Imagining Extinction in the Anthropocene: Planetary Collapse as Negative Anticipation and its Role in the Politics of Global Sustainability.

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Abstract: Ever since the rise of modern environmentalism, ecological catastrophe has been used by the green movement as a way to convey the unsustainability of socionatural relations. In fact, doomsday scenarios led some political thinkers in the 70s to argue in favor of an eco-authoritarian approach to politics: individual freedom had to be traded for ecological security and democracy replaced by a strong state run by scientifically informed decision-makers. Neither eco-authoritarianism nor the apocalyptic discourse prevailed in the following decades, as the paradigm of sustainability gained public acceptance and environmental political theory labored to reconcile environmentalism and democracy. However, this may have changed in the last few years. Climate change and other global challenges, defining features of the Anthropocene as a new historical stage of socionatural relations, foster a new sense of urgency associated to the fear of planetary collapse. Theorists and activists alike warn against the danger of human extinction in an uninhabitable planet, a doomsday scenario that is meant to provide extra legitimacy to radical strategies of social change such as degrowth. On the other hand, the distinctive temporalities of the Anthropocene offer a glimpse into a deep past in which a number of extinctions took place, thus suggesting that they may happen again if the global system is not securely stabilized. On top of that, the COVID-19 pandemic has exposed the relative fragility of social systems in the face of global dangers. Yet the rise of this new extinctionism, which so far has not translated into an open support for authoritarian eco-regimes, pose a number of questions regarding the anticipation and imagination of sustainable futures. Is negative anticipation capable of mobilizing political actors and social groups? What kind of futures are elicited by the fear of collapse? Are extinctionism and democracy compatible, or perhaps the latter cannot deliver social change in the absence of a hopeful future? In dealing with these questions, I will argue that extinctionists of all kinds —including collapsitarians who see collapse as inevitable and even desirable as the only pathway towards a rebuilt human social order— play an ambiguous role in the politics of anticipation, as they are always on the verge of instilling despair rather than hope. I will also suggest ways of turning their negative energy into a positive resource for achieving a sustainable future.

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1. Introduction*.

In an early morning of mid-October 2019, London's public transport network was disrupted at rush hour by protesters from the global environmental group Extinction Rebellion. Trains and buses were targeted as part of a fortnight of demonstrations that tried to highlight government inaction in the face of climate change, while fostering public consciousness about the impending ecological collapse. However, things did not work out as expected: commuters resisted the attempt to stop transportation and angry scenes took place in some stations where protesters were dragged from the roof of underground trains. Senior figures from Extinction Rebellion later admitted that the protest was a wrong move that caused reputational damage to the movement and split opinion within it. In short, enraging commuters did nothing to increase their commitment to global warming.

And yet a question lingers: if the world is about to collapse and the human species runs the risk of extinction, why were these activists *rejected* by ordinary people instead of being *joined* by them? This, of course, is a matter for speculation. Perhaps they just have more pressing concerns, focusing on the end of the month instead of worrying about the end of the world — as it was put during the uprising of the «yellow vests» in France back in 2018. But how can the end of the month be compared with the end of the world? It could also be the case that citizens do not *believe* that the risk of extinction is real and act accordingly. On the other hand, they could also feel that there is nothing to be done: either because they feel themselves powerless or because they think that there is no power in the world that is capable to prevent collapse anymore. But it could also be that the environmental movement has lost its credibility.

Modern environmentalism has certainly warned about the possibility of an ecological breakdown of modern society since its very inception. In fact, the fear of apocalypse is an enduring component of the movement´s identity — the clash between modernity and nature, which is seen as leading to a deep ecological crisis, endangers the nonhuman world and thus the environmental conditions under which the human species can live and prosper. The extinction narrative has a long and rich genealogy, the most proximate origin of which is the Romantic rejection of industrial modernity — Mary Shelley's *The Last Man* imagined a world devastated by a plague in 1826. It adopted a modern shape in the early sixties, as the idea that nature could be destroyed by human beings was presented as supported by scientific evidence: Rachel Carson (2000 [1962]) evoked a «silent spring» in her denunciation of DDT, whereas Paul Ehrlich (1968) depicted an overpopulated world that would soon be unable to feed its inhabitants. Ehrlich was bold enough to set deadlines: he wrote that «most of the people who are going to die in the greatest cataclysm in the history of man have already been born», predicting «an utter breakdown of the capacity of the planet to support humanity» within the next 15 years. Soon after, the report on the *Limits to Growth* (Meadows et al. 1972) described a systemic clash between the carrying capacity of natural systems and economic human activity — a clash which would cause a major socioecological collapse «within the next one hundred years» if global trends remained unchanged. Likewise, best-selling pamphlet *Blueprint for Survival* (Goldsmith et al. 1974) announced that the «irreversible disruption of the life support systems on this planet» would happen «possibly by the end of the century» if radical action was not taken. These warnings made an impression on Western public opinion, which still lived under the threat of nuclear war and was deeply shocked by the oil crisis in 1973: after 25 years of post-war economic growth, progress seemed reversible. What if the green movement was right?

The stakes were so high that a number of radical positions emerged in response to the perceived risk of societal collapse. On the one hand, a number of thinkers suggested that democracy was a luxury that humanity could not afford: eco-authoritarianism was justified as the only pathway to survival, since only the temporary rule of experts could prevent a global breakdown that films such as *Planet of Apes* and *Mad Max* had made popular. As the writings of William Ophuls (1977) or Garrett Hardin (1977) attest, the main worry of eco-authoritarians was *scarcity* in a *finite* world in

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which human *population* grew at a rapid pace. According to Ophuls, a green Leviathan was required: a centralized state ruled by «if not a class of ecological guardians, then at least a class of ecological mandarins who possess the esoteric knowledge needed to run it well» (Ophuls 1977: 163). On the other hand, the premise that «humans» were destroying «nature» led some to conclude that the world could only flourish without us. As Norbert Bolz (2020) has recalled, chemist Erwin Chargaff and philosopher Ulrich Horstmann argued back in the early eighties that the Earth would be a paradise if humanity disappeared. During the outbreak of the coronavirus pandemic, as more or less accurate images of wild animals venturing into cities started to circulate, a similar idea was formulated: the real virus is mankind, and the planet was trying to get rid of us. The *Voluntary Extinction Movement* believes so and encourages people to realize that the extinction of *Homo sapiens* is the only alternative to the exploitation and destruction of the Earth.

