



Our Blue Planet at the Crossroads. Between the Hobbesian Nightmare and a New Culture of the Commons

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Abstract

The exponential acceleration of the global environmental and climate crisis is becoming an imminent and dangerous existential threat to the sheer survival of humankind. The origins of this unique menacing predicament are deeply rooted in the culture developed in the cradle of European Modernity. It is a culture of utilitarianism, fuelled by an uncritical faith in the unlimited performance of technology in changing the material world. The essence of Modernity was a triumvirate—built upon the congruence between the sovereign State, the techno-science establishment, and the globalised market economy. This power-triangle commodified nature and created a pragmatic and operative fragmentary world culture that brought us to the crossroads we are now entangled in. As a result, International Law does not correctly address the prior theoretical structural problem of the existence of “global commons” that span across borders, or the intergenerational character of the concept of ‘humanity’. Global commons have

always been understood only as geographical leftover territories outside political borders.

Recognition of the intangible value of the ‘software’ of the Earth system and legal acknowledgement of a stable climate as a Common Heritage of Humankind will be the *locus* upon which an urgently needed system for management and permanent maintenance can be built, which will be essential to steer the Anthropocene wisely. This new space without enclosed territory should be the new object of global governance, and the seminal concept for a new culture of the global commons.

Keywords

Common concern/Common heritage of humankind · Compulsory cooperation · Earth System (intangible software) · Global environmental and climate crisis · Sovereignty · Utopia/Dystopia

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1 Introduction

If we ponder on the present state of our planet, taking the past forty years as our period of analysis, we cannot help but be shocked and deeply concerned about the increasingly tragic situation in which humanity finds itself. Tragedy is used here in the strict sense of the term. The awareness that we have today of the unity and interdependence of humanity on this extraordinary planet is

overshadowed by the threatening approaching of what seems to be an ineluctable fate. This time, unlike in classical Athenian tragedy, this fate, which we can only contemplate but are seemingly powerless to alter, does not stem from an external cause. It is not the whim of the Olympian gods that should be blamed for the increasing degradation of the balanced state of global life-supporting ecosystems. The threat entails the possibility of deeply damaging the biophysical conditions that could provide for the continuation of human history in a regime of civilisational complexity and refinement. This staggering predicament is not the result of blind indifference towards our fate by colossal and overwhelming physical forces. There is no one to blame but ourselves.

2 The Broken Mirror of Our World View

Paradoxically, the ever-growing capacity to accurately monitor the impact of our aggregate action on the Earth System has given us undeniable proof of impotence. On one hand, we are able to project scenarios regarding the ecological entropy installed on Earth, rooted in our current societal model, but, on the other, we are unable to bring about, in a timely, collective and articulate manner, the cultural, political and economic changes that could prevent these negative scenarios from coming true. The causes of this paradoxical asymmetry between knowledge and action, between lucidity and damaging immobility are deeply buried in our modern history. However, what is evident is that the artificially designed operating rules of the international system are on a clear collision course with the software of nature and are totally inadequate to prevent or even mitigate escalation from a critical ecological situation to a possible ontological and societal collapse (IPCC 2021; Patrick 2021).¹

¹ The alarming degradation of the Earth System is highlighted in a stark and accurate manner in the latest IPCC Report (2021). On the other hand, the growing asymmetry between the international system (including diplomacy and international law) and the Earth System is almost at breaking point.

2.1 What Should We Name Our Malaise?

From as early as the nineteenth century we can find premonitory testimonies to the growing severity of the damage being inflicted on the planet by human action. Among the pioneers, working between the latter part of the eighteenth century and the first half of the nineteenth century we may highlight the scientific endeavours of Alexander von Humboldt (1769–1859) and José Bonifácio de Andrada e Silva (1763–1838), which anticipated the development of today's Earth System Sciences (Soromenho-Marques 2019b; Steffen et al. 2020).² Closer to the present, one of the most surprising warnings of these dire negative consequences came in President Dwight Eisenhower's Farewell Address, which also touched on the serious topic of justice between generations (Eisenhower 1961).³ However, even today we still have a semantic vacillation, which demonstrates that there is no true and effective consensus on the diagnosis of the cultural illness that is devouring our collective chances of having a future worth living. This lack of consensus is reflected in the difficulty in finding response strategies and a legal and institutional framework powerful enough to implement adequate treatment.

