

The Sense of an Ending? Nature and the Anthropocene

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Abstract: Among the normative questions posed by the supposed advent of the Anthropocene is the following: Does the Anthropocene spell the end of nature? The philosophical answer to that question may determine the political answer to the phenomenon that is described by this geological-cum-historical notion. In this paper, I will argue that, although the signs are mixed, the Anthropocene does indeed confirm that nature has ended in a particular yet important way - but that such ending does not preclude further reflection about the human relation with the environment. In fact, such recognition makes possible another understanding of the task that lie ahead: a reflective re-organization of socionatural relations and a reconceptualization of sustainability.

1. Introduction.

Since it first appeared a few years ago, the notion of the Anthropocene has been gaining ground in the field of environmental studies and seems now to be everywhere. Admittedly, the label is appealing, while (or because) the news it communicates are dramatic. The success, then, seems justified. However, there is something else. The Anthropocene might just be what we were waiting for, namely, a notion able to encompass and express a number of shared intuitions about the human place in the world and the state of the socionatural relations. In that regard, the Anthropocene provides a framework for discussing such relations from an interdisciplinary perspective, ranging from the natural sciences to the social ones and the humanities. To some extent, we had been discussing the Anthropocene before we had the concept, lacking, so to speak, the scientific validity that it seemingly provides to an old idea: that human beings are entangled with nature and vice versa.

Yet the coming of the Anthropocene, both literally and epistemologically, does not constitute the final conclusion of any conversation, but the starting point for one. Because if we acknowledge that human beings and societies are a major force in nature, that we have transformative powers that have reached this formidable degree, then we have to reflect upon (i) the meaning of this geological shift, as well as upon (ii) the normative consequences it entails. And such is the topic of this paper, which tries to make sense of the Anthropocene by exploring how the latter is related to our understanding of nature and to the historical process that have led to the irreversible social entanglement described by it.

To begin with, I argue that the Anthropocene gives credit to a view of nature that focuses on hybridization and environmental recombination as the main outcomes of the human adaptation to the natural world. Secondly, I explore some normative implications of the Anthropocene hypothesis, linking it to the human-nature dualism and to the claim that nature has ended. Finally, I suggest that a key part of this answer is the rethinking of the human domination of nature, an idea that resonates differently now that the Anthropocene has begun.

2. Nature in the Anthropocene.

The Anthropocene is an overarching concept that has appeared and gradually risen to prominence in the last decade, embodying scientifically the idea that the relationship between human beings and nature has shifted dramatically in the course of the last centuries. This hypothesis tries to capture the quantitative shift in the relationship between humans and the global environment, as provoked by the massive influence of the former in the natural systems that constitute the latter. Thus the term Anthropocene suggests that the Earth is moving out of its current geological epoch, called the Holocene, and that human activity is largely responsible for this exit, i.e. that humankind has become a global geological force in its own right (Crutzen and Stoermer 2000; Steffen *et al.* 2011).

It is worth noting that the term Anthropocene denotes two different, albeit complementary, meanings. On the one hand, it is a period of time, one that, according to an increasingly large number of natural scientists, should be recognized as a new geological epoch. This is so because of the events that take place within it. But those very events, that may be summed up in the anthropogenic transformation of nature at a global scale, leads us to use the term in a different way: as an epistemic tool. In other words, the Anthropocene is both (i) a *chronology* that, by comprising a number of processes and phenomena whose common feature is the anthropogenic influence on the planet, ends up designing as well (ii) a given *state* of socionatural relations.

What the science behind the notion suggests is that natural and social systems are coupled and the extent of the anthropogenic influence on ecological systems and natural processes is unprecedented (Liu *et al.* 2007; Ellis *et al.* 2010; Ellis 2011). Climate change is the most spectacular outcome of this shift, but it is far from being the only one—disappearance of pristine land, urbanization, industrial farming, transportation infrastructure, mining activities, loss of biodiversity, organism modification, technological leaps, growing hybridization are also on the list. Thus, it is a quantitative shift that constitutes also a qualitative change. Or rather it is the human *realization* of a change undergone some time ago. And it should be added that, even if the notion is finally not recognized by geologists or fails to capture the public imagination, the reality it describes will not fade away.