Whereas environmentalists were portrayed as «the vanguard for a new society» (Milbrath 1984), their vision was usually bleak, and it took some time before their picture of the ideal society became more amiable. But not less radical: the green utopia has consistently been grounded on the end of capitalism and the dramatic reduction of the scale of human societies — as the degrowth movement attests nowadays. However, the ideal green society is presented now and then as the solution to the problem of survival, which is also the problem of extinction. As Dobson (1990) once argued, even though the private ecologist may believe that the protection of nature is a worthy goal, the public ecologist underscores the risk for human beings in order to mobilize public support.

And yet the collapse never took place. The goal of reaching a «sustainable development» was adopted in the early 90s by most countries and the success of the Montreal Protocol in dealing with the weakening of the ozone layer led many to believe that ecological modernization might work. As Frederick Buell (2003) pointed out, apocalypse became a «way of life»: danger was processed as risk and societies learnt to coexist with a number of environmental problems that the green movement —activists and thinkers alike— presented as constitutive of an ongoing ecological crisis. Needless to say, the latter was in turn related to many other crises, among them «a crisis of culture and character» (Eckersley 1992: 17), a «crisis of consciousness» (Blühdorn 2000: 37), a «crisis of failing of reason and culture» (Plumwood 2002: 15), as well as «a crisis of governance» (Adger and Jordan 2009: xvii). By definition, a crisis ends up with some kind of change and the prospect of ecological collapse was never out of the picture. Nevertheless, the old view that nature was at one side and humanity at the other was gradually replaced by a more complex understanding of socionatural relations as grounded on their mutual imbrication rather than separation (see Arias-Maldonado 2015). But the apocalyptic tradition within environmentalism has not disappeared, it has only adapted:

> «Rupture, revelation, world-end and judgment are no longer what they were then. We do not encounter revelations of sudden ruptures with the past; environmental problems and constraints are that past» (Buell 2010: 28).

In fact, the rise of global warming as the most salient environmental problem faced by humanity in the 21st century has revitalized the apocalyptic strain of the green movement. Even though climate change reveals a «long-term systemic crisis» (Derber 2010: 1), collapse has become a more distinct possibility once the «hothouse Earth» has entered into public imagination as one of the scientifically validated trajectories that the planet could follow *if* radical action is not taken. In particular, the acceleration of global warming leads to «tipping points» that would irreversibly change the climate system and thus endanger the human habitation of the Earth (see Retallack and Lawrence 2007: 55). Remarkably, this is not a fringe view, but rather one that circulates widely in the public sphere. Former US vice-president Al Gore told American Congress back in 2007 that mankind faces «a planetary emergency, a crisis that threatens the survival of our civilization and the habitability of the Earth». A decade later, Swedish activist Greta Thunberg has turned into a celebrity by giving voice to young people that demand political action against climate change, often describing global warming as an existential crisis — «code red for humanity». As we have seen, prominent

environmental group Extinction Rebellion alerts that «we are heading for extinction» and a great number of scholars agree that humanity faces «planetary ecological collapse» (Foster 2020: 35).

Apocalyptic discourse is thus a mediating frame through which the public has come to engage with climate change and green politics writ large (Urry 2011). What climate change provides the environmental movement with is a scientifically grounded planetary apocalypse, namely an impeding catastrophe that justifies political exceptionalism (McNeish 2017). However, global warming does not hold a monopoly on the green apocalyptic narrative — not since the Anthropocene discourse gathered force in the last decade. Admittedly, climate change is a manifestation of the Anthropocene. Or, to put it differently, the climate system is one of the planetary systems that have been disrupted by human activity — a sum of anthropogenic transformations that are displacing the Earth system towards a new state of equilibrium that may be detrimental to human comfort and even to human survival in the long run (see Steffen et al 2007, Ellis 2018).

While the Anthropocene designates a new state of the Earth, one in which key natural systems are coupled with social systems at a global level, it could also be formally recognized as a new geological epoch. If stratigraphical criteria are not met and such official recognition does not happen, however, the natural phenomena described by Earth system science will not disappear. And the same goes for the claim that humanity has become a major environmental force that would do well in reacting to the danger that it has created. Still, the geological aspect of the Anthropocene narrative is key for understanding its apocalyptic appeal: as the safe conditions of the Holocene are left behind and living humans enter the unpredictable Anthropocene, the fragility of our earthly condition becomes more conspicuous than ever. Even the prospect of human extinction, as we will see, gains credibility when presented under such umbrella — the Earth's violent past is rediscovered, and the realization follows that its habitability cannot be taken for granted. Danowski and Viveiros de Castro (2016: 22) are blunt: «The Anthropocene is the Apocalypse». But is it?

In this paper, I deal with the apocalyptic quality of the Anthropocene and reflect upon its political implications. In the next section, I describe the rhetoric of extinction and catastrophe that is associated to the rise of the Anthropocene and climate change. The third section tries to identify the difference that the Anthropocene introduces — how is the danger of human extinction perceived now that environmental problems are replaced by the risk of an uninhabitable planet? In the fourth section, I move on to consider how valuable or useful is the apocalyptic frame in order to increase public consciousness and to mobilize public support. Finally, I reappraise the role that negative anticipation can play in the public discourse of contemporary environmentalism, suggesting that the Anthropocene may be employed as a didactic apocalypse that turns despair into hope and coexists with other eco-narratives in a pluralistic public-sphere.

2. Data and Gloom in the Anthropocene.

The apocalyptic narrative of contemporary environmentalism has so far been mostly tied to the peril of global warming. However, global warming can be seen as a manifestation of the Anthropocene, which is a wider concept — one that encompasses a greater number of anthropogenic disruptions of planetary systems and emphasizes the role of the human species as a major geophysical and environmental force. Insofar as natural scientists alert about the possibility that the Earth ends up following a trajectory that endangers human habitation of the planet, the Anthropocene posseses a strong apocalyptic potential. While natural scientists often describe the disruptions suffered by natural systems in a detached way, other thinkers and activists talk openly about collapse and display more explicit narratives about the end of the world and the extinction of humanity. On the other hand, the coronavirus pandemic had apocalyptic reverberations at the outset, reminding us that humans cannot entirely control their interactions with the natural world (see Arias-Maldonado 2022).