Recently the term *climate emergency* has been gaining ground. However, this is a semantically poor concept because it isolates climate change from its context, as if it were a stand-alone crisis rather than an important part of a larger troubled whole. Another name that has often been used is the *energy transition*. In this case the contractionary and simplifying effect is even greater, as this term not only confines the heart of our

² Earth System scientists are today the newest and single academic community able to think of our planet as a complex and interdependent whole object.

³ "As we peer into society's future, we--you and I, and our government - must avoid the impulse to live only for today, plundering, for our own ease and convenience, the precious resources of tomorrow. We cannot mortgage the material assets of our grandchildren without risking the loss also of their political and spiritual heritage. We want democracy to survive for all generations to come, not to become the insolvent phantom of tomorrow".

civilisational distress itself to the field of climate change but also understands it only as an energy policy problem, leaving aside other key dimensions such as changing lifestyles or the accelerated extinction of biodiversity. Other sectoral proposals have originated from scientists and activists committed to biodiversity conservation. The *Half-Earth* project, presented in 2016 by Edward O. Wilson (1929–2021), recognised as the heir to Charles Darwin, also seems far from grasping the complexity of the biophysical natural processes that support life on this planet, and which cannot be reduced to a rigid territorial partition perspective of the planetary whole (Wilson 2016).⁴

Over the last few decades, the term *Anthropocene* (Crutzen and Stoermer 2000) has often been used to describe the opening of a new geological epoch singled out by the structural and lasting impacts of the action of the human species on the Earth. This seems to be closer to an integrated vision of the current dangerous state of the planet, and the term has several advantages: (a) it makes it possible to insert the time of human history into the long temporality of geological and natural history; (b) it identifies the planet in its entirety as the mega-object where changes take place, leaving no domain out, and focuses in particular on a detailed analysis of the impacts of society and the techno-sphere on the Earth System as a whole; (c) the identification of humanity as the driving force of this new geological epoch is at the same time neutral and descriptive, on one hand, and moral and politically responsible, on the other. By making humanity an actor and a potential victim of its own action, this designation of our epoch gains a significant advantage in the political discussion, bringing science and society mutually closer in the search for political solutions that may inspire new and bold public policies.

⁴ Despite being a particularly relevant popular science book, E. O. Wilson's work is mainly focused on reducing the loss of habitat, not taking into consideration other threats such as climate change. Unfortunately, he is also mainly concerned with terrestrial ecosystems, leaving little room for the oceans and marine life.

The historical concept of the Anthropocene is not, however, at odds with earlier, equally comprehensive readings of our contemporaneity, which were more oriented towards a descriptive phenomenology of the specific characteristics of the global environmental crisis. This proposal is validated by the meaning of each of its elements, but what is truly unique is the reciprocal interaction between all the elements: each one acts on all the others, each in turn being affected by all the others.

If we consider our present time as the crossroads of the first human-made *global environmental and climate crisis*, we also place the emphasis on its six main features, summarised as follows:

- Planetary dimension (there is no sanctuary away from this crisis).
- Irreversibility and entropy (e.g., massive biodiversity extinction).
- Cumulative acceleration (e.g., GHGs causing climate change).
- Growing political, social and cultural unrest (e.g., decline of classical power of the State, growing waves of environmental refugees).
- Risk of internal and/or international violent armed conflicts (e.g., the Sahel conflicts, the 2011 Arab Spring).
- Clash between entropy and complexity in the realm of Culture (e.g., the “world visions” of Mr. Trump and Mr. Bolsonaro) (Soromenho-Marques 2019a).

Whatever we decide to call our existentially threatened epoch, the truth is that all diagnoses have simultaneously increased their accuracy through the processing of data and consequently highlight the gloomy content of many of the future scenarios. Despite its sober language, the most recent IPCC report is surely the one that most profoundly illustrates the increasing possibility of the environmental crisis being upgraded to a state of collapse, with permanently negative and irreversible consequences for our future as a species. Recently coined concepts such as “Necrocene” or “humanity’s plague phase” are being used with increasing frequency in the

tentative screening of the time to come (McBrien 2016; Rees 2020).