In this regard, the Anthropocene may be said to constitute the geological translation of the idea that nature has ended. Furthermore, the concept is consistent with a refined Darwinian view of the human development on the planet, since it does not rule out the possibility that this whole process, which has arguably made a laboratory of the Earth (McNeill 2000), may end up being a huge human maladaptation with unforeseeable consequences. But that much remains to be seen. What seems to be clear is that, although there will be considerable room for normative disagreements about causes and consequences, the Anthropocene hypothesis is being embraced by most observers. It seems to have touched a nerve, we might say—that is, it has given name and scientific validation to a shared intuition about the state of socionatural relations and nature itself. I would even suggest that the Anthropocene has *confirmed* the plausibility of a particular view of nature and the corresponding relations between the social and the natural.

3. The fact of hybridization.

But which is this view? Which is the understanding of nature and socionatural relations involved in the Anthropocene hypothesis or that the latter can support? If we put it briefly, the Anthropocene confirms that society and nature are not two separate entities influencing each other, but rather that there exists a socionatural entanglement—that is, an irreversible, complex, and increasingly hybrid socionatural system. Yet, paradoxically, this does not mean that there remains no separation between human beings and nature. It is because we have separated ourselves from nature in a certain way throughout history that this deep entanglement has been produced. In fact, such separation allows us to be aware of the entanglement and gives us the possibility of re-arranging socionatural relations in a new, in some regards more refined ways.

In order to develop this point, let us take a reasonable starting point for isolating what nature is: nature is that what is not artificial. Thus we can understand it, following John Stuart Mill, as “all the powers existing in either the outer or the inner world and everything which takes place by means of those powers” (Mill 1998: 8). Therefore, the concept of nature would cover all those entities and processes that come into being or exist without any human intervention. Nature can then be characterized as a self-generating and self-sustaining entity defined by its *telos*, i.e. by its ability to maintain its organisation in the presence of external forces and to exert its own force on its environment while trying to maintain its integrity. Such teleology means that nature is autonomous from human beings.

Of course, there is a sense in which nature consists of those causal powers not created by human beings. But is this definition useful? Maybe not. Natural history is also social history, that is, one that has spread the human influence in so many ways that it is now difficult to tell whether man is *absent* or not from a given natural process or a certain natural entity. Are domesticated animals, man-designed rivers, or

managed ecosystems still natural? If we stick to a strict distinction between the natural and the artificial, they are not. Not even the climate is completely ‘natural’ anymore!

This suggests that we should go beyond a definition of nature that relies on the absence of any trace of human influence. Nicole Karafyllis (2003) has proposed the term *biofact* to name those entities whose origin and formation has been anthropogenically influenced, directly or indirectly, irrespective of the actual *visibility* of that influence. This notion of the visibility of the anthropogenic influence is—as climate change again shows—more important than it seems, especially in regard to the public reaction to certain policies and socionatural possibilities (like transgenics, aquaculture or climate geoengineering). The wider historical process so referred is one of hybridization, i.e. the environmental recombination that results after humanly originated processes and artifacts have exerted a variable degree of influence on natural beings and processes. This is a two-way process, as well as a *productive* one. As Steve Hinchliffe puts it:

“The metaphor of hybridity allows for something different, it allows for change in all parties as they relate to one another. And it allows for novelty to be produced. (...) Rather, in relating, the parties and the product must change too (this is the key to most relational thinking). Nothing remains unaltered in the event of relating” (Hinchliffe 2007: 51).

This is not surprising. As Biesecker and Hofmeister (2006, 2009) have been trying to underline, nature lives and is in itself productive, so that we should not see it just as a limit to human activity, but rather as forming a nonseparable unity of productivity and re-productivity with the latter:

“The productivity of nature is at the same time re-productivity. (...) The production system ‘Nature’ is then simultaneously starting point (productivity) and outcome (product) of the process of (re)production” (Biesecker and Hofmeister 2009: 183).

