

Towards ecological law? Environmental law on the threshold of a new ecocentric legal paradigm in the anthropocene

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Abstract: *Verso un diritto ecologico? Il diritto ambientale alla soglia di un nuovo paradigma giuridico ecocentrico nell'Antropocene* - The article analyses, with an emphasis on Brazilian law, the impact of the recognition of the new geological epoch of the Anthropocene on the Law and, in particular, on Environmental Law. Among the transformations caused by the Anthropocene in the original configuration of Environmental Law, the debate around the emergence of a new ecocentric legal paradigm anchored in Earth Science and ecological ethics stands out. The disruption to the anthropocentric legal paradigm that molded the foundations of classic Environmental Law half a century ago, that is, at the beginning of the 1970s, would be decisive in recognizing a new evolutionary phase in the discipline: Ecological Law. Recognizing the legal personality of new subjects (future generations, animals, Nature, natural entities, etc.) and the rights of animals and Nature is another striking feature of the new paradigm and legal narrative under construction.

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1. Introduction: environmental law at the crossroads in the new geological epoch of the anthropocene

"In my opinion, the change needed here could best begin with explicitly recognising the dignity of the natural environment (die eigene Würde der natürlichen Mitwelt), especially of higher animals, the land, the oceans, as

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well as life and nature as a whole, also in the constitution and individual laws" (Klaus Michael Meyer-Abich).³

"For a long time we have been lulled into thinking that we are humanity and we have become alienated from this organism that we are part of, the Earth, thinking that it is one thing and we are another: the Earth and humanity. I don't realise that there is anything that isn't Nature. Everything is Nature. The cosmos is Nature. Everything I can think of is Nature" (Ailton Krenak).⁴

"From hunter-gatherers to a global geophysical force"⁵. The passage quoted accurately describes the magnitude of human intervention on Planet Earth, culminating in the end of the *Holocene Geological Epoch* (or *Holocene*) and the beginning of the new Anthropocene Geological Epoch⁶. The name "Anthropocene", as can be assumed, is attributed to the behavior of a single species ("human beings"), notably as a result of its intervention in the Earth System. It is not, therefore, a positive honor, as an expression of recognition of their virtue and harmony in their relationship with other forms of life and the planetary system as a whole (*Gaia*), but precisely the opposite.

For no other reason, Edward O. Wilson prefers to use the nomenclature *Eremocene* or *Age of Loneliness* to define the current geological epoch, basically conceptualizing it as the "age of people, our domesticated plants and animals, as well as our agricultural plantations all over the world, as far as the eye can see"⁷. The Age of Loneliness represents, in other words, the progressive "loneliness" of the human species resulting from the decimation of wildlife and biodiversity on Planet Earth caused by *Homo sapiens* towards the sixth mass extinction of species⁸ currently in full swing.

The start of the *Anthropocene* is identified by some authors in the mid-20th century (1950s), i.e. the period that followed the end of the Second World War (1939-1945) to the present day, known as "The Great Acceleration"⁹. Geologist and paleobiologist Jan Zalasiewicz, coordinator of the Anthropocene Working Group, established in 2009 and charged with formalizing the recognition of the new geological epoch before the International Commission on Stratigraphy (ICS), argues that the radioactive substances expelled by the nuclear tests carried out in various parts of the world in the middle of the 20th century would be the geological markers

³ M. K. Meyer-Abich, *Aufstand für die Natur: von der Umwelt zur Mitwelt*, München, 1990, 137.

⁴ A. Krenak, *A vida não é útil*, São Paulo, 2020, 83.

⁵ The passage quoted reproduces verbatim one of the subtitles of an article written by some of the most renowned scientists studying the so-called Global Planetary System (*Earth System*), including atmospheric chemist and Nobel Prize winner Paul Crutzen, to whom are attributed the first studies dealing with the concept of the Anthropocene: W. Steffen *et al*, *The Anthropocene: from Global Change to Planetary Stewardship*, in *Ambio* (Royal Swedish Academy of Sciences), 40, 7, Nov. 2011, 74.

⁶ P. J. Crutzen, *Geology of Mankind: the Anthropocene*, in *Nature*, 415, Jan. 2002, 23.

⁷ E. O. Wilson, *Half-Earth: our Planet's Fight for Life*, New York, 2016, 20.

⁸ E. Kolbert, *The Sixth Extinction: an Unnatural History*, New York, 2014.

⁹ W. Steffen *et al*, *The Anthropocene: conceptual and historical perspectives*, in 369 *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* (Royal Society), (*The Anthropocene: a new epoch of geological time?*), 1938, 849-853 (2011).

best suited to meeting the requirements for demarcating the start of the new geological epoch of the Anthropocene¹⁰.

Since the emblematic article by Johan Rockström and other scientists published in the journal *Nature* in 2009¹¹, scientists today use the concept of "planetary boundaries" to identify the nine main biophysical processes of the Planet Earth System, with an emphasis on those whose capacity for self-regulation and resilience (or support) has already been compromised or is in the process of being compromised. The nine categories identified are as follows: 1) Climate change; 2) Ocean acidification; 3) Stratospheric ozone layer depletion or reduction; 4) Atmospheric aerosol loading; 5) Interference in the global phosphorus and nitrogen cycles; 6) Rate or index of biodiversity loss; 7) Global freshwater use; 8) Land-System Change; 9) Chemical pollution¹².

In (at least) four cases - climate change, interference in the global phosphorus and nitrogen cycles, changes in the soil system (e.g. deforestation) and the rate or index of biodiversity loss - scientists are assertive in pointing out that the "limits" and margin of safety have already been exceeded on a global scale¹³. In 2023, a new article was published in the journal *Science Advances*¹⁴, with some of the same scientists as in the previous studies (e.g. J. Rockström and Will Steffen), which identified a worsening of this scenario, with 6 of the 9 planetary boundaries being jeopardized, with global freshwater use and chemical pollution joining the list.