2.2 Factors of Blindness: Hiding the Growing Global Ontological Threat

If we follow the insight of the original proposal of the Anthropocene, we know that the birth of the global environmental crisis overlaps with the beginning of the English Industrial Revolution (1750). It is, however, undeniable that the process of environmental degradation, including the historically unprecedented accumulation of greenhouse gases, intensified exponentially in the second half of the twentieth century, after World War II, in the period that should be called the *Great Acceleration* phase of the Anthropocene (Steffen et al. 2007). However, the roots of the key driving forces behind both the increasing impacts of the human material culture on the natural environment and the stubborn ignorance or underestimation of those impacts go back much further. Let us try, in a very condensed way, to identify what we call the *factors of blindness*, responsible both for concealing the growing symptoms of the global environmental crisis and for the lack of understanding of the shared and common nature of their negative long-lasting consequences.

2.2.1 The Utopian Soul of the Modern Techno-Scientific Revolution

With the various revolutions of the Modernity period, which began in the fifteenth century in Europe, and the expansion of planetary geography and the emergence of a new understanding of the nature and role of science, there was a true metamorphosis in the way humanity began to see itself and to rethink and reshape its relationship with the natural world. Not only was there a quantitative change in the essence and uses of science, but a real qualitative change. Science came to be understood as being increasingly entangled with technology. Scientific endeavour was intended to bring theoretical knowledge of the natural world to the brink of an effective

transformation of that same natural world through technologies that would limitlessly extend the human dominium over nature. Science (*episteme*) viewed as the intellectual contemplation of the real, which had satisfied the ancient Greeks, became, with the Moderns, a driver in the process of transforming and dominating the world. To serve that purpose, the key ingredient was the intimate unity between science and technology (techno-science). For the Ancients, the search for a future in conformity with the ideal, given by reason, should be the combined work of philosophy, ethics, education and politics. That idealised future (as Plato explains in *The Republic*) is seen essentially as a change in the relationship that human beings have with themselves and with each other collectively in the political realm. Contrary to the Ancients, the Moderns thought that the great leap forward towards a better future should involve changing the relationship of human societies with nature through technology, seen as the embodiment of human knowledge and inventiveness. The new vision of science was driven by a broader purpose of increasing human power over natural forces and processes, implementing applications that could be developed through the use of innovative technology.

In Modernity, technology ceases to be a mere secondary, instrumental and derivative consequence of scientific primacy, instead becoming the very vehicle and purpose of the desirable future, through our increased ability to alter and mobilise nature to suit our needs and even our whims. It is no coincidence that the concept of utopia was invented in this period, namely in 1516, by Thomas More. Thereafter the most influential utopias that followed suit, such as those of Tommaso Campanella and Francis Bacon, have the increasingly predominant presence of techno-science as the anticipation driving force of a desirable future.

We have reached the contemporary period with a fully-fledged technological orientation of the science infrastructure, and also of its planning and operating procedures, in an atmosphere of uncritical optimism, averse to any prudential reserve. The discourse of unlimited scientific progress marginalised dissenting voices and

regarded the growing toll of environmental and social negative impacts as acceptable collateral damage. The utopian drive of techno-science is increasingly escalating towards the opposite world of a dystopian nightmare (European Environment Agency 2001, 2013).⁵

2.2.2 The Commodification of Scientific Knowledge in a Growing Market Society

A second factor of blindness, with widespread and fundamental importance, is the absorption of techno-science into the economic sphere. Techno-science has become a productive force in a marketplace with variable and cyclical geometry, but always tending towards the maximum possible extension. Techno-science has entered into the competitive war for the conquest of market niches. The self-interest of companies with the capacity for technological innovation met with little opposition to the rapid implementation of patents in this field. With no or little environmental impact assessment regulation worthy of the name, companies were able to get round the fragile regulation by public policies, generally in the area of public health. Often, governments themselves became accomplices of these companies in the unrestricted and unconditional race for the conquest of markets, also as a way to affirm political and national supremacy. The replacement of society by the market, as the key historical actor, paved the way for the profound shift from the model of a society with a market at its service, to the opposite model of a market that transformed society and nature into its two chief satellites (Polanyi 2001). The lessons of pristine industrial capitalism, and the later tumultuous events that led to the first liberal globalisation, and to its demise into the thirty violent years of World Wars, Revolution, and Depression (1914–1945), were quickly forgotten, after three decades of welfare policies and mildly regulated capitalism. In the 1970s the wheel of history

turned around, setting the world on the vertiginous path of a second (neo)liberal globalisation entailing with it the intensification of all environmental and technological risks that are today part of our daily routine.