In this context, hybrids are *processes* that connect society and nature as well as *products* that are nature-culture outcomes. We could then say that everything will become human, but in a general sense the reverse is also true: everything remains natural. Often, this hybridization is intentional; sometimes, it is not. On the other hand, this process allows for multiple agencies distributed in networks and including non-human entities and processes (cfr. Bakker and Bridge 2006: 17-18; Latour 2004). There exists a network of agencies among which, though, the human one is the most powerful, i.e. both the most disruptive *and* creative.

However, neither naturalness nor hybridization are absolute categories. On the contrary, they are relative, depending on the degree of human influence upon each biological process, natural being, or ecosystem. Naturalness is a gradable reality. Kate Soper’s (1995) well-known distinction between a *deep* and a *shallow* nature is very relevant in this context. Whereas the former refers to the causal powers and structures that operate constantly in the physical world and are the condition for any human intervention in the environment or the biological realm, the latter is that of our immediate experience in everyday life: animals, the natural environment, our bodies, the material resources.¹ A less-known but similar criterion is used by Dieter Birnbacher (2006) to distinguish nature in a *genetic* sense from nature in a *qualitative* sense. The former refers to the moment of nature’s coming into existence without human intervention,

¹ It might be noted that the climate would actually be in-between these categories and therein lies its singularity: it is a complex system of causal powers that also influences our everyday life providing us with certain lifeconditions upon which so many aspects of our lives depend.

whereas the latter alludes to the appearance of natural forms, which can be, and actually are, affected by human beings. Genetic nature's description is *historical*, whereas qualitative nature's description is *phenomenological*. Therefore, nature as an ahistoric essence is not the same as nature as an historic process. We are concerned about the constraints exerted by the former, as well as with our interactions with the latter.

To embrace the idea of the Anthropocene is thus to advance towards an understanding of nature that takes human influence on it seriously –before considering the moral implications of that influence, which in turn should probably be the departing point for any moral debate about the human behaviour *towards* nature, as opposed to the ethical strategy that consists in adopting a moral viewpoint about such behaviour in an abstract way and then imposes it onto reality. What the Anthropocene states is that there is no way back for human beings, because we are not just embedded in nature, but actually entangled with it in an irreversible and complex way. We are living in the Anthropocene and we should just start thinking within this new frame.

4. Making Sense of the Anthropocene.

So far I have argued that the Anthropocene comes to confirm the plausibility of a view of nature that is in itself very dependent on the history of socionatural relations. Therefore, we should distinguish between that what nature is *ontologically* and that which it becomes *historically* after an increasing interaction with human beings and societies. Such increase would have led to the actual transformation of nature into human environment and to a process of growing hybridization and recombination whose final result is an encompassing human influence on natural processes, ecosystems, and beings. Of course, the influence of the latter on human beings has to be taken into account as well—since every relation operates both ways.

This last point deserves to be underlined. Nature is also a material force in human history. It is not only influenced by human beings, it also influences *them* in turn in multiple ways. Nature is an unconscious but active agent that conditions human development and the shapes that the latter adopts, as much as is conditioned by social forces. There is actually a co-evolution of humanity and nature, according to which social forces have been evolutionary forces and anthropogenic evolution has been a social force (Russell 2011). An expanded view of evolution as something that takes place daily on different levels—from the microbiological to the atmospheric—helps to make this point more salient.

Again, climate is a telling example. By unwillingly changing it, we are forced to adapt ourselves to a phenomenon that exerts a massive influence on human life conditions. Yet the disturbed climate that acts as a constraint on us is not purely 'natural' anymore, without ceasing to be so: its current form is the product of our influence on it over the last centuries. Furthermore, we are also a part of nature, it just happens that we are a dominant species that goes beyond its ecological niche and transforms the environment. In that regard, there is nothing 'unnatural' about climate change.