According to the article, human activity is affecting the Earth's climate regime and ecosystems more than ever before, jeopardizing the stability of the entire planet. For the first time, all nine planetary boundaries have been assessed, with the identification that six of the boundaries have already been breached, from global warming to the biosphere and deforestation, from pollutants and plastics to nitrogen and freshwater cycles. Six of the nine planetary boundaries are being crossed and, at the same time, the pressure on all boundary processes is increasing.

¹⁰ J. Zalasiewicz *et al*, *When did the Anthropocene begin? A mid-twentieth century boundary level is stratigraphically optimal* in 383 *Quaternary International*, 196-203 (2015).

¹¹ J. Rockström *et al*, *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, in *Ecology and Society*, v. 14, n. 2, p. 1-32, Dec. 2009. Available at: <https://www.ecologyandsociety.org/vol14/iss2/art32/>. The article was also published, in the form of a brief introduction, in the journal *Nature*: J. Rockström *et al*, *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, in *Nature*, 461, 472-475, 2009. Available at: <https://www.nature.com/articles/461472a>. For more information, see the website of the Stockholm Resilience Centre at Stockholm University, directed by Johan Rockström: <https://www.stockholmresilience.org/>. After the 2009 article, the topic was revisited by the same group of scientists in an article published in the journal *Science* in 2015: W. Steffen *et al*, *Planetary boundaries: guiding human development on a changing planet*, in *Science*, 347, 2015, 1259855.

¹² W. Steffen *et al*, *Planetary boundaries: guiding human development on a changing planet*, 741.

¹³ J. Rockström, O. Gaffney, *Breaking Boundaries: The Science of Our Planet*, New York, 2021, 97 (Illustration B4).

¹⁴ K. Richardson *et al*, *Earth beyond six of nine planetary boundaries*, in 9 *Science Advances* 37 (2023).

It is therefore necessary to scale back human intervention in these planetary subsystems, which are interrelated and dictate sustainability and resilience on a planetary scale. These planetary "limits" (with local, regional and global impacts) are pointed out not by politicians, state agents or environmentalists, but by the best scientists, from the best scientific institutions in the world, including several Nobel Prize winners. As expressly stated in the Preamble to the Paris Agreement (2015), the international community recognizes "the need for an *effective and progressive response* to the urgent threat of climate change based on the best available scientific knowledge".¹⁵

The seriousness of the ecological and climate crises and its consequences for human and non-human life on Planet Earth is of such magnitude that some countries have declared a "state of ecological and climate emergency". The recognition of a state of climate emergency has found widespread support from the scientific community, as seen, for example, in the reports of the UN Intergovernmental Panel on Climate Change (IPCC), namely the 6th Report (AR6) released between 2021 (Group 1) and 2022 (Groups 2 and 3), noting, among other noteworthy points, the greater intensity and frequency of extreme weather events already underway. The state of ecological and climatic emergency described represents a major challenge for the theory and praxis of Environmental Law, to the point of talking about a renewal of the discipline through the adoption of a new nomenclature: Ecological Law.

2. Widening the moral circle and recognising rights beyond the human spectrum

"If we want to get out of the current ecological crisis that humanity has brought upon itself, and if we don't, we will have no future, we will need a broader, more complete morality, an ecological ethic. We have to learn to see the whole. We have to get rid of this old Western prejudice, the idea that man is the centre of the Universe, that all of creation is here to serve us, that we have the right to use and abuse it without any sense of responsibility. We have to free ourselves from the idea that other beings only have meaning in terms of their immediate usefulness to man. As Schweitzer wanted, our ethics will have to include the whole of creation" (José Lutzenberger, AGAPAN founding speech in 1971).¹⁶

In the early 1960s, Rachel Carson warned us that the contemporary world was living under the paradigm of the empire of science and technology.¹⁷ Almost nothing has changed just over half a century later. And if it has, it's to make us even more hostage to technology in our daily

¹⁵ Available at: <https://www.undp.org/content/dam/brazil/docs/ODS/undp-br-ods-ParisAgreement.pdf>.

¹⁶ J. Lutzenberger, *Por uma ética ecológica*, in E. Bones, Geraldo Hasse, *Pioneiros da ecologia: breve história do movimento ambientalista no Rio Grande do Sul*, Porto Alegre, 2002, 190. The passage quoted was taken from the founding speech of the of the Gaucho Association for the Protection of the Natural Environment (AGAPAN), recognised as the first Brazilian environmental organisation.

¹⁷ R. Carson, *Silent Spring*, cit., 13.

lives, as well as exposing us to ever greater existential risks. The technological ambitions of Homo sapiens find no parameter in planetary boundaries. Today, after becoming a geological force that has led to the recognition of a new geological epoch called the Anthropocene, given the magnitude of our intervention in the integrity of the planetary system, science is increasingly moving towards geoengineering and other technologies with unimaginable consequences.¹⁸

It is completely irrational to think that the solution to the contemporary ecological crisis is (yet) more intervention in Nature. What we need to do is reduce our "ecological footprint" by taking our foot off the gas pedal of the locomotive that has taken us to the precipice of civilization. It is Ulrich Beck's "risk society" (which puts us "at risk"), as we dealt with earlier in a specific topic, operating with ever greater technological "weaponry" in a war in which humanity and nature are losing together.

This debate certainly establishes an important dialogue between Ecological Ethics and the Theory of Law, which are the reflexive basis for shaping contemporary Environmental Law.¹⁹ In the legal field, for example, one of the most notable studies and forerunners of this discussion is the classic work by German jurist Klaus Bosselmann *Im Namen der Natur der Weg zum ökologischen Rechtsstaat*, published in 1992, the same year as the UN Conference on Environment and Development, held in Rio de Janeiro. In the final part of the book, the German author draws up a "Manifesto of the New Order", whose fundamental idea (*Leitidee*) would be ecological ethics, impacting both the national and international legal systems.²⁰

Bosselmann's work - and that of several other authors in the same vein - opened up legal thinking to ecological ethics, having a definitive impact on the concept we have today of Environmental Law (or even Ecological Law, at an even more advanced stage). The influence of this system of thought built on ecological ethics has led to discussions, for example, about animal rights and the rights of nature (forests, rivers, landscapes, etc.), as well as a break with the anthropocentric legal framework - in favor of another biocentric or ecocentric legal matrix. The purpose of this chapter, on the other hand, is precisely to familiarize the reader with the topic and retrieve a little of the history of philosophical thought that lies in the different currents, formulations, and authors of ecological ethics.