No one has expressed more elegantly than Aldo Leopold what was at stake in the surrender of science to the market's absorption logic. For Leopold, scientific knowledge had two faces: in its capacity to shed light on the unknown, to broaden the horizons of our understanding of natural processes, science was a "searchlight"; but insofar as knowledge transformed by technology becomes power, science is also a "sword". Between the demands of the market and the imperatives of national security, even in peacetime, the sciences and scientists have been pushed to maximise efficiency, even at the expense of the light that might illuminate the dangers that were potentially looming ahead. The role of knowledge as a sentinel against risks and threats was therefore marginalised by an Academy also caught by the feverish urge for exponential growth (Leopold 1977).

2.2.3 The Power Triumvirate and Its Fragmented Worldview

The third factor of blindness strikes directly at the heart of international relations, designed according to the Westphalia blueprint. Its intrinsic and stiff mechanical understanding of sovereignty kept international law, geopolitics and diplomacy under the biased *Realpolitik* spell, unable to screen the rapid and dangerous anthropogenic transformation of the planetary software.

In fact, there is a strong congruence between the three driving actors of contemporary civilisation, which were born in the same period of European history, these being modern science, the sovereign State and the capitalist market economy. These three share a very similar internal structure in fundamental aspects. They are united by the quest for growing efficiency in the transformation of the world. Science was moved by its growing marriage with technology and its wonders. The modern State, especially after the Treaty of Westphalia (1648), was propelled by its tenacious attempt to assert the validity of the

⁵ Regarding the complex network of non-scientific pressures that are involved in the scientific agenda of research, the following two EEA Reports may be considered as mandatory readings.

modern myths of sovereignty and autonomy. The market economy was fuelled by the axiomatic imperative of the boundless investment, expansion and multiplication of capital. This triple convergence is densified into a triple fragmentation. Science is divided into disciplinary areas, epistemologically differentiated and even distant, united by an operational agenda dictated from outside, be it national security (such as the Manhattan Project which allowed the USA to win the race to produce the atomic bomb) or private business objectives. The State looks at the planet through the lens of the territorial projection of power, completely oblivious to the complex ecological functioning of the Earth System, concerned only with what lies within the sphere of its sovereignty and largely indifferent to everything and everyone lying beyond its borders. The economy, both as theory and practical activity, focuses only on its internal models and instrumental goals, aiming at unlimited growth of production, consumption and profits. What lies beyond it are externalities that can be put aside in the operation of both economic thought and its praxis. The ideal type of business in a “free society” is depicted by Milton Friedman in his classic essay of 1970, which bluntly states that there should be no such thing as “business social responsibility”. That task may be assigned to government policies, not to privately owned corporations whose job is to maximise profits for their “stockholders” (Friedman 1970).

The specific transformative activism of the software shared by these three major institutional players makes up for what they lack in prudence and capacity for critical and strategic reflection. Only once, at the height of the Cold War, when the possibility of a limited nuclear conflict was growing on European soil, did an epistemological breakthrough occur that prevented a third world war, sparing the world from the full destructive impact of atomic weapons. The awareness of Mutual Assured Destruction (MAD) was accepted—at least in the final period of the Cold War—by all parties involved. There was no point in continuing a nuclear arms race if, sooner or later, it would precipitate a war in which there would be no winners, only losers. For reasons not

entirely clear, the lessons of the Cold War seem to have been completely forgotten. Today we are witnessing a race between States that are engaged in a true Mutual Environmental Destruction (MED) dynamic. Yet unlike what happened after 1985 with nuclear weapons, and despite all the current ecological and human catastrophes (from climate change to biodiversity loss, soil degradation and environmental refugees, for example), nobody has truly dared to map out the full consequences of this entropic process and demand with a strong voice and a resolute stance that this race towards the abyss should be stopped. If we want to rise to the challenge of the global environmental and climate crisis and avoid falling into a Hobbesian scenario of “war of all against all” over the meagre spoils of a devastated planet, we must be able to defeat our own demons. Our main weapon will be the building of a culture of the commons, by organising “compulsory cooperation” in order to face the dangers we all share (Soromenho-Marques 2016).

