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The new climatic regime of Anthropocene and Gaia

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Abstract

This article discusses the concepts of Anthropocene and Gaia, raised by Bruno Latour, as categories to understand the climate regime we are experiencing and serve as a theoretical basis to seek appropriate responses to the climate crisis. These concepts seek to overcome two assumptions of modern rationality: the opposition between nature and culture – questioning the principle that humans are the only actors in reality and introducing all living beings as agents shaping the environment – and the globalizing vision of planet Earth that prevents us from seeing it as localized soil where biogeochemical cycles of energy transformation that make life possible take place. It is concluded that Latour's reflection provides ontological bases for the discussion on climate change and assumptions for environmental bioethics.

Keywords: Biosphere. Ecosystem. Climate change. Ecology. Geology. Bioethics.

Resumo

O novo regime climático do Antropoceno e de Gaia

O artigo discute os conceitos de Antropoceno e de Gaia, apontados por Bruno Latour como categorias para entender o regime climático que estamos vivendo e servir de base teórica para buscar respostas apropriadas para a crise do clima. Os conceitos buscam superar dois pressupostos da racionalidade moderna: a oposição entre natureza e cultura – questionando o princípio de que os humanos são os únicos atores da realidade e introduzindo todos os seres vivos como agentes conformadores do ambiente – e a visão globalizante do planeta Terra, que impede de ver a terra como solo localizado onde acontecem os ciclos biogeoquímicos de transformação da energia que possibilitam a vida. Conclui-se que a reflexão de Latour fornece bases ontológicas para a discussão sobre a mudança climática e pressupostos para a bioética ambiental.

Palavras-chave: Biosfera. Ecossistema. Mudança climática. Ecologia. Geologia. Bioética.

Resumen

El nuevo régimen climático del Antropoceno y de Gaia

Este artículo discute los conceptos de Antropoceno y Gaia, señalados por Bruno Latour como categorías para entender el régimen climático que estamos viviendo y para servir de base teórica para buscar respuestas adecuadas a la crisis climática. Los conceptos buscan superar dos supuestos de la racionalidad moderna: la oposición entre naturaleza y cultura – cuestionando el principio de que los humanos son los únicos actores de la realidad e introduciendo a todos los seres vivos como agentes conformadores del medio ambiente – y la visión globalizante del planeta Tierra, que impide ver la tierra como un suelo localizado en el que tienen lugar los ciclos biogeoquímicos de transformación de la energía que hacen posible la vida. Se concluye que la reflexión de Latour proporciona bases ontológicas para la discusión sobre el cambio climático y supuestos para la bioética ambiental.

Palabras clave: Biosfera. Ecossistema. Cambio climático. Ecología. Geología. Bioética.

The author declares no conflict of interest.

The environmental crisis is much more complex than previously thought and, as the successive proposals of the world conferences of the United Nations (UN) on the environment show, superficial solutions and accommodations are not acceptable. This finding became even more acute with the interdependence between the covid-19 health crisis and climate change. The very negationist positions towards the climate crisis indirectly shows this gravity, as its agents have realized the consequences of an effective solution would require deep economic transformations, affecting their interests.

The entanglement of the two crises points to the virus as a link of social and environmental interrelations. The pandemic is not a purely natural phenomenon but a cultural event; the virus expression is different according to location, creating genetic variants caused by social and ecosystem interdependencies. Therefore, nature cannot be separated from culture/society, since the agents that interfere in this situation are the result of this interface¹.

Aware of the complexity and gravity of the climate issue, Beck² proposes the category of “metamorphosis” to interpret the problem. The author starts from the fact that climate change implies an epochal metamorphosis, since the solution cannot come from the usual question: “What can we do against climate change?”. The answer to this question has always been disappointing, as shown by international climate agreements.

Thus, a different formulation, according to Beck, guided by metamorphosis as a sociological and analytical question, would be: “What does climate change do for us, and how does it challenge the societal and political order?”. This formulation leads us to think beyond the apocalypse or the salvation of the world, focusing on the metamorphosis of the present age. For Beck, *the main source of climate pessimism lies in a generalized incapacity, and/or unwillingness, to rethink fundamental questions of social and political order in the age of global risks*³. It is about the recognition that *climate change alters society in fundamental ways, entailing new forms of power, inequality and insecurity, as well as new forms of cooperation, certainties and solidarity across borders*³.