Lutzenberger's epigraph, quoted at the beginning of this topic, is a good illustration of what is at stake in the relationship between human beings, scientific and technological development and nature, as well as, of course, pointing to the absolute and exclusive centrality that human beings occupy in the order of moral values, especially since the philosophical matrix that built modern thought. The "limit situation" we have reached with regard to the ecological crisis is directly associated with the philosophical stance - incorporated into our daily practices in both the private and public

¹⁸ E. V. Kolbert, *Sob um céu branco: a Natureza no futuro*, Rio de Janeiro, 2021.

¹⁹ In German doctrine, proposing a dialogue between philosophers and jurists on ecological ethics and legal theory, see J. Nida-Rümelin, D. Pfordten (eds.), *Ökologische Ethik und Rechtstheorie*, Baden-Baden, 1995.

²⁰ K. Bosselmann, *In Namen der Natur: der Weg zum ökologischen Rechtsstaat*, Scherz, 1992, 407-412.

spheres - of human domination over the natural world, consolidated by modern Cartesian-inspired science.

From the perspective of the "technological vocation" of the human being, as illustrated in Hans Jonas' work²¹, the Brazilian geographer Milton Santos, based on Kantian philosophical thought, who said that history was an endless progress of techniques, emphasizes that the development of history goes hand in hand with the development of techniques, and with each technical evolution, a new historical stage becomes possible.²² However, scientific progress alone, that is, the creation or even technical-scientific improvement, does not automatically take us to a new stage of moral evolution and existential well-being (individual, social, and ecological). A self-centered view of the world and (human) history is incompatible with our biological and ecological condition.

The Enlightenment, through the political (and legal) affirmation of the leading role of human reason (and human being) and scientific development in various fields of knowledge, represented a unique milestone in the civilization process. Ecological ethics, in criticizing Cartesian thinking and the duality between human beings and Nature that it preached, does not, of course, seek a return to medieval obscurantism. Rather, it aims to further deepen the process initiated by the Enlightenment thinking. The Enlightenment is an unfinished process, both in the scientific and ethical fields. Scientific progress - as illustrated by the latest developments in the fields of Earth Science and Climate Science - has enabled us to understand ever more clearly the interrelationship of environmental phenomena on a planetary scale, as well as the existential risks arising from human intervention of geological magnitude on Planet Earth - which has brought us to the Anthropocene, as mentioned above.

Added to this is our total existential dependence on ecological integrity, as the Covid-19 pandemic has dramatically demonstrated. Based on this understanding, Mayer-Abich defends the need for a "second Enlightenment" to deepen and complete the civilizing process begun by the first, integrating human beings definitively into the natural world.

"The realization that all people are born equal by nature and that this equality must also be preserved in the coexistence of the state became the basis of the modern constitutional state and was already irrepressible at that time. Concerning the role of human beings in Nature, there has not yet been a corresponding Enlightenment (*Aufklärung*). I argue that the first Enlightenment (*ersten Aufklärung*) about the natural equality of human beings (their equal birth) should be followed by the further Enlightenment about our natural kinship (*natürliche Verwandtschaft*) with the rest of the world (*Welt*). Both Enlightenments have far-reaching but different political consequences."²³

²¹ H. Jonas, *Das Prinzip Verantwortung: Versuch einer Ethik für die technologische Zivilisation*, Frankfurt am Main, 1979.

²² M. Santos, *Por uma outra globalização: do pensamento único à consciência universal*, 6. ed., Rio de Janeiro, 2001, 24.

²³ K. M. Meyer-Abich, *Aufstand für die Natur: von der Umwelt zur Mitwelt*, München, 1990, 39.

The *Prometheus* or *Golem* of modern science set in motion, with the progressive improvement of technology, an unprecedented cycle of human intervention in Nature. As a consequence of this feat of civilization, Nature has been conquered by human beings in practically every corner of the planet. From the Old World to the New World. From the West to the East. From North to South. Planet Earth has been dominated by one animal species like never before. The apparent physical strength of the dinosaurs, with their sharp claws and teeth, as in the case of the *Tyrannosaurus rex*, is incomparable to the strength of the "human hand" enhanced by skill. The power that human beings (*Homo Faber*) have today to transform Nature knows no bounds. From the destruction of forests for timber extraction and agricultural and agropastoral practices to the generalized pollution of Nature's elements, reaching the extreme of nuclear contamination and risking our very survival as a species, as we have seen with the climate issue.

Human beings have spared no technique to weaken Nature, extinguishing countless species on the way to their civilizational "progress". A quick visit to any natural history museum reveals some of the species that have been extinguished by human hands, such as mammoths (*Mammuthus*), mastodons (*Mammutidae*), giant sloths (*Megatherium*), saber-toothed tigers (*Smilodon populator*), etc. Not to mention the countless "hominids" that have also become extinct by human hand. Many other species did not even have time to be known and cataloged before they became extinct.

This is the central question posed by ecological ethics. We need a new ethical parameter for human practices carried out by the new technological tools that have been developed, especially given the ecological crisis triggered by human beings and their growing (and almost absolute) power to intervene in (and destroy) Nature. An ethic capable of disrupting the classic anthropocentric paradigm, even though the very survival of human beings is threatened by the ecological crisis and therefore the "salvation" of humanity is at stake. A disruption in the sense of "broadening moral boundaries", in other words, including Nature in the same moral community that includes human beings, to attribute intrinsic value to natural elements (fauna, flora, etc.). From the ethics of the individual (of the "I"), we must migrate to the ethics of the Universe!