By making it clear that human extinction may result from the anthropogenic alteration of planetary natural systems, the Anthropocene is serenely apocalyptic. Such is at least the view that stems from

the scientific descriptions of the Anthropocene. As Thomas (2022a) highlights, Earth system scientists approach Earth as an integrated system in which different spheres —atmosphere, hydrosphere, lithosphere, pedosphere, biosphere— mutually impact one another in complex and sometimes unpredictable ways. What the Anthropocene adds to the traditional picture is the human sphere, which has been interacting with the rest for some time now and has gathered an extraordinary force since the rise of the industrial civilization. But if humans have accrued such power is thanks to technology. For that reason, the human sphere is actually the «tecnosphere» upon which we utterly depend: while the latter unfolded from the biosphere, it has grown at the expense of it (Zalasiewicz 2022: 44). Hence the usefulness of this new epistemic framework, which helps us to connect the accumulated knowledge of the whole Earth system with all human activities including cultural production (see Steffen et al. 2020: 7).

Nevertheless, as Zalasiewicz (2022) remarks, this new concept does not need sophisticated statistical analysis to reveal its meanings — numbers suffice. To give just a few: the concentration of carbon dioxide in the atmosphere is the highest in 15.000 years, perhaps the most rapid change in atmospheric dioxide levels in the Earth's history, and if nothing changes in the next century the world will turn into a «hothouse Earth» without major polar icecaps (see Clark et al. 2016). On a different note, humans have used some 30 trillion tons of Earth material and multiplied the number of «minerals» more than 40-fold, as well as produced such an amount of plastic that the latter has found its way into the sedimentary record (Zalasiewicz 2022: 30-36). In parallel, humans have halved the living mass as they have replaced forests with biotas that are useful to them (see Ellis 2015), while flying insects are declining at an alarming pace (more than 75% of them have disappeared over 27 years in protected areas: see Hallman et al. 2017). In fact, extinction rates have accelerated in recent decades and while the so-called «sixth mass extinction» has not happened yet, the number of species known to be endangered is such that if current trends are not curbed such major extinction would take place within the next two to three hundred years (Barnosky et al. 2011). As for our own extinction, the habitability of the Earth should not be taken for granted: wet-bulb temperatures of 35 degrees Celsius or more would be lethal for humanity, as the heat indefinitely generated by an individual cannot be dissipated (Zalasiewicz and Waters 2015: 258). As imagined by English novelist J. G. Ballard (2014) in *The Drowned World*, this would not necessarily spell the end for the human species, but humans would have to abandon most of the currently inhabited Earth and concentrate themselves far from the Equator.

If cold numbers can be worrying, a number of social thinkers and humanists argue that the transition from the Holocene to the Anthropocene throws humanity into uncharted waters in which the whole species could eventually drown. The key point is that the end of the Holocene is interpreted as an unprecedented episode in the history of socionatural relations. For instance, Hamilton (2015: 4) argues that the Anthropocene is not «a mere ecological crisis», but rather an event that «heralds a new geological regime of existence for the Earth and a new human condition». In short: the Anthropocene thesis describes a *dangerous* transformation. Whereas the Holocene is a «fairly unremarkable interglacial phase» when viewed from the standpoint of planetary history, it is also the geological interval in which the human species has thrived (Clark and Szerszynski 2021: 5). Leaving the stability of the Anthropocene behind thus spells trouble for humans: «We have reached a threshold» (Bounneil and Fressoz 2016: xiii). What is beyond it? This is where the apocalyptic discourse finds its footing.

Although uncomfortable with the «masculinist-solutionist ambitions» of the Anthropocene narrative, Zylinska (2018: 4) acknowledges that the latter has provided new life to the apocalyptic narrative of modern environmentalism. Two narratives thus converge and yet, according to Zylinska, visual representations of the Anthropocene are contradictory in that they portray the end of the world while simultaneously «hide the fact that soon *there will be nothing to see*» (2018: 64). More accurately: there will be *nobody* capable of seeing what is left of the planet. As it happens, though, a number of apocalyptic narratives that focus on the Anthropocene and climate change can be seen as attempts to *awaken* living generations to the fact that the human species may perish *if* nothing is done to avert such fate. Best-selling journalist Naomi Klein puts it this way:

«Major cities will very likely drown, ancient cultures will be swallowed by the seas, and there is a very high chance that our children will spend a great deal of their lives fleeing and recovering from vicious storms and extreme droughts. And we don't have to do nothing to bring about this future. All we have to do is nothing» (Klein 2014: 4).

In a similar vein, journalist David Wallace-Wells (2019) argues that irrespective of whether human extinction happens or not, what stands in between us and extinction is awful enough: normality is gone and the human answer to climate change will only determine the extent of the damage and thus the severity of the hardship humans will endure. His book is about what it means to live under new planetary conditions, as well as a description of the costs of passivity, but he is as gloomy as it gets: «between two hellish poles, in which our best-case outcome is death and suffering at the scale of twenty-five Holocausts, and the worst-case outcome puts us on the brink of extinction» (Wallace-Wells: 2019: 27). A grim choice, if there ever was one.

A different position is that of those commentators who believe that collapse is unavoidable *no matter what is done* by living humans. Thus warnings are less about the possibility of averting breakdown than about the need to prepare for it. Among such fatalists there are «collapsologues» who aim to predict *when* is collapse to happen with the help of natural science (see Stetler 2020; Servigne and Stevens 2015). «Collapse» can be understood as «a rapid, uncontrolled, unexpected, and ruinous decline of something that had been going well before (Bardi 2020: x). And collapsologists see no way to prevent catastrophe: sooner or later tipping points will be passed and life on Earth will become much more troubled if not unfeasible. In the end, collapsology does not differ much from the classical «limits to growth» perspective, but it lacks the cautionary tone of the latter — the unhappy ending is just taken for granted.

But if the ecological apocalypse is a certainty, what should be made of it? Some thinkers believe that collapse offers the sad chance to reimagine the human society of the future and encourages us to avoid the mistakes that have condemned civilization this time around. Spanish philosopher Jorge Riechmann (2018) argues that the breakdown of modern society is not the end of the world, but the chance to transition to a truly sustainable society. For those who reject modern society, an apocalyptic shock is the bitter recognition that the current system cannot be changed — even in the face of an existential risk. Roy Scranton (2015) is convinced that an ecosocial breakdown is near: «We face the *imminent* collapse of the agricultural, shipping, and energy networks upon which the global economy depends, a large scale die-off in the biosphere that's already under way, and our own possible extinction as a species» (Scranton 2015: 19; my emphasis). And yet he recommends that we «learn to die in the Anthropocene», abandoning hope and concentrating on how to adapt to an inhospitable new world. Others simply assume that humans are living NTE —«near-term human extinction»— and recommend that we pursue a «life of excellence» as long as we can (see McPherson 2019). Individual redemption is still at reach, but humans as a collective are condemned.