It is necessary, according to Beck², to overcome the nationalist perspective based on sovereignty and adopt a methodological cosmopolitanism,

because we live in a society at global risk, in which thousands of activities taken as common turned current social and political arrangements obsolete. The side effects of these activities determine reality to the point that they create the awareness that their control is fictitious. However, the accumulation of negative collateral consequences can give space for actions of a cosmopolitan nature, global change unprecedented in human history, requiring an epistemological metamorphosis in the way of facing the environmental problem and an ethical change to implement suitable actions with this axial time².

Analyzing Beck's proposal, Latour⁴ praises the radical nature of the metamorphosis category but criticizes methodological cosmopolitanism as a basis for actions. The author notes that this perspective circumscribes to humans the role of actants who interfere in the situation, disregarding all other living beings that are part of the interdependence of agents that make up the environment. Latour then opposes, to Beck's cosmopolitan and human universalism, the vision of cosmopolitics or, in other words, the politics of the cosmos, which seeks to consider the totality of intervening actants in the configuration of the environment⁴.

Almost all the world conferences on the environment mention only humans as the origin of the climate issues, excluding all other agents that also influence it – and this seems to be the cause of the successive failures of these conferences. In opposition to this perspective, Latour proposes the categories of Anthropocene and Gaia⁵ to think about the new climate regime. The first category seeks to overcome the opposition between nature and culture present in the Anthropocene of Geosciences proposal; the second aims to go beyond the vision of the Earth as a terrestrial globe among other stars, thinking of it as a soil where biogeochemical cycles that determine life take place. This article addresses these ideas – central to Latour's proposal – by taking them as a challenge to rethink the ecological and environmental discussions in bioethics.

Distinction/opposition between nature and culture

Modernity presented itself as a passage from the regime of nature, with its determinism and violence, to culture, characterized as a regime of

freedom, the result of the taming of nature. However, the aggravation of the environmental crisis make some to look for answers that seek a certain return to the natural world and its laws. An example of these responses is ecology as the irruption of nature in public space, a perspective absent in modernity and which meant, as Latour points out, *the end of nature as a concept that allows us to summarize our relations with the world and pacify them (...), because nature made the world uninhabitable*⁶.

Nature as opposed to culture meant the unity of a universe inhabited by non-human beings. This cosmology, however, was destroyed by the crisis, which imposes the search for another cosmological arrangement, called by Latour "world" as a pluriverse, and not universe, because it encompasses all existing in their diversity and multiplicity, without the unity intended by the modern concept of nature. According to the author, to *speak of "Nature," of "man in nature," of "following" nature, of "returning" to it, of "obeying" it or "learning to know it" is to have already decided an answer to the two canonical questions about the set of existents and the choice of the forms of existence that link them*⁷.

For Latour, it is necessary to find a cosmological figure tied to the concept of the world as a pluriverse, capable of including, in addition to humans, all other living beings, as actants in the environment. In the old and outdated conception of nature, living beings were inert units for the configuration of the environment, in opposition to society/culture, formed by humans as true agents of reality.

The worsening of the climate crisis demonstrated the total inadequacy of the modern opposition between nature and culture, which included some actors (humans) and disregarded others (other living beings) as agents. A Latour observes, *when it is argued that there is, on the one hand, a natural world and, on the other, a human world, it is simply proposed to say, after the fact, that an arbitrary portion of the actors will be stripped of all action and that another part of the same actors, also arbitrary, will be endowed with a soul (or a conscience)*⁸. This means not recognizing the power to act of most of those involved in the problem. Hence the need to find a cosmological figure that allows us to encompass the totality of actors who intervene in the shaping of the environment.

Anthropocene Proposal

The proposal to move from the geological era from the Holocene to the Anthropocene aims to overcome the opposition between nature and culture. The Holocene refers to the most recent epoch of the Quaternary period, when post-glacial conditions allowed for relative climatic stability, spanning approximately the last 11,700 years of the Earth's history. Such stability allowed humans to develop agriculture and livestock, build empires, and spread across the Earth. That epoch, however, would be coming to an end, giving way, as geologists conjecture, to the Anthropocene. But what is the scientific basis for this proposal, on which full consensus is yet to be achieved⁹?

To define geological eras, scientists rely on stratigraphic studies that investigate sedimentation in the ground to prove the passage from one era to another. The sedimentary stratifications that would demonstrate the beginning of the Anthropocene refer to human interventions in the carbon and nitrogen cycles in the Earth's biogeochemical cycles. Interpositions in ecosystems for the development of agriculture occurred in the Holocene, but this interference did not affect the terrestrial cycles that shape the environment. Scientists can prove the degree of human intervention in stratified geological sediments, which has increased the consensus around the idea that we are entering the Anthropocene geological era⁹.