As Edward O. Wilson said, the millions of species that inhabit Planet Earth are our phylogenetic kin, i.e. "their long-term history is our long-term history. Despite all our gimmicks and fantasies, we have always been and will continue to be a biological species linked to this particular biological world. Millions of years of evolution are indelibly encoded in our genes."²⁴ To deny this reality is to deny what we are, creating artifices (or hoaxes) disconnected from our real existential condition. In other words, we are a biological species - *Homo sapiens* - as cataloged by Carl Linnaeus in 1758, when he published his famous system for classifying species - used to this day by biological science.

An extremely relevant historical episode on the subject of planetary ethics is Pope Francis' encyclical "*Laudato si'*: on the Care of Our Common Home" (2015), which established an important dialogue between religion and ecological ethics. Cardinal Jorge Mario Bergoglio's choice of the name

²⁴ E. O. Wilson, *Half-Earth: our Planet's Fight for Life*, New York, 2016.

"Francis" - for the first time in history, in honor of Saint Francis of Assisi - for his name as the 266th Pope in 2013 reveals the importance of the ecological theme for the Catholic Church, as is also enshrined in the Encyclical *Laudato Si*, also in the sense of recognizing that the "sacred" is also in Nature. In 2019, the Synod on the Amazon was held at the Vatican, precisely to discuss the issue of protecting the Amazon rainforest and indigenous and traditional peoples.

Ecological ethics from this perspective has several dimensions²⁵, among which we can highlight *intra-generational* ethics, in the sense of establishing a relationship of respect and consideration for the various peoples and generations that inhabit the planet today and suffer the consequences of the ecological crisis, many of whom, it should be emphasized, are unfairly bearing the burden and negative ecological externalities resulting from the high industrial and consumption standards of developed countries. Not to mention the injustice and the demand for a climate ethic in the relationship between the younger generations (children and adolescents) who already inhabit Planet Earth and the older generations who are currently in power and exercise political leadership, making the decisions that will be borne by today's young people in a few decades, as a result, for example, of climate change.

Another dimension of ecological ethics is *intergenerational* (or intertemporal) *ethics* so that our present actions are guided by respect and solidarity with future human generations. Or, as Dieter Birnbacher puts it, an "ethics of the future" (*Zukunftsethik*).²⁶

Also noteworthy in characterizing the dimensions of ecological ethics is interspecies ethics, which focuses on human actions with other species (animals and non-animals). From a philosophical point of view, these concepts are connected even to the idea of *ecological or environmental justice*, emphasizing the respect and duties (moral and legal) that human beings must observe when interacting with Nature and non-human life forms. It is, so to speak, a true expression of otherness, that is, recognizing the intrinsic value and subjectivity of a "non-human other", worthy of consideration and respect for its own moral (and legal) value.

<p>DIMENSIONS OF ECOLOGICAL ETHICS</p>	<ul style="list-style-type: none"> - Intra-generational (between the same generation or living generations) - Intergenerational (between different generations) - Interspecies (between different biological or natural species)
	<p>Pathocentrism - from the Greek páthein, to suffer - designates the ethical conception that "all</p>

²⁵ See P. Saladin, *Die Würde der Kreatur*, in *Schriftenreihe Umwelt*, 260, 1994.

²⁶ D. Birnbacher, *Verantwortung für zukünftige Generation*, Stuttgart, 1988, 9-16. In Brazilian doctrine on the rights of nature, see. V. H. de Oliveira, *Direitos da Natureza*, Rio de Janeiro, 2016.

<p>CURRENTS OF ECOLOGICAL ETHICS²⁷</p>	<p>sentient beings deserve consideration in their own right".</p> <p>Biocentrism - from the Greek <i>bíos</i>, life - is characterised by arguing that "all living beings deserve consideration in their own right".</p> <p>Ecocentrism - also called "holistic ethics" or "physiocentrism" by some, from the Greek <i>physis</i>, meaning Nature - is based on the premise that "all of Nature (holistic version) or everything in Nature (individualistic version) deserves consideration in its own right".</p>
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3. From ecological ethics to ecological law: towards a new ecocentric legal paradigm in favour of "liberating nature"?

"Every form of life is unique and deserves to be respected, whatever its usefulness to man, and in order to recognise the intrinsic value of other living beings, man must be guided by a code of moral action." (World Charter for Nature 1982)²⁸

"Conscious of the intrinsic value of biological diversity (...)" (Preamble to the 1992 Convention on Biological Diversity).

After highlighting some aspects of ecological ethics, we'd like to clarify our position to the reader, since from the next topic onwards we'll be entering the "legal world". And ethical foundations are crucial to our understanding of law. In the field of Environmental Law (or Ecological Law, as part of the doctrine has recently been maintained²⁹), there is a growing dispute in the theoretical field between different paradigms.³⁰ On the one hand, some defend a predominantly anthropocentric theoretical matrix. On the other, the followers of the currents of ecological ethics: *pathocentrism*, *biocentrism*, and *ecocentrism*.

For some time now, the doctrine of Environmental Law has advanced in overcoming the classic Cartesian philosophical anthropocentrism, refusing the rigid relationship of the subject (human beings) and object (Nature), with a clear instrumental and dichotomous character in dealing

²⁷ A. Krebs, *Naturethik im Überblick*, in A. Krebs (ed.), *Naturethik: Grundtexte der gegenwärtigen tier-und ökologischen Diskussion*, Frankfurt am Main, 1997, 345.

²⁸ Adopted by the UN General Assembly on 28 October 1982.

²⁹ J. R. Morato Leite (ed.), *A ecologização do direito ambiental vigente: rupturas necessárias*, 2. ed., Rio de Janeiro, 2020; M. Peña Chacon, *Derecho ambiental del siglo XXI*, San José (Costa Rica), 2019.

