. Lovelock's theory of Gaia, Haraway introduces the theory of tentacular thought that allows her to overcome the concept of humans and to project herself towards new dimensions of existence that transcend human life on Gaia "We are humus, not Homo, not anthropos; we are compost, not posthuman" (Haraway, 2016).

Chthulhucene is a figure, visible and tangible. At the same time, the Anthropocene does not clarify what the characteristics of Anthropos are; this does not clarify if it refers only to the human species that burn fossils or to all those who possess these features, how to visualize who is part of what nor, which are the networks of connections between govern global capitalism, the ecological crisis and the connections with the past. Chthulhucene is a real figure in the continuous movement that weaves plots in a long period between the past and the future and with a constant biological exchange of matter.

The difference between the Chthulhucene and the Anthropocene and the Capitalocene lies in having shifted the investigation asset from man (ego) to the environment (eco), understood in the broadest sense, an environment composed of human and non-human species present, but also past, which through biological, physical and chemical phenomena return to being humus, part of the soil and all those components that keep Gaia in chemical and physical balance.

6. Conclusions

This article explains some of the main factors of our time and how the climate and ecological crisis merge with the human and social sciences. To better understand the complex issues of our time, a greater fluidity of knowledge between the natural sciences and the humanities. It is necessary to have adequate tools to understand what is happening to our Planet and species. Beyond the need to progress, to develop, it is necessary to rethink what is the role of the human species on the Planet and to act immediately within the limits of the Planet and of man; the 2030 UN Agenda for Sustainable Development represents a guide for individuals, communities, and nations to mend the disconnects that have occurred between humanity and Nature. The climate crisis can be an extraordinary opportunity for humanity to improve the quality of life of global citizens, bridge their social gaps, and pursue a more equitable and just world. Further interdisciplinary and multidisciplinary studies aimed at an action in each disciplinary field are needed to find coherent solutions aimed at daily actions between the climate crisis and social crises.

References:

Angelini, A., Farioli, F., Mattioli, G. and Scalia, M. (2015). Le due crisi: Crisi del capitalismo e crisi ambientale. Una soluzione sostenibile? *Culture Della Sostenibilità*, 16, 95–114.

Angelini, A. and Pizzuto, P. (2021). *La società sostenibile. Manuale di ecologia umana*, Milano: Franco Angeli.

Bologna, G. (2007). *Manuale della sostenibilità. Idee, concetti, nuove discipline capaci di futuro*. Milano: EdizioniAmbiente.

Crutzen, P. J. and Stoermer, E. F. (2000). The Anthropocene. In *The Anthropocene* (2000) (pp. 479–490). Yale University Press. <https://doi.org/10.12987/9780300188479-041>

De Juan, A., Hoffmann L. and Lay J. (2022). *Large-scale agricultural investments, employment opportunities and communal con ict*.

Haraway, D. J. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Durham: Duke University Press.

Klein, N. (2014). *This Changes Everything: Capitalism Vs. The Climate*. New York: Simon and Schuster.

Lovelock James. (2006). *The Revenge of Gaia: Why the Earth is Fighting Back and How We Can Still Save Humanity*.

Merchant, C. (2020). *The Anthropocene and the Humanities. From Climate Change to a New Age of Sustainability*. Yale University Press. <https://yalebooks.yale.edu/9780300244236/the-anthropocene-and-the-humanities>.

Moore, J. W. (2017). The Capitalocene, Part I: On the nature and origins of our ecological crisis. *The Journal of Peasant Studies*, 44(3), 594–630. <https://doi.org/10.1080/03066150.2016.1235036>

Pörtner, H.-O., & Roberts, D. C. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. IPCC.

Scalia, M. (2008). "Energia e cambiamenti climatici", In Angelini A. *Il Futuro di Gaia*, Roma: Armando Editore.

Wallerstein, I. (1989). The Capitalist World-Economy: Middle-Run Prospects. *Alternatives*, 14(3), 279–288. <https://doi.org/10.1177/030437548901400302>.

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