In sum, the question of how to act in the face of catastrophe is controversial. Earth system scientists Simon Lewis and Mark Maslin (2018: 369) outline three possible futures: an increase in the complexity of current civilization, its sudden collapse, and the establishment of a new mode of living. And while collapse is a consequence of inaction, as those who hold an apocalyptic stance make clear when warning of the rising costs of inaction, some of them claim that not even action can prevent collapse. On the other hand, collapse may bring about a new mode of living if survivors behave wisely — or else gives way to an uninhabitable Earth where humans become actually extinct. Following the taxonomy of Dryzek and Pickering (2019), the latter would be a *bad* Anthropocene, whereas any Anthropocene in which human beings continue to thrive would be a *good* one. In their view, however, the only thing we know for certain is that the Anthropocene is *inescapable* — it demands a reflective answer on the part of living humans. Ironically, the answer offered by some of them is that we should stop worrying and learned to love collapse.

The apocalyptic narrative is however opposed in two additional ways. On the one hand, there is the rise of what Cassegard and Thorn (2018) designate as «post-apocalyptic environmentalism», namely, a view that is based on the experience of irreversible or unavoidable loss. From this viewpoint, disaster is not yet to come — it is already happening. Thus we are going through a slow-motion catastrophe that might still gather speed. Hence the collective Dark Mountain's aim to narrate «post-cautionary tales» (see Hine et al. 2013), i.e., «tales which do not seek to avert crisis or radical change, but which acknowledge that we are already living through those things and that we are going to have to deal with the consequences». The interesting thing about post-apocalyptic environmentalism is how it departs from a tradition of green thought in which the anticipation of future disaster was meant to elicit fear and hence lead to pre-emptive political reaction — thus sowing the seeds for green utopia. If apocalypse is going on and disaster has not been averted, what is left to do? Plenty: the identification of damage and loss, the denunciation of injustice, the fight for better conditions of living. As Cassegard and Thorn (2018: 9) remarks, it could also be the case that the unavoidability of catastrophe *fuels* political action. But then it may not — a question that will be discussed later.

A related criticism of the apocalyptic narrative focus on the supposed universalism of the *anthropos* that operates as the main character in the Anthropocene drama. If the Anthropocene is an apocalypse, whose apocalypse is it? That is the question formulated by decolonial thinkers for whom «apocalyptic imaginings have often been framed through an exclusionary hierarchy of humanity» (Gergan, Smith & Vasudevan 2020: 92). Once the «fictitious human unity» presumed in the Anthropocene narrative is rejected, it becomes clear that a number of minorities and peoples have been suffering the apocalypse for a long time. Hence only «subjects of white privilege» can be warned that their living conditions are threatened, since they have not been affected by the unequal distribution of harms made possible by «global structures of environmental racism» (Mitchell & Chaudhury 2020: 314; see Yusoff 2018). This position can also be deemed post-apocalyptic, if only because it argues that disaster is nothing new.

3. Before Extinction is After Extinction: The Meaning of Apocalypse in the Anthropocene.

The criticism levelled against the universal quality assigned to the *anthropos* is a recurrent feature of the Anthropocene debate. I am not interested in opening up this debate here. However, there is no reason why the recognition that the human species has disrupted the state of the planet cannot go hand in hand with the clarification that different human groups have contributed to the latter in different ways. It is a matter of perspective: *from the viewpoint of the planet* it is indifferent who or when did exactly what — all that counts is the aggregate impact on, and the resulting disturbance of, planetary systems. The notion that humanity possesses a collective agency is resisted by those traditions of thought that rely on the assumption that foundational differences between human groups —be it gender, class, or race— prevent any generalization about «the human» (Heise 2017: 220-221). But anthropological variety coexists *de facto* with anthropological commonality. Moreover, the whole of the species will be equally affected if the Anthropocene leads to an uninhabitable planet. Ironically, the apocalypse is democratic.

In this section, I would like to answer to a simple question: what is unique to the Anthropocene *as* apocalypse? What tells it apart from previous apocalyptic narratives as deployed by modern environmentalism?

Interestingly, the Anthropocene is very different from the model catastrophe that was employed by environmentalism as a blueprint for the ecological breakdown of human society, namely the nuclear disaster. As Cassegard & Thorn have pointed out, the postwar environmental movement emerged out of the antinuclear movements *and* their early texts «invoked the image of the nuclear mushroom cloud to convey the message about the coming of a new age in which environmental destruction occurred on an entirely new spatial scale» (Cassegard & Thorn 2018: 5). In the nuclear era, the

attempt to master nature could destroy the planet — faith in science as a guarantee of progress was unfounded. Now, according to Masco (2018: 76), the apocalyptic visions of the future that are being employed to mobilize the Anthropocene draw as well «on tropes developed most directly by nuclear crisis as a tool of political mobilization». It helps that the dissemination of radioactive isotopes following the Trinity atomic test in 1945 is taken into consideration as the most appropriate marker for the beginning of the Anthropocene from a stratigraphic viewpoint. Glikson (2017) goes even further and suggests that the new epoch should be called the «Plutocene».

But apart from the obvious threat to human survival that they both represent, the Anthropocene and the nuclear disaster are quite different events. While a nuclear apocalypse would be sudden and fast, the apocalyptic dimension of the Anthropocene is related to its geological temporality, that is, to the deep time of the planet. In short: if the Anthropocene narrative can be related to the threat of extinction, is because it re-connects us with previous extinctions while reminding us that a world without humans will happen someday — it is a predictable scenario in Earth's history. In the larger context of deep time, the apocalypse is not even apocalyptic. That is why the Anthropocene cannot be trivialized as a simple increase of the ecological damage caused by human beings. Such is John Gray's view, for instance: «In wrecking the planetary environment humans are only doing what they have done innumerable times before on a local level» (Gray 2007: 209). In a sense, this is true: planetary systems are now being substantially affected by human action, whereas past alterations were mostly local or never went as far as to announce a shift in the planet's state. And yet this does not capture what is particular about the Anthropocene — what is that provides it with a strong apocalyptic potential. Doing so requires taking a closer look at the connection between human extinction, deep time, and the Anthropocene.