³⁰ In the doctrine about the different paradigms, see. M. Klopfer, *Art. 20a*, in W. Kahl, C. Waldhoff, C. Walter, *Bonner Kommentar zum Grundgesetz*, Heidelberg, 2005, 43-44; I. Wolfgang Sarlet, T. Fensterseifer, *Direito constitucional ecológico*, São Paulo, 2019.

³⁰ With the same understanding, even applied to environmental criminal issues and based on the German doctrine, see. H. R. L. da Costa, *Proteção penal ambiental*, São Paulo, 2010, 24-25.

with Nature, but rather an ecological legal anthropocentrism - or even a "relative" or "broadened" anthropocentrism³¹ - intending to recognize the intrinsic value inherent not only in human beings but also in other non-human forms of life (and Nature itself).

The "recognition" of an intrinsic value in other non-human forms of life leads, in itself, to the attribution of "dignity" beyond the human sphere, as well as, of course, allowing the identification of an ecological dimension to the dignity of the human person itself, as will be dealt with later. From this perspective, the protection of ecological values and legal goods will impose restrictions on human rights and behavior, even to the point of characterizing moral and legal duties (the right to the environment itself has a constitutional legal regime of a fundamental right and duty). And not just to protect other human beings (present and future generations), but to affirm values and protect legal assets that transcend the human orbit.

Despite the significant advances in the theoretical frameworks that sought to relativize the classic philosophical and legal conceptions, based on the Cartesian matrix, as highlighted above, they were unable, over approximately five decades of development of Environmental Law, starting in the early 1970s, to curb the predatory impetus of human beings in their relationship with Nature. Moreover, it has established a regulatory legal framework capable of balancing the axes that characterize the concept of *sustainable development* (ecological, social, and economic) and, ultimately, ensuring ecological integrity at local, regional, and national levels, as well as on a global scale.

As Fritjof Capra and Ugo Mattei argue, it is necessary to build "a paradigm shift inspired by the recognition of the basic principles of ecology and the new systemic thinking of contemporary science".³² The scales of justice can no longer tip in favor of human beings and their interests, otherwise, by not adjusting to the "laws of Nature" and ensuring planetary ecological balance, they will jeopardize their own future existence.

The law needs to act not only as a mechanism capable of integrating the new moral and ethical values of an ecological nature that are rising in the social sphere but also with foresight and with the purpose of ensuring the protection of life, dignity, and fundamental rights in the future. This implies "reallocating" the place of Nature in the Law.³³ This legal turn, in our view, necessarily involves a complete reconfiguration of our relationship with Planet Earth at all levels and, in particular, the recognition of a new *legal status* not only in favor of non-human animals but of Nature as a whole and its elements (rivers, forests, landscapes, etc.).

³¹ According to this understanding, see J. de Sousa Cunhal Sendim, *Responsabilidade civil por danos ecológicos: da reparação do dano através de restauração natural*, Coimbra, 1998, 98; V. Pereira Da Silva, *Verde cor de direito: lições de direito do ambiente*, Coimbra, 2002, 29-30; J. Rubens Morato Leite, P. de Araújo Ayala, *Dano ambiental: do individual ao coletivo extrapatrimonial (teoria e prática)*, 3. ed., São Paulo, 2010, 77.

³² F. Capra, U. Mattei, *A revolução ecojurídica: o direito sistêmico em sintonia com a natureza e a comunidade*, São Paulo, 2018, 38.

³³ Regarding the "place" of Nature in the legal system, see the reflection proposed by A. H. Benjamin, *A natureza no direito brasileiro: coisa, sujeito ou nada disso*, in 31 *Nomos Revista do Programa de Pós-Graduação em Direito da UFC*, 1, 79-96, (2011). Available at: <http://www.periodicos.ufc.br/nomos/article/view/398/380>.

This involves a profound break (or "revolution"³⁴) with the modern legal tradition, symbolized at the constitutional level by the defense of an *Ecological Constitution* and *Ecological Law* based on a new *ecocentric legal paradigm*, capable of recognizing the intrinsic value inherent in Nature as a whole (biotic and abiotic elements). Although this is not the paradigm in force at the normative level in the vast majority of constitutional systems (with the exception, perhaps, of Ecuador's 2008 Constitution), as is the case in Brazil, we believe that it is towards this new constitutional horizon that we must aim and move, as even stated by Justices of our Constitutional Court³⁵, working to ensure that it gradually becomes a new reality and is realized in time to save Planet Earth (and ourselves) from the ecological collapse that is looming.

The first steps in this direction have already begun to be taken towards "breaking down the anthropocentric wall" built by modern thinking to exclude non-human animals and Nature from the "world of rights", including in the Brazilian constitutional framework. The concept of the environment enshrined in the National Environmental Policy Law (Act 6.938/81) contemplates a final, functional and ecosystemic approach to the legal treatment of the matter, by delimiting it, in section I of article 3, as: "the set of conditions, laws, influences and interactions of a physical, chemical and biological order, which allows, shelters and governs life in all its forms". Safeguarding life in all its forms - and therefore not just human life - in other words, biodiversity and the ecological integrity of Nature, shows a clear sign of a break with the classic anthropocentric paradigm.

The duties of protection recognized by article 225, *caput* and § 1 of the Brazilian Federal Constitution of 1988, which bind both the state and private agents, reveal a spectrum of protection beyond the human being, as can be seen: "*preserving and restoring essential ecological processes and providing for the ecological management of species and ecosystems*" (article 225, § 1, I); and "protect fauna and flora, prohibiting, by law, practices that jeopardize their ecological function, cause the extinction of species or subject animals to cruelty" (item VII of the same provision). Both constitutional provisions cited seem to us to be expressive examples of autonomous legal protection ensured to Nature itself, fauna, flora, etc. and to animals (rights to life, freedom of movement, physical integrity, well-being, among others).