If Holocene stability is over, do we enter a new period of human-induced instability? Latour argues that the Anthropocene does not mean an immoderate extension of anthropocentrism. Humans have not become super-actors of the geological arena, but they are co-participants in a network formed by many other agents, endowed with contradictory interests, in a struggle to reach a redistribution of geo-history's actants.

This means irreversibly entering a post-natural, post-human and post-systematic era, because it is necessary to consider all the actors that intervene in the environmental arena, from bacteria to humans, and who do not pursue a single end. Therefore, the Anthropocene does not mean the victory of the exclusive action of

human individuals, but, on the contrary, of the action of multiple beings, which have always been part of the biogeochemical cycles of life⁵.

Planet Earth as terrestrial globe

The Copernican revolution ended the geocentric system, revealing the Earth as one more celestial object in the solar system, identified as a globe that rotates around the Sun. This astronomical conception of the Earth – one spherical planet alongside others – prevented the understanding of its specificity as a habitat for life. Photographs of the “Blue Planet,” taken from spacecrafts from the 1960s onwards moved people and confirmed the vision of the Earth as an inhabited, coherent and balanced earth globe in the service of life. Such a view, however, ignored the diversified pluriuniverse of actors who act on the soil that makes up the Earth⁵.

To criticize the astronomical concept of Earth, Latour starts from the spherology invented by Sloterdijk¹⁰, which analyzes the metaphor of the sphere to think about the environment, using immunology as a reference. According to spherology, every entity protects itself from destruction by creating a controlled envelope via a protective membrane. The vision of the terrestrial globe responds, according to Sloterdijk, to this objective of including in itself everything that is true and beautiful in order to protect oneself from the outside.

It is interesting to note a problem that arises when someone who claims to have a global view of the universe is asked where they live. Their answer will actually be local, not global. Starting from everyday questions like this, it appears that one does not live in the infinite universe of the globe or in nature. So, in order to think about atmospheric and climatic conditions, the utopia of the globe must be overcome, because nobody lives in it, but in a specific place on the planet, where such conditions occur. This is the new climate regime that must be faced⁵.

Vernadsky¹¹, when proposing the concept of biosphere, sought to overcome the view of the Earth as another planet in the solar system. His ideas opened up a new research path: the planet's geochemistry, referred to as the chemistry and history

of the Earth's crust. Vernadsky defined the biosphere as the shell occupied by the life that surrounds the Earth, and not as an external or accidental surface phenomenon.

In this perspective, life is closely linked to the structure of the Earth's crust, being part of its mechanism and formed by the whole of life and all the living matter that circulates in this structure. In this sense, according to Vernadsky, life is characterized by ubiquity, as it occupies all spaces on Earth, forming a surrounding membrane where biochemical cycles take place, transforming cosmic radiation into active terrestrial energy and causing chemical elements to migrate through living matter and out of it as energy. Oxygen is an intimate part of these biochemical processes in the Earth's crust and will disappear with the extinction of life¹¹.

Vernadsky's intention is to highlight the specificity of the Earth, which, closely linked to the mechanisms of life, is unlike any other planet. The Earth, therefore, is not just a planet on which living beings walk; its crust contains the geochemical mechanisms that produce life and transmit vital energy.

These biogeochemical processes that take place on the Earth's surface must be observed, as they are crucial to the conformation of the environment. At the same time, we must stop conceiving the Earth as a terrestrial globe, because this view impairs awareness of the biogeochemical interactions that take place locally.

Gaia Model of Earth Understanding

Lovelock's theory of Gaia¹² starts from Vernadsky's view but radicalizes this conception when considering that the Earth is not only enveloped in its crust by biogeochemical mechanisms of vital energy circulation, but also creates the environmental conditions for life to exist. Against Darwin, for whom the selection of living beings depended on their ability to adapt or not to the environment, Lovelock stated that living beings also shape the environment in which they live. At first, he called this new model of understanding the Earth the “Gaia hypothesis,” a name suggested by a poet friend¹².

This denomination created many problems. For critics, Lovelock's theory would be mythological (by calling the planet Gaia) and would include a

certain teleology in the Earth system. Lovelock had against him the Darwinian biologists and the geologists who considered only abiotic elements as part of the geochemical mechanisms. In a work published in 2009, Lovelock traces a history of Gaia theory to demonstrate its evolution and the gradual acceptance of its assumptions¹³.