Be that as it may, there are two important normative consequences stemming from the Anthropocene hypothesis: one is the idea that the human-nature dualism is untenable, the other the proposition that nature has ended. They are closely related to each other and revolve around the described understanding of nature and both might be considered interpretations of the fact—the very fact of the socionatural entanglement—embodied by the Anthropocene. They have both normative implications and are worth discussing, insofar as they relate to the history of socionatural relations and to the situation to which such history has finally led. Besides, they are directly related to any meaningful environmental ethics and to

any sustainability politics, because, by helping to explain how human beings *are* related to nature, it contributes to the reflection about how they *can* relate to it in the future. There is no naturalistic fallacy involved, since it is not a matter of an *ought* derived from an *is*, but of determining which are the ways in which human beings have been related to nature and why, so that the range of possible futures in the socionatural relation remains realistic.

4.1. Dualism and the Anthropocene.

On the one hand, we have the deceptively simple question of the human-natural dualism. How can any separation between human beings and nature be sustained in the light of the Anthropocene? The coupling of natural and social systems would precisely involve the opposite suggestion: that the human and the natural cannot be separated, because they have never been separated. Any distinction between realms would then be just a clever representation of the world that happens to meet human expectations as to what can be done *with* and *to* nature, but it possesses no rational ground whatsoever. Human beings are natural beings and the fact that the social and the natural are so intermingled comes to show that we cannot escape to natural constrictions and planetary boundaries. In other words, the Anthropocene would put an end to the typically modern assumption of human exceptionalism.

However, it might not be that simple. For one thing, the way in which socionatural history has unfolded complicates an outright refusal of the human-nature dualism. This is an important and subtle point that can be easily misunderstood. To begin with, it is difficult not to acknowledge that humans have in fact separated themselves from nature in a meaningful way. Human beings have proven exceptional, no matter which is the moral judgement that such exceptionalism and its ‘products’ may deserve. Yet it is hard to deny that humans have been able to transcend their own ecological niche and have developed very complex and successful tools for surviving and thriving as a species. They have done so by creating an artificial, man-made world that sets them apart from nature – between the natural and the artificial realms.

This aspect of human behaviour is linked to natural evolution by the niche-construction perspective on the latter, a theory introduced to evolutionary biology by Richard Lewontin in the 1980s. Instead of subscribing to the view that organisms always adapt to their environments and never vice versa, it recognizes the evidence that organisms *change* their environments, thus describing a dynamic, reciprocal interaction between the processes of natural selection and niche construction (cfr. Laland and Brown 2006). As it happens, culture is a key factor to explain the remarkable magnitude of *human* niche construction. Cultural niche construction is that in which learned and socially transmitted behavior modifies environments, amplifying the evolutionary feedback loop generated by niche construction. Although niche construction is a general process exhibited by all living organisms, human beings are specially effective niche constructors due to their capacity for culture. And although it is debatable whether niche construction should be regarded one of the primary causes of evolution, there is an overwhelmingly compelling fact that supports the assertion that niche construction is, from the point of view of the species, adaptive: human population growth (Laland and Brown 2011: 101). A very Anthropocene-friendly argument! An evolutionary explanation of human behaviour and culture is thus compatible with the recognition of humanity’s *exception* – that of a psycho-biological animal that is simultaneously inside nature *and* apart from it.

It can then be said that there was no original separation between humans and nature. Yet the human-nature division has become real with the passing of time, as human beings evolved and colonized and transformed nature in an ever-increasing sophisticated way. Such separation has been produced through

processes such as the separation between the urban and the rural life or a human socialization more and more detached from the latter. Dualism is not so much *ontological* as it is *historical*, i.e. an emergent order that is produced by human beings in the course of their adaptation to nature. Crucially, such dualism is originated in the practical realm of socionatural relations, where the entanglement between the human, the social and the natural has never ceased to increase. Needless to say, humans are natural remain subject to nature's laws, but they are also able to change some natural conditions which would have seemed immutable in the past—ranging from contraception to genetic manipulation. They are embedded in nature but can also detach themselves from nature.