3 The Imperative of a New Culture of the Commons

3.1 Breaking Free from the Global Deadlock

It is easy to see that governments have a responsibility to protect their own citizens from pollution that affects the right to life, private life, or property.⁶ However, within the environmental crisis and climate change context, all the foundational pillars of international law are questioned. A stable climate that is “an intangible natural resource, which spans across and beyond the national territories of States” (Borg 2007) is not only subversive to current legal structures, but

⁶ The Social and Economic Rights Action Center and the Center for Economic and Social Rights v Nigeria, ACHPR, Communication 155/196 (2002), §§ 52–53; Lopez Ostra v Spain (1994) 20 EHRR 277; Guerra v Italy (1998) 26 EHRR 357; Fadeyeva v Russia [2005] ECHR 376; Öneriyildiz v Turkey [2004] ECHR 657; Taskin v Turkey [2004] ECHR, §§ 113–119; Tatar v Romania [2009] ECHR, § 88.

also entails potentially enormous domino effects across all the institutions of human society. It pervades in every human sphere: it is a human rights issue; it is a trade issue; it is a biodiversity issue; it is a security issue; it is a health issue. It is a huge challenge affecting the very foundations of the survival of civilisation as we know it. To put it another way, climate change—within the wider framework of the global environmental crisis—is too serious a problem to simply be left in the hands of a particular body of the UN, the UNFCCC, as if it were something that could be dealt with in a separate box, detached from the model of civilisation that brought it into being.

Climate, seen as mentioned above, challenges the very foundations of International Law, because its intrinsic nature is hostile to any kind of physical or territorial division, even in a legally abstract way. Although it is legally possible to divide the areas of the oceans and airspace abstractly into distinct zones, it is impossible to perform the same operation (of abstract legal division) with regard to the biogeochemical composition of the oceans and the atmosphere, or the climate system as a whole, given the sheer physical evidence that the fluids they comprise circulate continuously all around the entire planet. These facts of the natural world demand a new way of thinking about the Earth, and challenge the law to find new solutions capable of dealing with this stubborn scientific reality. Addressing the challenge of recognising in legal terms the intangible functioning process of the Earth System as a single whole requires redefinition of the current concept of “global commons”, which so far has been exclusively based on a territorial approach. In the near future, hopefully, it will also include the intangible and non-territorial character of the functioning of the Earth System, our planet’s ‘software’ (Magalhães et al. 2016).

Because the Earth System is shaped precisely by the intangible interacting physical, chemical and biological processes that cycle materials and energy throughout the system at the planetary level, it should not be owned, enclosed or disposed of (i.e., divided and appropriated) by any State or entity, if there is a threat of permanent damage being inflicted on the inner structure of

that processing system. Humanity shares, even without being clearly aware of this, all these processes that are conducive to maintaining a favourable state for us to thrive in, both in physical space and along the generational timeline. In this sense, the biogeophysical structure of the Holocene epoch is part of the international common heritage (patrimony) and therefore *belongs in usufruct to all humanity in common* (Banning 1995).⁷

Given its dynamic cross-cutting nature, the biophysical life support system of the Earth should be considered, beyond any reasonable doubt, as the most critical of the “commons”. Therefore, it should be used, but not owned, either as private or common property or via the claim of sovereign rights (Taylor 2016). Yet these characteristics of “belonging to all but owned by no one” do not necessarily prevent the “commons” from being put to use in an organised and regulated way. From a legal perspective, the regulation and collective control of something must be preceded by a fundamental question: “*How can a good that belongs to no one be subject to a legal regime?*” (Kiss 1982). In other words, if our life support system is a unique favourable state of functioning of the Earth System, how can we regulate its use in the absence of any form of legal representation of this intangible vital good within the realm of international institutions?

The recognition of objects as possessing an intangible or immaterial character is not new to the legal sciences. UNESCO’s immaterial cultural heritage, the intangible value of companies in commercial law, intellectual property, intangible orbital slots on the geostationary orbit or frequencies in Space law are examples where the need to organise the use of something, or the importance of the values intended to be protected, have always justified the search for new solutions. These solutions, which have resorted to the legal

⁷ The meaning of the “usufruct” concept (“*The earth belongs in usufruct to the living*”) was introduced and explained by Thomas Jefferson in 1789, in a letter to James Madison. This letter may be considered the philosophical foundation of the intergenerational justice issue.

recognition of new intangible assets, have proved to be a driving force in shaping today's society and the way it functions. So, what is hindering us from recognising that nature is not only what is touched and seen, but also its most inner, cross-cutting and valuable intangible dimension?