A 'biocentric' interpretation of article 225, as raised above, was enshrined in the votes of some Supreme Court Justices in the judgement of the Direct Action of Unconstitutionality n. 4.983 (known as the 'Vaquejada Case', ADI 4.983/CE), particularly those of Justices Rosa Weber and Ricardo Lewandowski. For Justice Rosa Weber, "*the current evolutionary stage of humanity imposes the recognition that there is dignity beyond the human person*,

³⁴ F. Capra, U. Mattei, *A revolução ecojurídica*, cit., 9 ss.

³⁵ See, in this sense, the votes of Justices Rosa Weber and Lewandowski in the judgement of ADI 4.983/CE: STF, ADI 4.983/CE, Full Court, Rel. Min. Marco Aurelio, j. 06.10.2016. In another pioneering and unprecedented decision on the subject, the STJ recognised the rise of a new legal paradigm overcoming anthropocentrism, attributing dignity and rights to non-human animals and Nature: STJ, REsp 1.797.175/SP, 2nd Panel, Rel. Min. Og Fernandes, j. 21.03.2019.

so that the task of embracing and introducing the ecological dimension into the Rule of Law becomes present”.

Quoting a passage from the work of Arne Naess, which deals with the recognition of the intrinsic value of all forms of life on Planet Earth, regardless of human purposes, the Minister pointed out that:

*“the Constitution, in its article 225, § 1, VII, accompanies the level of enlightenment reached by humanity in the sense of overcoming the anthropocentric limitation that places man at the centre of everything and everything else as an instrument at his service, in favour of the recognition that animals have a dignity of their own that must be respected. The good protected by item VII of § 1 of article 225 of the Constitution, I emphasise, has a biocentric matrix, given that the Constitution confers intrinsic value on non-human forms of life and the way chosen by the Charter of the Republic for the preservation of fauna and animal welfare was the express prohibition of cruel conduct, offensive to the integrity of animals”.*³⁶

Following a similar path, Justice Lewandowski said in his vote:

*“I would like to say that I make a biocentric interpretation of art. 225 of the Federal Constitution, as opposed to an anthropocentric perspective, which considers animals as “things”, devoid of emotions, feelings or any rights. In order to make this interpretation, I refer to the Earth Charter, signed by Brazil, which is a kind of planetary code of ethics, similar to the Universal Declaration of Human Rights, but focused on sustainability, peace and socio-economic justice, and was devised by the United Nations World Commission on Environment and Development. The first of the Charter's principles is: ‘Recognise that all living beings are interconnected and that every form of life has value, regardless of human use. This means that it is necessary, especially when the very survival of the planet is at stake, to respect everyone as a living being in their complete otherness and complementarity. Today, in these turbulent days we are experiencing, the criterion for dealing with the environment must be ‘in dubio pro natura’, honouring the principles of precaution and care.”*³⁷

These provisions reveal a very clear legal-constitutional turn in the opposite direction to classic anthropocentrism. The same reflection can arise from the criminalization of human conduct that degrades the environment, which was carried out at the infra-constitutional level through the Environmental Crimes and Administrative Infractions Act (Act 9.605/98)³⁸, regulating a provision of FC/1988 (article 225, § 3). The "criminalization" of the ill-treatment of animals introduced by Act 9.605/98 can, to a certain extent, lead to the understanding that this rule is based on an "ecocentric" legal conception, in its art. 32 it states that it is a criminal offense to "abuse, ill-treat, injure or mutilate wild, domestic or domesticated, native or exotic animals" (*caput*), as well as that the same penalty applies to "anyone who performs painful or cruel experiments on a live animal, even for educational or scientific purposes when alternative resources are available" (§ 1º) and that "the penalty is increased from 1/6 (one sixth) to 1/3 (one third) if the

³⁶ STF, ADI 4.983/CE, Plenary Court, Rapporteur: Min. Marco Aurelio, 06.10.2016.

³⁷ Idem.

³⁸ Regarding the criminalisation of conduct that harms the environment and even the recognition of Nature as a passive subject of crime, see article by P. V. S. De Souza, *O meio ambiente (natural) como sujeito passivo dos crimes ambientais*, in *Revista Brasileira de Ciências Criminas*, São Paulo, 50, 2004, 57-90.

animal dies" (§ 2°). This regime was reinforced by increasing the penalty for the crime of ill-treatment of dogs and cats, with the inclusion of §1°-A in art. 32 through the Act 14.064/2020.³⁹

The criminalization of harmful conduct to the environment on its own is certainly not enough to disconnect from the anthropocentric conception of the Law in favor of an ecocentric vision - as advocated, for example, by Arne Naess's (*Deep Ecology*)⁴⁰ and Hans Jonas's ethics of responsibility, the latter was studied in the previous topic - but it already symbolizes, to some extent, the progressive movement of small disruptions to the anthropocentric legal tradition. Today, there is no legal advancement - theoretical, normative or jurisprudential - to definitively disconnect from the anthropocentric tradition, but on the other hand, we can already categorically affirm that "classic anthropocentrism" has been overcome.⁴¹

The current legal system (national, comparative⁴², and international) already validates the reconciliation of human and ecological values, to integrate them and, at the same time, recognize their inherent interdependence, gradually moving away from Cartesian anthropocentrism. According to the current stage of development of the contemporary constitutional framework, adequate ecological protection requires the consolidation and integrative implementation of fundamental liberal, social and ecological rights, as well as the affirmation of the autonomy of the ecological legal good, without which environmental protection will be mere fiction and ink on paper. As Klaus Bosselmann points out, there is the possibility of "coexistence" between the "anthropocentric" and "ecocentric" paradigms within the protective system established by Environmental Law.⁴³

As previously mentioned, although the environmentalist discourse - both legal and non-legal - is always enthusiastically proclaiming the defense of a new ecocentric paradigm - as opposed to anthropocentrism - this understanding does not (yet) reflect the legal constructions and respective normative mechanisms available to us today to *protect* and *promote* the environment. In the absolute majority of cases, the same theoretical, normative and jurisprudential foundations available to protect human life

³⁹ "§ Paragraph 1-A In the case of a dog or cat, the penalty for the conduct described in the heading of this article shall be imprisonment from 2 (two) to 5 (five) years, a fine and a ban on custody. (Included by Act 14.064/2020)."