Post-colonial historian Dipesh Chakrabarty (2018) has called attention to the unique convergence of temporalities that takes place in our epoch: we stand at a point of human history in which we can connect what is happening to events whose origin can only be explained on a geological time scale. As the discussion surrounding climate change demonstrates, though, deep time usually disappears whenever humanists and social scientists are involved — as the anthropogenic impact receives greater attention, social processes such as the industrial revolution are favored over geological timescales. But current levels of CO2 only make sense when compared with previous levels of CO2, which in turn means that we need to resort to paleoclimatology as the means to establish whether humanity is treading dangerous ground. Claire Colebrook puts it this way: «In the Anthropocene, these two timelines, in their dissonance and difference, intersect: geological change is occurring within human and humanly experienced time» (Colebrook 2017: 6). Instead of putting an end to natural history, the Anthropocene sets the latter within the geohistorical narrative that emerges around 1800 with the «discovery» of deep time (Clark & Szerszynski 2021: 28). In his lengthy account of such discovery, Rudwick (2014) has shown how the traditional picture of a «young Earth» described an almost wholly human Earth, whereas the «ancient Earth» reconstructed by early geologists was almost completely devoid of humans. But the planet *had* a history of its own — one in which human beings appear quite late. How the history of Earth was seen changed too, as it gradually became clear that the former combined a relative ordinariness with violent episodes featuring catastrophes and extinctions. The existence of craters on the Moon showed that there had been occasional major impacts from asteroids throughout the Earth's history, thus inviting comparisons to other celestial bodies. As a result,

> «the Earth with its human passengers became just one planet orbiting one star in an inconceivably immense space, while human existence on Earth became just the last moment in an inconceivably vast span of time» (Rudwick 2014: 306).

That span of time can be measured in opposite directions: the Earth is 4.6 billion years old, but in 5 or 7 billion years from now it will be destroyed as the sun turns into an expanding red giant before it dies out. This *will* happen: the certainty is overwhelming. In the meantime, the human species will have disappeared — unless a huge technological leap allows it to extend its lifespan much longer

than expected and it can survive to the major changes the planet will undergo. Although it is our main worry, global warming will not last forever:

«no matter what human beings do —even if we hit the gas for the next several centuries and burn every last molecule of coal, oil, and gas we can find— the rocks will weather away, the oceans will turn over, the seafloor will dissolve, the glaciers will advance, the seas will drain, and the world will shiver» (Brannen 2017).

In other words, a new ice age will begin. In about 1.6 billion years from now, due to CO2 starvation, the biosphere will have ceased to exist (see Frank, Bounama & Bloh 206) and the planet will belong to bacteria once again. This is not the whole picture of the Earth's deep future, though: at some point great outbursts of tectonic violence will take place as continents are torn apart before they are reunited and torn apart again (see Ord 2020). And while current global warming can be attributed to humanity, the Earth has shifted from one state to another many times in the past without any species triggering such change. This capacity, if that is the right name for it, is thus independent of our existence (Clark & Szerszynski 2021: 20). Telluric and cosmic events are then manifestations of an «inhuman nature» to which humans are exposed — we are «inherently liable to being thrown off course by the eventualities of our planet» (Clark 2011: xiv). It is in this sense that our current self-understanding as a major geophysical force can be seen as an exercise in megalomania or vanity, so that the Anthropocene might even be renamed «the Narcisscene» (Sagoff 2018). Humans are not as important as they think.

Therefore, a deep time perspective provides a view of the planet that underscores the variability of its conditions and thus the fragility of Earth as a stable home for the human species. Projecting the Anthropocene into the future in order to determine which material traces of it will remain in the fossil record forces us to imagine «a world without us» (Weisman 2007). Others describe in detail what «the Earth after us» might look like (Zalasiewicz 2008) or search in the present for our «future fossils» (Farrier 2020). Such thought experiments are supposed to help us to understand the present, the remote ages of the deep future encouraging a closer look at the realities that are at hand (Davies 2016: 84). But it may also have other, unintended effects. One of them is pointing to past extinctions: a future Earth in which humans do not feature anymore is an inverted reflection of that past Earth in which other animal species were wiped out by some dramatic event. As Zalasiewicz and Walters put it: « viewed through the lens of mass extinctions, it's also remarkably fragile: when crises push the planet outside a narrow set of surface conditions, it has been nearly sterilized» (Zalasiewicz & Walters 2015: 16). During the outbreak of the coronavirus pandemic, as lockdowns were imposed and the severity of the new virus was still unclear, a glimpse of such an sterilized planet was available. If the Earth is a home, then, it is one humans can be evicted from: an apocalypse to end all apocalypses.

The notion that a future disappearance of humanity will just be another episode of mass extinction in the long history of the planet can be summarized in the realization that standing *before* extinction also means living *after* extinction — albeit the extinction of other species, including the ancestors of *homo sapiens*. As Grusin (2018: viii) recalls, the concept of species extinction ceased to be an aberration when it came to be considered a part of the process of natural selection. It also weakened the gradualist view of evolution, as the role of catastrophes became increasingly clear in the mass extinctions of the past. That the latter have been possible at all alerts us to the seriousness of the threat that we ourselves have created, showing how «triggering events followed by a series of positive amplifiers can issue in devastating results for life» (Connolly 2018: 7). Zylinska goes as far as to suggest that in the present time extinction has entered the horizon of the majority of global citizens, thus turning into something that is not alien anymore — something to be sensed and imagined here and now (Zylinska 2018: 51). Nevertheless, this is not an easy task: human beings seek meaning and inevitably think about the world as being a fundamentally human place, a view that is challenged by the uncomfortable prospect of extinction (Prince 2021). And yet the horizon of a planet devoid of human presence brings has also nurtured a positive view of apocalypse, a posthuman utopia in which nature is saved while we are not. In fact, nature is saved *from* us:

«The end of man establishes a peaceable kingdom, one that will not last a mere thousand years but, in fact, forever. The vision of paradise is there. Of course, it is a problematic vision. The new Garden of Eden banishes man. We are punished for our sins» (Jendrysik 2011: 48).