Lovelock^{14,15} sought to scientifically prove his hypothesis with a computerized experiment, expressed in mathematical language, called the “Daisyworld”:

a planet like the Earth, orbiting a star like the sun, but on which the only species are light and dark daisies. In the distant past, when the star was less luminous, only the equatorial region would have been warm enough to permit the growth of daisies, and the dark daisies would have flourished because they absorb more warmth from sunlight. Gradually the dark daisies would have colonized most of the planet and, by absorbing heat begun to warm the surface environment. However, as the star's luminosity increased the lighter daisies would in turn be favored due to their natural ability to keep themselves and the planet cool by reflecting more light. Finally, when the heat flux from the star becomes so great that not even white daisies can keep the planet cool enough for life, deserts spread from the equator and finally the system fails and Daisyworld dies¹⁶.

From this proof in physical-mathematical scientific language, the reaction began to change in relation to the hypothesis, now called the “Gaia theory.” Those most interested in the experiment were meteorologists and climatologists, followed by geologists and geochemists (biologists, in general, remained quite skeptical)¹⁵. Today the theory of Gaia is accepted by the scientific world, although some exceptions remain.

Latour⁵ uses this theory to discuss the climate issue, noting the difference in perspectives between Galileo and Lovelock. The first looked at the sky as a cosmic space, reinforcing the similarity between the Earth and all other celestial objects, whereas the second lowered his eyes to the Earth's surface, showing the specificity of our planet. Galileo understands that mechanics explains the Earth as a planet; for Lovelock, it is chemistry that aids in understanding the processes that make up the

Earth. Unlike other planets, *the blue planet suddenly appears as a long series of historical, random, specific and contingent events, as if it were the provisional and fragile result of a geo-history¹⁷.*

The Earth is not characterized by perennial mechanisms, like other planets, but by specific random events that allowed the emergence of life, constituting history. It is about returning from the infinite universe of Galilean outer space to the limited and contingent cosmos of the Earth surface's geochemical cycles. This means abandoning the distant gaze of the terrestrial globe and adopting a closer view of Gaia⁵.

Gaia does not fit into the modern scheme of distinction/opposition between nature and culture, typical of the Galilean era, because Gaia should not be taken as a coherently composed whole, which would give it a soul. The theory of Gaia is not religious at all; it is secular, or rather, mundane, in the English meaning of *earthly*. Gaia is composed of agents who are neither discouraged nor overanimated, but actants, who do not unify into an acting totality. In other words, it is necessary to know how to follow the biogeochemical connections and interdependencies without integrating them in a holistic perspective. In this sense, the theory of Gaia is anti-systemic, as it deals with understanding the biogeochemical cycles at stake on Earth, without forming a coherent system, and how these processes can feed back collective actions of humans in the Anthropocene (hence Latour's intention to bring together Gaia and Anthropocene⁵).

Gaia expresses the intentionality present in all agents, each transforming their surroundings according to their convenience, modifying its neighbors, even if slightly, to ensure its survival. In the same way, humans have adjusted the environment to their needs, as do all living beings. Thus, it is necessary to extend the powers of action and intentionality to all agents, which takes the focus from the intentionality of the totality, although it is possible to detect positive and negative feedbacks between actors that are no longer intentional, and whose result is neither cooperation nor selfishness but chaos. Lovelock, with his theory of Gaia, is not proposing a unified providence for the Earth, but countless provisions, as many as the organisms that inhabit it. *Gaia is not the emergence of a final ultimate cause, but a beautiful mess. That mess is Gaia¹⁸.*

Against Darwin, this means that there is no inert environment to adapt to, as all living organisms have the power to act with intentionality, and it is impossible to distinguish between what is action on the environment and what is adaptation to the environment. But with that, a question arises: *what does it really mean for an agent to “calculate” their interest?*¹⁹

Evolutionists criticized Lovelock because they thought he proposed a unified living planet, a superorganism, which is a total misrepresentation of his theory. Evolutionism is based on the principle that it is possible to limit the organism in its chances of survival by the idea of adaptation, and that the condition of ultimate arbiter of this survival is given to the environment via selection. Lovelock does not see limits for organisms because they are agents, and the environment is not an inert whole to which something adapts to because it is modified by organisms. Lovelock then revolutionizes the understanding of evolutionism by reversing the starting point: *if there is a remnant of providence, it is in Darwinians that we run the risk of finding it*²⁰.