⁴⁰ A. Naess, *Ecology, community and lifestyle: outline of an Ecosophy*, Cambridge, 1989.

⁴¹ See, in this sense, the vote of Minister Barroso in the judgement of ADI 4.983/CE: STF, *ADI 4.983/CE*, Plenary Court, Rapporteur Minister Marco Aurelio, 06.10.2016.

⁴² Here it is worth mentioning Ecuador's 2008 Constitution, which established an unprecedented specific chapter on the "Rights of Nature (or 'Pacha Mama')", in its articles 71 to 74, in order to advance towards a normative horizon unprecedented in contemporary constitutionalism, and already in a perspective closer to what could be called an "ecocentric legal paradigm". As the Ecuadorian constitution states, "Nature, or Pacha Mama, where life is reproduced and realised, has the right to full respect for its existence and the maintenance and regeneration of its life cycles, structure, functions and evolutionary processes (art. 71)", and that "nature has the right to restoration (art. 72)".

⁴³ K. Bosselmann, *The principle of sustainability: transforming law and governance*, Hampshire, 2008, 92-94. For Portuguese language version, see. K. Bosselmann, *O princípio da sustentabilidade: transformando direito e governança*, São Paulo, 2015.

and dignity will be used to favor ecological protection. For this reason, our theoretical approach is built on the pillars of Constitutional Law and Fundamental Rights Theory (and also Human Rights Theory, if we take the perspective of International Law).

For us, the protection of human beings is the protection of Nature, and vice versa. Therein lies an "ecocentric" mark in our theoretical approach, since we advocate an integrated vision between human beings and Nature. We see this "reconnection" as vital, identifying human beings as just another element in the chain of life on Planet Earth. With Lutzenberger, we understand that "we are not outside, above and against Nature, we are right inside. We are a piece of it".⁴⁴

The principle of ecological integrity, as the *Grundnorm* [Basic Norm] of Ecological Law⁴⁵ and of the ecocentric legal paradigm, is also the foundation for recognizing the Rights of Nature. In addition to the classic Theory of Will, based on human rationality, the legal theory of Animal Rights is now based on the Theory of Interest.⁴⁶ From this perspective, the "interest" (and, in a second step, the "rights") of non-human animals not to be ill-treated or subjected to cruel practices is recognized. The idea of a duty to respect animal integrity, as an expression of the protection of their interests and rights (including their rights to life and physical and psychological integrity), can also be aligned in the same direction.

This discussion, in our view, can also be extended to the field of a Legal or Lawful Theory of the Rights of Nature. The concept of ecological integrity translates a scientific parameter that can be measured in the natural sciences into the legal world. There is, so to speak, Nature's "interest" in maintaining and expanding its ecological integrity, with the flourishing of life (animal, plant, etc.) and biodiversity. Human actions and omissions that go against the ecological balance (pollution, deforestation, etc.), jeopardizing essential ecological functions and processes, negatively affect and violate the aforementioned legally protected interest (or right?). In the same vein, ecological ethics, by recognizing the intrinsic value and moral *status* inherent in Nature (and animals), also provides an important foundation for the recognition of a Legal or Lawful Theory of the Rights of Nature.

The *ecocentric legal paradigm* aims to broaden the framework of human well-being beyond the liberal and social spectra, necessarily including the ecological variable, in addition to attributing intrinsic value and rights not only to animals but also to Nature. The Cartesian dichotomy between human beings and Nature is incoherent from an ontological point of view, given the inherent biological nature of the human existential condition. The defense of Nature's rights is ultimately the defense of human life, dignity, and fundamental rights, since they are premised on *ecological integrity* for the exercise and flourishing of human life on Planet Earth.

⁴⁴ J. Lutzenberger, *Por uma ética ecológica*, cit., 190.

⁴⁵ P. Bridgewater, R. E. Kim, K. Bosselmann, *Ecological integrity: a relevant concept for international environmental law in the Anthropocene?* In *25 Yearbook of International Environmental Law* 1, 2015, 75-76.

⁴⁶ S. Stucki, *Towards a Theory of Legal Animal Rights: Simple and Fundamental Rights*, in *40 Oxford Journal of Legal Studies*, 3, 2020, 1-28.

This "ecological turn" in the conception of the General Theory of Environmental Law (or Ecological Law) and also of the principle of human dignity itself (from its *ecological dimension* and even the attribution of dignity beyond the human frontier)⁴⁷ implies the imposition of restrictions on the exercise of the other fundamental rights (liberal and social), but always seeking to ensure the integrality, indivisibility, and interdependence that characterize the *jusfundamental* legal regime and the defense of such values in a future perspective.

Ecological ethics, as already mentioned by Höhle, seek to establish a "synthesis" between human beings and Nature, capable of providing an existential reconciliation to disconnect from the Cartesian dichotomy. It is the reunion of the existential link lost by human beings on their civilizing journey. It is a conciliatory and integrative approach to human and ecological values, as two facets of the same legal identity that dignifies life and existence on Planet Earth. Although this framework has not been fully consolidated in the political-legal option outlined in our 1988 Basic Act (art. 225), this seems to be the path we should follow in the future, as even referred to in recent decisions by our Constitutional Court, as mentioned above, considering our responsibility - as the present human generation - for the interests and rights (?) of future generations (human and non-human).