However, this is a minority view — most living humans would like to see the species survive in the long run. In fact, it is unclear whether *human* extinction has actually penetrated into our cultural and experiential horizons. As Irvine (2014: 161) remarks, connecting the time horizons of everyday life and the scale of natural processes that unfold in geological timespans is not an easy task. Inasmuch as deep time displaces human beings from the center of the *story* of planetary *history*, our literary and cinematic fictions grant them a central position. Take a film like Von Trier's *Melancholia*: while it has been rightly praised as making viewers «aware of a universe that is not centered upon, or necessarily correlated with, humankind» (Shaviro 2012: 49), the story of how the Earth is destroyed by an asteroid that comes closer to it every day is told through the eyes of the members of a human family — how else? There is a paradox in the apocalyptic view of the Anthropocene: human extinction does not allow human redemption, which has always been a key aspect of apocalyptic narratives.

The ultimate ambivalence of the Anthropocene cannot be erased. The anthropogenic disturbance of planetary systems puts humanity at the center of the stage (as a driver for planetary changes), while simultaneously suggests that the stage is far greater than humanity (as a potential victim of such changes). In other words, the prominence assigned to humans in the shift of the planet's state goes hand in hand with the realization that in the context of deep time our species is just an anecdote. We resemble Rosencrantz and Guildenstern in Tom Stoppard's play: secondary characters turned into protagonists that show up in *Hamlet*'s plot for a moment but still live their own story as the one that is meaningful to them. But such is the most distinctive feature of the Anthropocene — a connection to the geological history of the planet that puts humanity in a larger context and hence exposes its insignificance. In the Anthropocene, apocalypse means the erasure of those who narrate the apocalypse — falling into the black abyss of deep time.

4. The Trouble with Apocalypse: Philosophical Horror and Political Impotence.

Deep time was discovered around 1800, just when the Industrial Revolution started to unfold. Two centuries later, human beings are realizing that deep time is not a foreign abstraction but rather a reality in which they are immersed — one that is bound to affect them directly sooner or later. Such is the bitter lesson of the Anthropocene. But does it work, politically speaking? Does the negative anticipation of catastrophe elicit a kind of fear that leads to greater support for sustainable or remedial policies? As the episode of the London underground demonstrates, neither climate catastrophism nor the threat of a «bad Anthropocene» seems to have elicited a strong response on the part of the public so far — despite the proliferation of dystopian narratives and apocalyptic images. In this section, I explore the reasons why insisting upon collapse does not result in a stronger social response against unsustainability, arguing that extinction plays a dubious role in the politics of anticipation as it tends to instill despair rather than hope.

As McNeish (2017) points out, apocalyptic narratives have proven to be divisive within the environmental movement itself. Some commentators believe that they play a key role in creating the sense of urgency that mobilizes people (Thompson 2009), while challenging the modern narrative about indefinite progress (Ginn 2015) and providing a framework for appraising our ethical behavior (Veldman 2012). Who is to say that environmentalism thrives *despite* the fear of collapse and not *because* of it? The success of the climate movement cannot be explained without the shared feeling that the young people of today can be deprived of their future if global warming is not deterred. In the absence of alarmism, contemporary societies might fall into the traps of complacency — if nobody is alarmed, how could dangers be averted?

Others, however, are not persuaded: the fact remains that environmentalism is not a mass movement and most people do not seem convinced that the world might end relatively soon. Becoming aware of the scale of disaster does not compel people to embrace radical politics (Lilley 2012). After all, there is no evidence that perception is a trigger for action — saturation can actually have the opposite effect (Zylinska 2018: 66). The narratives of collapse may be counterproductive because they make the environmental movement look hysterical (Hoggert 2011). A negative anticipation of this kind runs also the risk of «producing melancholic forms of subjectivity deprived of capacity for action» (Parikka 2018: 41), becoming «a pure negativity» that denies any possibility to alter history through political mobilization (Swyngedouw 2010: 219). People who are told that extinction is a likely scenario will naturally believe that political action is pointless: attending a demonstration is certainly not a powerful weapon against devastating geological events. Malm (2021) decries such «climate fatalism», while Lynas (2007) speaks of «geological fatalism» — there is nothing we can do about the end of the world, so let us seize the day while the day lasts.

The truth is that green catastrophism has been controversial from the start. Thirty years ago, geographer Cindi Katz (1993) wrote a tirade against environmental apocalypticism from the perspective of a Marxist feminist green thinker, arguing that apocalypticism is politically disabling and contradictory regarding the human capacity for positive action:

«Infinitely capable of wrong, "human beings" are paradoxically incapable of transformative action; greed after all is human nature. Until the apocalyptic moment human action drives history, but history-become-apocalypse renders human agency moot. In apocalyptic readings of crisis, conscious beings become spectators, shrill exhortations to action notwithstanding» (Katz 1993: 277).

A different sort of criticism comes from those who are skeptical about the kind of predictions made by environmentalists, often derided as «doomsaying». Some commentators present themselves as former believers who have finally realized that the catastrophic scenarios anticipated by greens never come true, thus feeding the impression that they were not making scientific predictions but rather promoting a world view or a particular ideology (Bailey 2015; see also Shellenberger 2020). Bolz (2020) prefers to speak of a «political theology» that fulfills religious needs, noting how surprising it is that several apocalypses —nature's, capitalism's, mankind's— are meant to happen during our lifetimes. For all the talk about the Anthropocene requiring urgent action, most people do not respond to an alarm that is sounded on behalf of the future. Perhaps the problem lies in the way people think about the far future. Skrimshire (2010a: 3) wonders: «how can one know and grasp meaningfully such a thing, let alone relate ethically and politically to it? Can one imagine, believe in, empathize with the future of the human at all?» These are relevant questions that becomes more pressing when apocalyptic narratives are employed in order to mobilize the political support of a democratic audience, let alone to invoke urgency in order to temporarily suspend democratic rule.

That the far future seems meaningless to us is not a moral aberration. As Chakrabarty (2018) explains, deep time and historical time are tied to very different affective regimes. — only in the realm of historical time can we feel hope or fear. German conceptual historian Reinhardt Koselleck (2004) famously argued that historical time provides the space of our experience and constitutes our horizon of expectations. That is why climate change only makes sense when it is historically represented — preventing an increase in temperatures during this century makes sense, but thinking about 2450 does not. In deep time, human beings are not the main characters: it is the Earth that counts. Either in the deep past or in the deep future, both the timescales and the telluric episodes that are invoked feels much greater than us. As a result, we find it difficult to emotionally relate to them. Yes, living in the Anthropocene means inhabiting the superficial time of history and the deep time of the planet at the same time. And yet we do not know how to do so — we remain naturally attached to the former and refuse to be concerned about the latter.