This conception introduces time into space, because this is not a reality inert to the actions of time. In other words, Gaia theory historicizes the earth and the environment. Therefore, humans are not the only ones responsible for time, because every agent depends on time to act. *Learning to place human action in this geo-history does not lead to “naturalizing” humans*²¹ but making them aware that their action is immersed in geo-history cycles without any protagonism, and that their competence to calculate interests are limited, since it is impossible to master the multiple variables involved in the conformation of the environment.

Earth citizens: centrality of Earth as physical soil

Currently, there is a conflict between those who propose globalization as a solution, radicalizing ideals of modernity and freedom, and those who defend a local, ethnic and communitarian perspective, based on a return to traditional values. The first perspective tends to the left of the political spectrum, whereas the

second tends to the right. These poles are present in several countries and there is a process of radicalization that has fostered irrational conflicts.

It is urgent to abandon such an intemperate opposition, which creates obstacles to an adequate response to the environmental crisis, insofar as it prevents the focus on Earth as the soil where biogeochemical cycles take place. The question of belonging to a territory and a land was never the concern of the left. Being attached to territory and soil would be a thing for animals and plants, not humans. The very terms “soil” and “belonging” were seen as reactionary. Today, there is a return to the care for the land as soil, but not the ethnic national territory that modernity has denied²².

The challenge is, on the one hand, to overcome the abstract globalist vision, devoid of materiality and without a common perspective, because no one lives on the globe, but in a concrete place; and, on the other hand, to overcome the narrow and utopian vision of the homeland, watered with blood and tradition, which prevents one from seeing the terrestrial soil, beyond the particularities of its cultural appropriation, as a manifestation of the processes of Gaia. It is necessary to have roots in the Earth-World or, in other words, to become terrestrial. This does not mean forgetting the social issue but knowing how to relate it to the ecological crisis in the context of Gaia, identifying the territory, land and habitat in which people live and on which they depend as configurators of their social needs²².

This means introducing a “gaiagraphy” different from geography. If geography is concerned with the distribution of stable geographic spaces, with their accidents and biological dynamics, gaiagraphy brings an energetic view of the Earth’s surface, concerned with the main agents of geochemical transformations, considering the interdependence between deep rocks, living organisms and solar activity. Organisms that transform matter play a central role between the Sun, through photosynthesis, and the geological elements of rocks in the Earth’s energy circulation.

This understanding is expressed in the Gaia model, which is both geocentric and heliocentric, because living organisms play an indispensable role in this transforming interaction of vital energy. Biogeochemical cycles depend on deep Earth energy, solar radiation and the action of living

organisms. This central activity of living organisms for the circulation of energy is the central thesis of Gaia. There is, therefore, no stability, as Galilean geographic cartography thought, but continuous migration and circulation of energy, with positions constantly modified by chemical and biological constraints. In other words, it is not about looking at the position of a place as classical geography thought, but at the signs of an energetic event that creates a development spiral in time, as proposed by gaigraphy²³.

From this understanding the question arises: what is the role of humans in the events that take place on the Earth's surface? Humans played a tiny role in the old cosmology, invisible in the face of the gigantic scale of biogeochemical cycles. In the Anthropocene, the scale of humans does not increase – which remains before the grandiose interactions of processes that take place on the Earth's surface – but human interference becomes visible through its signals in Gaia's spiraling cycles. The polluting effects of industry, for example, accelerated the carbon and nitrogen cycles. Faced with this reality, the planetary vision of the infinite universe of cartography and astronomy must be overcome, turning to the closed cosmos of the earth proposed by the vision of gaigraphy, privileging the place to rediscover the role of humans. In other words, it is necessary that we become terrestrial citizens by belonging to a soil²³.

For Latour, there is a conflict between modernizing (globalist perspective) or greening (terrestrial perspective) the world – hence the title of one of his latest books, *Onde aterrar? Como se orientar politicamente no Antropoceno*, or “Where to stick? How to politically orient oneself in the Anthropocene”²⁴. The answer to the crisis is territorialization, returning to land understood as soil, becoming terrestrial, situated, a citizen of the land, abandoning the modern rationality that forced globalization.

The proposal for modernization was expressed in the arrow of the future that “pulled forward,” based on globalization, towards which it was necessary to deterritorialize itself, denying the local with a universalist vision. Deterritorialization represented progress, while attachment to a particular, cultural place, made up of traditions, was identified with backwardness. The intention was that the globalizing modernizing

vision would reach all corners of the Earth, uprooting people from their *oikos*, house-land, causing multitudinous migrations, because the *leitmotiv* was to move from the traditional place to enjoy the values of modernity.