Individuals are not generally aware of the structural importance of these legal solutions, which are the basis upon which our societal institutions are founded. For example, without the legal separation between the intangible idea of an author and the tangible support on which that idea is recorded, neither would great increases in knowledge be possible, nor the mass dissemination of that knowledge, a key factor for every sector in our social life. The same idea could be applied to commercial law, where often the value of the intangible goodwill of one corporation is incomparably higher than its tangible assets. Drawing an analogy between these intangible legal objects and the intangible nature of the Earth System, which may not be "seen" before it is understood, might also be crucial in helping us to cherish the real value of natural biomes, whose ecological services for humanity are incomparably higher than the economic value of the specific natural hardware generated through those services. For example, the value of forests, which are vital for maintaining nature's capacity to support a favourable environment in which humans may live, only becomes visible in the economic and financial perspective through rush deforestation, turning living trees into dead raw material. In nature, too, the most valuable types of heritage are those beyond sight and touch.

In a recent work on the Global Commons in the Anthropocene, a set of critical biomes are defined by the fact that they "play a decisive role in regulating the overall status of the life-support system on Earth, that is, how well Earth can support world development" (Nakicenovic et al. 2016). These biomes are tangible and geographically and territorially enclosed, and almost all of them (with the exception of Antarctica and the Arctic) are under the jurisdiction of one or more States. From a legal point of view, it is entirely unfeasible to recognise them as global

commons, and accordingly, to consider their governance as a global and critical problem. Nevertheless, these biomes produce and provide intangible natural services that are disseminated throughout the planet, benefiting humankind and the biosphere as a whole. What is at issue here is the inability of State sovereignty to cope with the intangible value of the commons that cross its political geography, let alone to offer them adequate and necessary protection.

The reality is that our planet cannot be regarded simply as a geographic area of 510 million square km². In fact, all the known terrestrial planets share the same metric feature. What the others do not have, however, is an intangible and dynamic system embedded with strictly physical planetary hardware, capable of sustaining life as we know it. From a legal point of view, the planet is basically reduced to its territorial nature. This one-dimensional view ignores the most outstanding and vital expression of nature, the absolute singularity of the dynamic software that beats as the real heart of our living planet.

3.2 The Struggle for Non-Territorial Global Commons

When climate first entered the UN agenda, a fundamental question immediately arose: what is a stable climate from a legal point of view? The difficulty in answering this question was linked to the fact that climate is fully interwoven with the non-territorial ecological dynamic of our Earth, which crosses and transcends political borders. The thorny question regarding the nature of a stable climate was thus at cross purposes with the foundations on which International Law itself was built. Malta's first proposal (09/1988) to frame this new issue was to recognise a stable climate as Common Heritage of Humanity, which implied the conceptual innovation of legally recognising the existence of a common good that permanently circulates the territories of all sovereignties, both *internally and externally*. To get around this issue, in December of the same year, in UNGA Resolution 43/53, a further concept derived from the concept of common

heritage was coined, but with impoverished wording: climate change was defined as a “Common Concern of Humanity”. This option of addressing climate as a “concern” remains within the legal framework of the Paris Agreement to this day, and certainly paved the way for how societies are tackling climate change. Whether we like it or not, its shallow substance and characteristics are inevitably linked to the (lack of) results achieved.

The “common concern” is a vague political statement, which does not define specific rules and obligations but rather establishes only a general basis of cooperation for dealing with something that concerns the largest possible human community. In this system, those involved undertake to make an effort to mitigate or neutralise damage, but since the common good is not recognised, it is not possible to build a truly institutionalised management and governance system that ensures the permanent maintenance or restoration of this common good (in this case, a stable climate).

Had it been agreed that a sound and stable climate is our common heritage, the situation today would likely be different. We would probably have in place the two most basic design principles (DPs) that the economic history of long-enduring experiences of Common-Pool Resources (CPR) management define as the structural conditions for successful “collective action”, aimed at the sustainable use of common goods (Ostrom 1990). The first of these states that the nature and limits of the CPR must be clearly defined. The second principle requires “congruence between appropriation and provision rules”. By analogy, in the case of the urgent need to preserve a stable climate, this would mean a need to establish congruent rules between those who provide a stable climate and those who benefit from this common good.