The current emergency ecological crisis of global magnitude definitively shakes up the modern Cartesian tradition about our place *in* (and therefore not *outside of*) Nature. This, in turn, makes it necessary to conclude a new *political-legal pact* through a "veil of ecological ignorance", using the metaphor used by John Rawls in his classic work *A Theory of Justice*⁴⁸, which makes it possible to represent, include and take seriously not only the interests and rights (?) of future human generations (and even intra-generational conflicts), but also of non-human animals and Nature (and natural elements) in the light of an ecocentric legal paradigm driven by the human existential challenges posed by the *Anthropocene* on our present and future civilizational horizon.⁴⁹ The time has come for us to submit to the laws of Nature, and no longer Nature to the laws of men. Beyond the liberation of non-human animals, as proposed by Peter Singer in his classic

⁴⁷ In order to place the discussion on animal rights in the perspective of the Theory of Justice, see M. C. Nussbaum, *Frontiers of justice*, Cambridge, 2007, 325-407.

* Paragraph 3 of Article 225 of the Federal Constitution of 1988 expresses quite strikingly the "new" legal responsibilities of an ecological nature (in the civil, criminal and administrative spheres) of human beings (and also of legal entities) in relation to the environment, limiting, of course, other rights - fundamental and non-fundamental - with the aim of ensuring environmental protection. The rule in question states that "conduct and activities considered harmful to the environment will subject offenders, whether individuals or legal entities, to criminal and administrative sanctions, regardless of the obligation to repair the damage caused".

⁴⁸ J. Rawls, *A Theory of Justice*, Cambridge, 1999, 118-123. For a non-anthropocentric approach to Rawls' Theory of Justice, see Lawrence H. Tribe, *Ways Not To Think About Plastic Trees: New Foundations for Environmental Law*, in 83 *Yale Law Journal*, 7, 1315-1348 (1974).

⁴⁹ Regarding the discussion involving a new "social contract" of an ecological nature, with the purpose of including the interests (and rights?) of non-human actors or agents (*nichtmenschliche Akteure*), see J. Kersten, *Das Antropozän-Konzept: Kontrakt-Komposition-Konflikt*, Baden-Baden, 2014, 88-92.

work *Animal Liberation* (1975), the time has come for the "liberation of Nature".

ENVIRONMENTAL LAW ⁵⁰	ECOLOGICAL LAW
- Anthropocentric Paradigm	- Biocentric/Ecocentric Paradigm
- Holocene	- Anthropocene
- Modern Science (Cartesian/Mechanistic) - Dualism Nature v. Human Being/Culture/Society - Animal-Machine, Nature-Machine Manufacture of the World (F. Ost)	- Earth Science (Planetary Boundaries, Climate Science, Tipping Points, Ecological Realism) - New or Second Enlightenment (Meyer-Abich, Joachim Radkau)
- Human/Environmental Ethics (Immanuel Kant) - Modern Humanism	- Animal Ethics (Peter Singer) and Ecological Ethics (Hans Jonas/Meyer-Abich/Paul Taylor) - Indigenous Cosmology and Ancestry
- Instrumental and Utilitarian View of Animals and Nature	- Animal sentience, Phylogenetic parenting (E. O. Wilson)
- Ecological Dimension of Human Dignity	- Dignity (and Intrinsic Value) of Animals and Nature
- Environment	- Nature/Cosmos
- <i>Pro homine</i> principle	- Principles (<i>in dubio pro animale</i> and <i>pro Natura (et clima)</i>)
- Sustainable Development	- Ecological Integrity
- Fundamental/Human Rights (and Duties)	- Rights of (and Duties towards) Animals/Nature
- Will Theory	- Interest/Benefit Theory

⁵⁰ The comparative table, with some occasional adjustments, was taken from the second author's work co-authored with Ingo W. Sarlet: Ingo W. Sarlet, T. Fensterseifer, *Curso de direito Ambiental*, 4.ed, Rio de Janeiro, 2023, 114-116.

- Indirect Protection of Animals and Nature	- Autonomous Protection of Animals and Nature
- Intragenerational and Inter-generational Solidarity/Responsibility	- Interspecies Solidarity/Responsibility
- Human Health	- One Health - Human, Animal and Ecological
- Under-representation of the Interests and Rights of Future Generations, Animals and Nature	- Adequate Representation of the Interests and Rights of Future Generations, Animals and Nature
- Judge and Courts of (Award of) Damages	- Judge and Courts of Risk (Guardian of the Interests of Future Generations, Animals and Nature)
- Collective Process	- Structural Process (Prognostic and Risk Approach)
- Environmental Class Actions	- Access to Justice, Procedural Status and the Procedural Capacity of being a part of Animals and Nature
- Orthodox Liberal Economics	- Donut Economics (Ecological Ceiling and Social Floor) - SDGs of the 2030 Agenda

4. Final considerations

Welcome to the Anthropocene! Recognizing the new geological epoch of the Anthropocene is a call to "return to Nature", as Serres would say. A call to reunite with ourselves, with what we are and what we have never ceased to be, and with our deepest existential element embedded thousands and thousands of years ago in our DNA. We are the result of a journey through life on Planet Earth that began approximately 4.5 billion years ago. This is the "Great History" (and not Prehistory) of which we are also a part. We are a being of Nature, we are Nature and we are part of a community with other beings who, like us, are viscerally dependent on the integrity of Planet Earth to survive and flourish.

Law, and in particular Environmental Law, cannot turn a blind eye to the ecological and planetary reality that is being imposed by the

imponderable force of Nature's universal and absolute laws. Human laws are malleable and flexible, they can be reinvented and adapted at any time. Nature's laws are not, just like life and death. They are imposed on us, whether we like it or not, whether we agree with them or not. This is the reflection put forward in this article. Among the transformations brought about by the Anthropocene in the original configuration of Environmental Law, we highlight the emergence of a new ecocentric legal paradigm anchored in Earth Science and ecological ethics.

The unavoidable break with the anthropocentric legal paradigm that molded the foundations of classic Environmental Law at the beginning of the 1970s, as developed in the article, imposes the recognition of a new evolutionary phase in the discipline: Ecological Law. Recognizing the legal personality of new subjects (future generations, animals, Nature, natural entities, etc.) and the rights of animals and Nature is another striking feature of the new paradigm and legal narrative under construction.

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