Following philosopher Eugene Thacker's (2011), human beings relate naturally to the «world-for-us» that they inhabit on a daily basis, but there is also the «world-in-itself» that resists our influence and sometimes makes itself present in the form of natural and calamities such as earthquakes or

pandemics. And the more this «world-in-itself» threatens our existence or well-being, the more difficult it is for us to comprehend the «world-for-us». Moreover, there is also the speculative «world-without-us» in which human beings become extinct, the future occurrence of which can be anticipated thanks to scientific predictive models. Thacker argues that the invitation to think about humanity in relation to its extinction produces horror:

«I would propose that horror be understood not as dealing with human fear in a human world (the world-for-us), but that horror be understood as being about the limits of the human as it confronts a world that is not just a World, and not just the Earth, but also a Planet (the world-without-us)» (Thacker 2011: 15).

And yet this is a philosophical horror that only terrifies those who accept the invitation to think about it. Samuel Scheffler (2016) has shown that the prospect of human extinction affects us differently depending on *when* this event is supposed to happen: if the end remains within the historical time, knowing that the species will go extinct deeply affects us — even if we are going to be dead when that happens. On this reading, humanity is the ongoing historical project that provides the implicit framework for our judgements about what matters. If we are told that humanity is going to disappear 1000 or 100.000 years from now, however, such distant extinction will hardly move us. In her commentary on Scheffler, Susan Wolf (2016) argues that it *should* not be the case, since an impending extinction is not that different from a faraway extinction — both events, after all, will take place someday. But the fact remains that we are *not* equally moved by them. If we were, how could we lead our personal lives? Being told that you are going to die *soon* feels quite different from knowing that *someday* we have to die; the same goes for the human species as a whole. It may not be our fault: we may just lack the cognitive abilities required for perceiving large scale and long-term changes (see Hanski 2008).

All in all, apocalypse narratives that are centered around the abyss of deep time and the possibility of extinction are not that different from previous doomsday scenarios as devised by early environmentalism: they also fail to engage the mass public.

5. Reformulating Apocalypse for the Anthropocene: Negative Anticipation in a Pluralistic Democracy.

In view of its inability to elicit the kind of feelings that lead to purposeful political action, should apocalyptic narratives be discarded as appropriate tools for representing the predicament of the human species in the Anthropocene? Or is there yet a role for them in a public sphere where different views about the Anthropocene and its dangers circulate? Does negative anticipation do any good, in sum, or is it just a way of framing the relation between humans and the Earth that leads democratic citizens to apathy or despair? In this section, I will suggest that the negative energy of apocalyptic narratives can be turned into a positive resource for achieving an inhabitable Earth, provided that the alternative to disaster is attractive enough for the public to endorse it — so that *negative* anticipation is also the *positive* anticipation of a better future for humanity.

The question that follows is whether this also counts as an apocalypse — whether apocalypse can have happy endings. At the same time, one might wonder whether a narrative that features the extinction of the human species can be considered a «positive» anticipation capable of encouraging the audience to support political decisions oriented towards global sustainability. But the very word «apocalypse» has an ambiguous meaning: rather than predicting when will the world end, it reveals and anticipates the coming transformation of the world as we know it. Western societies have gotten used to equate the apocalyptic with the catastrophic, but there is more to it than that. Apocalypticism had a «secret utopian vocation» that has largely disappeared, but which helped to explain the apparently demented emphasis on disaster (see Jameson 2007: 199). It follows that apocalypse and extinction are not the same. As Prince puts it: «Apocalypse is the regeneration of meaning; extinction is the end of meaning» (2021: 118). Because there is no meaning in the absence of human beings — at least there is no *human* meaning.

Whereas apocalyptic narratives incorporate a moral view, extinctions happening within geological time refer to a planet that is indifferent to human life — one that has no morals. The gap between deep and historical time reappears at this point as the gap between humanly motivated actions and earthly unmotivated events. To complicate matters, human beings did not know that they were pushing the Earth towards a new state — the moralized Anthropocene is just beginning. The original meaning of *apokalypse* can thus be applied to the science that is behind the Anthropocene, which shows how humanity has become a major environmental force. What is revealed to us is that the whole planet is affected by human actions, which suddenly connects us with the longer history of the planet and opens up the perspectives of deep time. The Anthropocene is the apocalypse, then — not a catastrophe but a revelation.

Does this knowledge leads to despair? Is this apocalypse just an invitation to fear extinction? It has been argued that the apocalyptic discourse is not anti-utopian, since it mobilizes people through «negative» energies: the threat of disaster creates the incentive to change human society upside-down (Cassegard & Thorn 2018: 6). For others, human minds need an ending as a way to make sense of reality and this would explain the recurrence of apocalyptic narratives throughout history (see Kermode 2000). But there is a tension in the apocalypse as described by environmentalists: the scientific findings that motivate their warnings are transformed into a simple narrative of impending disaster, thus leading to the claim that only radical social change can avert catastrophe. With this move, environmentalism gives calculation away and embraces a millennialist mode of thinking: the world has to be given up, so that the world can survive. Hence the relevance of Heise's distinction:

«In the *apocalyptic perspective*, utter destruction lies ahead but can be averted and replaced by an alternative future society; in the *risk perspective*, crises are already underway all around, and while their consequences can be mitigated, a future without their impact has become impossible to envision» (Heise 2010: 142; my emphasis).

A similar position, albeit more critical, is held by Bolz (2020: 15-17): choosing catastrophe over risk means that one is not interested in making calculations but rather pursues the substitution of the current social other for a radically different one. Apocalyptic narratives that center around climate change and the Anthropocene are supposed to make people realize that only by taking an abrupt detour can humanity survive to its own mistakes. According to McNeish (2017), the problem with this type of apocalypticism is that it often fails to offer visions of alternative futures that capture the public imagination. In his view, the reason lies in their inability to challenge entrenched social and economic power: «the biggest obstacle to social ecological reconstruction is the way in which the apocalyptic revelation of global warming has been harnessed by state and market interests to signify the necessity for ecological modernization» (McNeish 2017). In my own view, however, that is precisely the problem with the apocalyptic narratives of the Anthropocene: they are grounded on a rejection of progress as a failed ideal and they fail to present an seductive alternative to it. If negative anticipations of potential disaster are to work simultaneously as positive anticipations of a better future, they cannot be austere utopias in which the human need for material comfort is disdained as a selfish motive to be sacrificed in the altar of socionatural harmony.