Actually, this emergent dualism is completely consistent with the Anthropocene hypothesis. It is not ontological, since it cannot be. And it is an emergent quality of socionatural relations that is produced via a double-edged process: on the one hand, humans penetrate in nature and the latter is more and more transformed and coupled with social systems, thus creating the kind of entanglement that sustains the very notion of the Anthropocene; on the other, as this mutual imbrication is reinforced, humans separate themselves from nature both cognitively and symbolically. This nuanced view of dualism allows us to avoid the conceptual trap of declaring dualism non-existent. Moreover, it is the logical derivation of the Anthropocene hypothesis, because the degree of human colonization described by the latter could have not been reached without such historical process: one in which human beings separate gradually from nature in the act of aggressively adapting themselves to it—by adapting it to them. And thus the corresponding proposition that nature is socially constructed.

Traditionally, the idea that nature is socially 'constructed', was meant to express that our perception of nature determines our relationship with it. In turn, this social condition would also mean that there is no *single* universal nature, because different contexts, cultures, social positions and historical moments will produce disparate visions of nature. Yet if we talk about socionatural history, we refer to the human penetration into the environment through nature's transformation, consumption and use. In other words, the social construction of nature implies not only a cultural apprehension of nature, but also a physical reconstruction of it, a human impact in the surrounding world that never leaves nature unchanged (cfr. Arias-Maldonado 2011). The latter is literally re-constructed by human beings and that is done in deeper and deeper ways, hence affecting realms of nature so far considered beyond the human sphere of influence. Of course, this social reconstruction produces unintended side-effects, as climate change dramatically shows. Yet both the intentional and unintentional changes are expressed in the Anthropocene notion, which alludes to the final outcome of a process of reciprocal influence comprising (i) intentional human modifications, (ii) unintentional side-effects of the latter, and (iii) natural influences on human beings and societies. Therefore, it is not unappropriate to argue that the Anthropocene is actually the result of the social construction of nature rightly understood.

4.2. The Anthropocene and the end of nature.

Furthermore, the Anthropocene is the confirmation that nature has ended. Again, this is a provocative formulation that has to be carefully elaborated—yet there is more than provocation in it. If we leave aside the supposed end of nature as an idea or symbol, the most important sense in which this end can be argued for refers to nature's reality. The proposition is simple: As human intervention in nature has grown dramatically, it has become more and more difficult to speak of a nature that is free from human modification. Although nature was relatively independent from society, now, after history, it is not. The limits between the natural and the social are blurred. It can even be said that nature has morphed into

human environment: the objective nature that existed long ago has been integrated into human history through labor and cultural appropriation.

To some, this process entails the end of nature. But the latter is not so much the philosophical undermining of nature's vitality that took place under the rule of mechanicism, as it is an actual process of human colonization of the natural world. Again, obviously, although there is no such thing as an ontological end of nature, it is not ontology that matters when socionatural interaction is considered. On the contrary, what matters is the multiplicity of particular relations between nature and human beings. In this regard, the end of nature has a twofold meaning: (i) natural processes can no longer be defined as independent from human influence, and (ii) natural forms and processes have been influenced by humans to a very high degree. Sometimes, human intervention is manifest; sometimes, it is not. Some other times, as with the climate, is not even planned. But that hardly makes a *philosophical* difference: what separates the rainforest from an urban park is only a matter of degrees. From this point of view, nature cannot be defined anymore by its independence from human beings and society.

There is no shortage of concepts able to express this. It had been said that we live now in a “post-natural world” (McKibben 1990: 60), made of a “created environment” (Giddens 1991: 124), which has put an end to the antithesis between nature and society, so that nature is not understood anymore outside society and vice versa (Beck 1992: 80). Therefore, a trait that was exclusive to mankind, namely, the hybrid position between nature and artifact, now encompasses nature at large. Needless to say, the interaction between nature and society has always existed, but it is the intensity of it that is unprecedented. This is precisely what the Anthropocene demonstrates—that the idea of nature as an independent entity is untenable in view of the degree in which natural and social systems are entangled. Earl Ellis concurs:

“From a philosophical point of view, nature is now human nature; there is no more wild nature to be found, just ecosystems in different states of human interaction, differing in wildness and humanness” (Ellis 2011: 1027).