According to Ostrom, there are eight DPs, and in the current climate policy, because these two first principles are not in place, all the subsequent others are also missing. Consequently, the option of considering climate simply as a feeble “concern” creates a huge gap between two very different worlds:

- (a) The “concern” concept implies a world in which a key global common that spans across borders is not recognised (current legal status). The “common concern” relates to an ill-defined “problem” and fails to define a real object of international law—the common good itself—and consequently, it is impossible for rights and duties to emerge from the provision or appropriation (usufruct) of that common good. (Scholtz 2014). Within the “common concern” approach, climate change is an “issue”, and a stable climate is not acknowledged as heritage that belongs, as an existential condition, to humankind as a whole. Therefore, the provision of a stable climate in a “common concern” framework, namely cleaning the atmosphere for the benefit of humanity, is the same as cleaning something that belongs to no one. It is a positive action lost in a legal void. The “concern” element presupposes that States are subjectively inclined towards joint and concerted actions” (Tolba 1991). “Common concern” is only a general framework for loose cooperation, and is a long way from an appropriate management system that is necessary in order to care for and restore a common good. This is the main reason why today there are no economic incentives for the provision of a stable climate, namely using policies to mitigate and actively restore the balance regarding the ever-increasing concentration of greenhouse gases in the atmosphere. What we actually have, on the other hand, is a badly designed and poorly performing mechanism of “voluntary obligations” to share the burden, aimed at reducing new emissions, but forgetting the need to remove the CO₂ already in excess in the atmosphere. This mechanism sets up a negative-sum game where the “stable climate resource” constantly decreases, due to the lack of an economic instrument to stimulate and pay for negative emissions. In a knock-on effect, the legal non-existence of the common good further prevents the emergence of an economy empowered to

preserve and restore a stable climate. All the benefits that could foster concrete and cooperative efforts to maintain and restore a stable climate disappear in the vortex of this *global legal gap* that means these benefits cannot be translated into economic value.

- (b) In a totally opposite direction, the “heritage” concept considers the stable climate as an intangible legal object across borders, i.e., a common good that can be the object of an international system of governance, where the unrestrained appropriation of the common good (negative impact) is considered as a value-loss, and most importantly, the provision of the common good (positive impact) can be considered as a value-gain in the “common heritage”. In this scenario we have the structural conditions needed for the ambition we are really seeking to achieve, i.e., an economy capable of actively cleaning, restoring, and maintaining a stable climate. Giving economic visibility to the output of the intangible benefits produced by nature would be a real *game changer* in the global economy because the value of natural services and assets would become directly visible in national and global GDPs. As a consequence, not only would countries attempt to cause minimum harm, but they would also be encouraged to add the maximum benefit possible to the common heritage in addition to enabling collective action, this would also drive us to protect and restore nature, without threatening the sovereignty of the countries where those key ecosystems are located.

This issue was clearly identified by Mostafa Tolba, one of the founders of the “concern” concept and executive director of the United Nations Environment Programme (UNEP), who stated in the early discussions: “It is very important that the concept of “common concern of mankind” is further elaborated to make its contents and scope understandable and clear; it is also important to make sure how this concept can be interpreted in the terms of the rights and obligations of states in

the process of its implementation.” (Tolba 1991). Thirty years later, this seminal challenge still remains unanswered and off the discussion agenda. The current model of considering climate change as a common concern has clearly proved to be insufficient. It functions, on the contrary, as an obstacle to social and collective action aiming for sustainability. Climate change is not simply a concern; it is also, and above all, a structural problem in our society and, most importantly, a stable climate is a heritage that belongs in usufruct to all generations. Only by intervening in the structure of the problem will we be able to aim for a different result, avoiding decades of successive failures of climate negotiations based on wrong assumptions.

Mostafa Tolba, besides accurately foreseeing the huge challenge ahead in order for the “common concern” concept to have any chance of producing a successful outcome, was also very insightful in predicting the resulting risks and pernicious impacts that would occur if the desired effects for which the concept was created were not achieved: “Joint efforts of governments, scientific community, scholars and public opinion are of crucial importance for the concept of “common concern of mankind” does not rest as just a vague political formula, which could be used to legitimize lack of concrete actions by simply declaring an environmental concern” (Tolba 1991).

3.3 The Commons and the Need for Innovation in International Law

In recent years, the Earth System sciences have produced a significant paradigm shift, unfolding a new way of systemically thinking about the Earth as a fragile and complex entity. The new paradigm of the Earth System sciences and the advent of the Anthropocene epoch calls for a comprehensive and multidisciplinary study of the co-evolution of natural and social sciences, as wise scouts of a new way for humanity to inhabit the Earth within those ecological boundaries that it would be unwise to cross.