However, with the climate crisis, the promoters of modernization themselves realized that the Earth would not support everyone accessing the goods of progress and, therefore, began to close the circle, seeking to isolate themselves from migration and promoting climate negationism. Right-wing governments like Trump's and Brexit respond to this trend of social and political confinement. This trend is accompanied by a social crisis, brought about by the migrations that governments are trying to repress, and a climate crisis that many of these governments are trying to deny with vast financial and parascientific resources. This is the current situation we are going through, to which the health crisis of covid-19 has been added²⁴.

A possible solution to this question, as Latour proposes, is to territorialize oneself, without this meaning returning to the place of cultural traditions, which would be impossible after uprooting. It is necessary to overcome both the abstract universalist globalization and the closure that denies particular differences (a trend into which modernity itself fell, because it represented a single vision). The challenge is to find a place open to the global, which identifies itself with the Earth's surface, called by Latour the “critical zone” because it includes biogeochemical cycles. This zone is formed by a few kilometers thick that surround the Earth's crust, where geohistory, energetic interactions between living organisms, solar radiation and sedimentary rocks and biogeochemical cycles take place. It is *a place by contrast; antiglobal*²⁵.

We live in a new reality, says Latour, for which the old names (Earth, Nature, etc.) are no longer useful, it is necessary to create something he calls *Earth with a capital E*, to emphasize that it is a concept and also to specify right now what we are addressing: *the Earth as a new political actor*²⁶. For this, one must consider the power of nature to act as a new actor, not reduced to human activity. The terrestrial, thus, ceases to be a mere background of human action and starts to be seen as an agent that interferes in this action.

This is true political ecology, in which the “geo” of geohistory does not mean the framing of human actions. All other actants on Gaia participate in the environment where human activity takes place²⁴.

But this anti-global terrestrial, because it is linked to the Earth on its soil, is not restricted to any borders. Identified with Gaia, it overflows all localized identities and is not confused with any ethnically particularized soil. In this sense, being ecological is becoming radically terrestrial and concerned with the joint action of all the actors involved in the critical zone of the Earth’s surface, with contradictory interests in shaping the environment²⁴.

Final considerations

The environmental climate crisis is not just an ecological issue that affects the current model of economy and agriculture²⁷ and brings certain consequences for the legal structure of society²⁸. More than that, it is a crisis of civilization, which shakes and transforms epistemological assumptions and cosmological and anthropological foundations. Latour’s original reflections, addressed in this article, seek to explain the ontological bases of this crisis.

Finally, let’s see what we can gather from these reflections as an epistemological tool to rethink environmental bioethics. We highlight the main challenges below:

- Overcoming the opposition between universal globalization, as synonymous with progress, and particular location, confused with a delay that needs to be removed. The crisis forces us to return to the particular location/soil, but without the boundaries of the terrestrial surface, identified as a critical zone for defining the climate.
- Overcoming the assumption of the distinction between nature and culture, according to which

the former is constituted by the inert set of living beings and is opposed to culture, identified with human activity in the domain of what is natural.

- Overcoming the view of the environment as a scenario for human actions since it is shaped by the interdependence and biogeochemical interactions of living organisms on the Earth’s surface. Biocentrism cannot serve as a reference, as living beings are configured in the interdependencies of the environment.
- Taking the Anthropocene as a foundation for interpreting the environmental crisis, without meaning to imagine humans as super-actors in the environmental scene. The minor action of humans can now be seen in stratigraphy, which shows how other actors have always intervened on a gigantic scale in the configuration of the environment. Therefore, the observation of the passage to the Anthropocene demonstrates the ineffectiveness of anthropocentric positions.
- Taking Gaia as a central category to think about the environmental and climate issue. This means becoming terrestrial, truly ecological, for being concerned with the *oikos*, the earth-house, seen not as a unified system of harmonic coherence, but as a result of countless biogeochemical interactions between a multitude of actors with antagonistic interests in the circulation of terrestrial energy. These actors interfere in the critical zone that makes up the earth’s surface, with consequences for the climate. The environmentalist tendency of ecocentrism is thus better suited to this understanding.

All these epistemological assumptions point to a necessary transformation in the cosmological and anthropological vision that has governed discussions on climate change so far. The analysis of this view shows the reason behind the low effectiveness of the climate agreements signed so far.

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