The Anthropocene can be interpreted as a revelation insofar as something about the world and our position in it has been revealed that was hidden. However, this is different from seeing climate change or the Anthropocene itself «as the historic or even cosmic opportunity for a paradigm shift or global transformation for the better», which is in itself apocalyptic (Skrimshire 2010b: 229). Neither the *meaning* of the Anthropocene nor the *normative* prescriptions for avoiding the worst scenarios it might bring are naturally deduced from the *descriptions* made by natural scientists about the state of the planet — they are open for discussion. What modern environmentalism claims, though, is that the «hidden truth» revealed with the Anthropocene is that modern progress is a dangerous delusion that threatens the planet's habitability. In fact, this argument was born with Romanticism, as an early reaction against industrial modernity — progress and the opposition against progress were born at the same time. But the failure of socialism as a progressive utopia has reinforced the critique of modern progress among those who believe that capitalism should be

abolished. Add the link between CO2 emission and global warming and the ideal of progress looks beyond redemption:

«The principal source of the ecological ruptures planet Earth is currently experiencing —the unfolding climate emergency above all— is a story a small subset of humans have been telling themselves and living according to the precepts for about 300 years. (...) The word most readily used as a kind of shorthand for this story is Progress» (Smith 2021).

There is yet another way to deal with the link between the ideal of progress and the material reality of the Anthropocene, which is to emphasize the role of Western colonization:

«Understanding the socio-political background that enabled anthropogenic effects on the Earth system, then, requires engaging with the history of the political and economic expansion of European rule over the planet. This history that can only be told as the history of "progress" for a very small proportion of the human population, but signifies histories of loss, violence, and suffering for many more» (Kelz & Knappe 2021).

Either way, the triumphant march of modernity towards universal progress is redescribed as a violent and unequal slouching towards catastrophe — Benjamin's celebrated Angel of History having to look now in both directions, as the disasters of the past become a prologue to the total calamity of the future. To complicate matters, our historical moment reflects a loss of faith in the future: after the grueling course of the twentieth century, there is the feeling that modernity is exhausted and thus we find ourselves living in an «ever-broadening present» that is still influenced by the past but does not have any confidence left in the future (Gumbrecht 2014). As «the kinetic utopia of modernity» comes to a halt (Sloterdijk 2020), we find no reasons to believe that the future will be the outcome of a sucessfull rational planning. Hence the collective fixation with the historical past (Hartog 2017) and the feeling that we are haunted by the ghosts of the better futures that never took place (Fischer 2014). The upshot of this deadlock is an emphasis on the possibility of disaster — apocalypse trumping risk calculation — as well as the choice for austerity as the defining feature of contemporary green utopias.

I have argued elsewhere that this makes ecomodernism, which promises a sustainable modernity that provides economic growth and well-being to all inhabitants of Earth, the most positive utopia for the Anthropocene (see Arias-Maldonado 2021). Naturally, this argument tends to be dismissed at once, often because the ecomodernist alternative is simply equated with a «business as usual» approach to unsustainability. But there is a number of commentators — not ecomodernists themselves — for whom environmentalism is mistaken in rejecting modern progress and economic growth. To name a few: Leigh (2015) rallies against an environmentalism that is addicted to «collapse-porn» and does not realize that more growth will be necessary to solve the global biocrisis, while Yuen (2012) laments that the catastrophism espoused by many greens today remains Malthusian and Henwood (2012) defends the need for more optimistic narratives that underline the resourcefulness of human beings instead of insisting upon self-defeating dystopias.

However, I am not interested in elaborating this point here. Instead, I would like to stress that the combination of apocalyptic narratives and austerity utopias is not the only possible combination as far as an «apocalyptic Anthropocene» is concerned. As Thomas (2022b: 74) has argued, the fact that the Anthropocene is global and near-synchronous should not be taken as a prescription for a global and near-synchronous solution: although the future is more restricted than in the past, the singular reality of the Anthropocene does not dictate only one human story. It could even be argued that taking the Anthropocene seriously does not necessarily mean adopting urgency as a way of thinking and communication: being responsible in the face of risk «also calls for patient, searching, reflective modes of operation» (Clark & Szerszynski 2021: 171). There is plenty of time in deep time.

Is there a role for apocalypse among the of narratives about the Anthropocene? Can we turn negative anticipation into a positive resource for change? Might apocalyptic narratives call the attention of distracted citizens in a manner that prevents both apathy and despair? My point is that apocalyptic

narratives in the Anthropocene should not be conceived as *revelations* of hidden truths nor as *warnings* about impending disasters, but rather as an *enlightening lesson* about the earthly condition of human beings and what it entails at this point in historical *and* geological history. This means explaining that human extinction is certain but distant; that the Earth is sensitive to anthropogenic influence; that telluric forces are indifferent to us; that we have the resources for preventing uninhabitability as well as for adapting to harsher environmental conditions; that preventing a bad Anthropocene does not necessarily mean leading austere lives in enclosed communities. In turn, deep time can be used as a means to show that the place of humans on Earth is not secured by divine means — rather it is the result of thousands of years of social evolution. The Anthropocene's connection to deep time and telluric events facilitates a new understanding of what is at stake now that the Holocene has ended (see Milligan, 2013).

Arguably, Simon (2020: 192) is right when he points out that human extinction scenarios are not exactly instances of unjustified catastrophism, but «a novel societal expectation of the future in which humanity authors its own disaster». By locating ourselves in a position where disaster and extinction are not just *imaginable* but also *calculable* events, we are better equipped to understand that the risk of uninhabitability must be dealt with. And while those who advocate radical social change are entitled to make their point, environmentalism should not be automatically identified with austerity — a sustainable modern-cum-liberal society is feasible and might prove more popular than alternatives such as degrowth or eco-authoritarianism. Be that as it may, the Anthropocene can operate as a *didactic apocalypse* as it seeks to enlighten rather than to frighten. In contrast to other forms of preventive dystopianism, it should present people with a positive view of the future: a «good Anthropocene» that employs reason, science and technology in order to make the Earth a comfortable home for humans and other animal species. There is (deep) time enough to try.

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