There is, however, a formidable gap between the growing knowledge of the Earth and our negative impacts on it, and the ability to make the civilisational reforms that can reverse the current course that is leading us at accelerating speed towards a dire scenario of a “Hothouse Earth” (Steffen et al. 2018). Pursuing a strategy towards a “Stabilised Earth” pathway will require much more than a dramatic technological transformation, or the loose establishment of carbon pricing regimes. Humanity is an integral and active part of the Earth System; consequently, there is an intimate connection between aggregate human activity and global, interdependent biogeophysical cycles. The Anthropocene implies, therefore, that legal systems should be able to tackle, in a normative manner regarding the regulation of our actions, the real possibilities and constraints deriving from the functioning of the Earth System. Otherwise, we will fail the historical task of maintaining the Earth System within the “Safe Operating Space”. This concept originated from a strong body of scientific findings and proposals, including the “Planetary Boundaries” (PB) framework, which was first published in 2009 (Rockström et al. 2009), and revised and updated in 2015 (Steffen et al. 2015). This research provides useful elements and concepts to better understand how the Earth System functions.

The PB framework is based on nine key Earth System processes: climate change, stratospheric ozone depletion, land system change, freshwater use, biosphere integrity decline (including genetic and functional diversity), ocean acidification, biogeochemical flows (as phosphorus and nitrogen cycles), atmospheric aerosol loading and introduction of novel entities. These are the science-based limits that determine the balance of our Earth System, which was essential for the rather favourable epoch of the Holocene, the cradle of human history. If the PBs are transgressed, the risk of the Earth System being driven out of the Holocene stability epoch increases rapidly. It is important to highlight that the most critical scientific principle that underpins the PBs framework is that the *Earth System functions as a single integrated system at the planetary level*. If a single PB process is addressed in an isolated way, all

the other critical elements that interact with it will be ignored, as well all the feedbacks and domino effects that will happen throughout the whole system as a result of the interaction of PB processes. This means that, more than sectoral, geographic, institutional or implementation gaps, we suffer from a substantive mega-gap, of a hybrid nature, which is both epistemological and moral. Although knowledge and reason invite us to accept the condition of being full members of the Earth System, a powerful part of our will leads us to consider the Earth as a mere trophy to be conquered and plundered, as if we were transit passengers waiting for a spaceship to some other unknown place in the universe.

4 Conclusion: The Way Ahead

Portugal was the pioneer in recognising a stable climate as a common heritage of humanity.⁸ This is a positive step, but only the first on a long road towards the recognition of a new culture of the commons, which humanity, the international community of states, international law, the economic system, the scientific community and each of us individually must pursue and implement, in words and deeds.

We are engaged in a dramatic race against time. At this moment, if this necessary change does not take place, all the evidence suggests that the goals of the Paris Agreement, even the less ambitious ones, will not be achieved. Even if the OECD countries meet their targets for reducing greenhouse gas emissions, the two dozen major countries that are not part of this organisation (including countries the size of India, Brazil, Indonesia and South Africa) will continue to increase the GHG concentration in the atmosphere, making the Hothouse Earth scenario increasingly inevitable (Gallagher 2022). Can we blame the leaders of those countries that

⁸ On 5 November 2021, the Climate Law (Lei n° 98/2021) was approved by a large majority in the Portuguese Parliament. Article 15 f) of the Law defines “The recognition by the United Nations of a stable climate as a Common Heritage of Humanity” as an objective of Portuguese climate diplomacy. Portuguese Climate Law, 12/2021: <https://dre.pt/dre/detalhe/lei/98-2021-176907481>.

foster energy consumption to continue to lift their citizens out of the current very high levels of poverty? Would it not be fairer to consider as more reprehensible the indifference of the developed countries' elites, who refuse to support, through technological and financial transfers, the transition of non-OECD countries to more sustainable models of energy production and consumption?

The illusion of sovereignty in a world governed by a totally interdependent Earth System has become a deadly hallucination. This is not mere selfishness, but a gross error. If we are not able to build a new kind of common dwelling of the Earth, rooted in institutions of compulsory cooperation, in which all actors share responsibilities and benefits, then the only thing that will be experienced in common, not far away in the future, will be the immense tragedy of seeing the global environmental crisis plunge into a civilisational and ontological collapse with no return option. The time for realistic hope seems increasingly short. Therefore, there is no alternative but to struggle for the defence of an Earth where our children and grandchildren and all future generations can have a place.

The unity of the Earth System does not allow for separation between “us” and “them”, nor the digging of borders of indifference between “today” and “tomorrow”. We are all, wherever we are in space and time, passengers on our one, only and magnificent Blue Planet.

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