Apparently, it could be said that the Anthropocene hypothesis fits *too well* in a number of assumptions about the socionatural relation. Because it does. But there is nothing suspicious about it, because those assumptions were already built upon the intuition that something like the Anthropocene—minus the name—was taking place. By linking the Anthropocene to these conceptualizations (an emergent dualism stemming from human exceptionalism, the social re-construction of nature, the proposition that nature has ended) we do more than making sense of the Anthropocene itself: we realize that the Anthropocene makes perfect sense.

5. Rethinking Socionatural Relations in the Anthropocene.

If we take the Anthropocene hypothesis seriously, which are the practical consequences that follow therefrom for the rearrangement of socionatural relations? More to the point, does the Anthropocene entail a substantial change of our understanding of such relations and nature itself? These are relevant and complicated questions with no single answers. Mine is that the Anthropocene stresses the need for a postnatural understanding of nature and socionatural relations—a shift that does *not* preclude a call to the protection of that what is left of nature. Those who claim that the Anthropocene is not just a scientific issue, but also a moral and hence a political one, are right (cfr. Ellis & Trachtenberg 2013). Yet we need to understand what the Anthropocene says about socionatural relations before we can articulate a moral answer to it.

By recognizing the extent to which society and nature are entangled in an irreversible way and the fact that human beings have become major forces in natural change (without ceasing to be influenced by a natural environment that is also a force in social change), the Anthropocene confirms that a human retreat from nature is but a delusion. Society and human beings are mixed up with nature, nature itself is not what it used to be before socio-natural history took place. Paraphrasing Marx, human beings have not just thought about nature, they have transformed it. And they will keep doing it, because that seems to be their way of being-in-the-world, insofar as that is the way in which they have *been* in it.

Now, we reach a tricky point. I suggested earlier that no naturalistic fallacy was involved in this way of reasoning. But if we claim that the occurrence of the Anthropocene is a confirmation for keeping business as usual regarding socio-natural relations, we would be incurring in such fallacy. Therefore, it is important to stress that, although the Anthropocene *does* confirm that no human retreat is possible anymore, a policy of retreatment (for instance via a radical mitigation against climate change) might be defended. For those who consider that our past relations with nature were both mistaken and avoidable, a correction of the former might be precisely the point. In other words, a change in the human way of being-in-the-world would constitute a philosophical and political program for radical green change.

Yet it could as well be argued that the Anthropocene gives us a wider perspective about the human relations with nature. As I have suggested, the end of nature has *already* occurred, as the logical consequence of a process of human colonization of nature which should be considered ‘natural’ rather than a matter of choice or a historical contingency. And it seems more realistic to depart from here than to propose a complete change in the human relation with the natural world. The latter can and should be refined –but it is dubious that it will be radically reshaped. A more promising normative claim for the Anthropocene would then be to refine our domination of nature, which is not and neither can be absolute nor perfect, in order to achieve sustainability while maintaining the best features of our liberal, pluralistic societies.

Admittedly, human domination of nature is *complicated* by the Anthropocene. It signals a number of planetary boundaries that must be respected, points to several uncertainties regarding the coupling of social and natural systems, alerts about the possibility of reaching tipping points². All in all, it seems to confirm Eric Katz's warning: “Nature’s control is a dream, a delusion, a hallucination” (Katz 1992: 267). For once, there are natural processes which remain inaccessible to us, interactions whose consequences we cannot predict, phenomena of such a range that we cannot influence them. The Anthropocene could actually be the proof of how dangerous it is to mess with nature - climate change being the most telling example of that general idea.

But, on the other hand, this is the logical consequence of our gainings in knowledge: the more we know about socio-natural relations, the more uncertainty we must face. As Innerarity puts it, we might rather be ‘ignorance societies’ instead of ‘knowledge societies’, that is, we are societies that “make progress not by increasing their knowledge but by learning to manage various forms of ignorance: doubt, probability, risk, and uncertainty” (Innerarity 2012: 5). Such is the language of the Anthropocene, the music of contemporary socio-natural relations. The hardness of the task is thus no reason for abandoning it. Increasing our control of nature *and* refining it in order to reasonably protect natural forms is a feasible program for environmental political theory and society at large.

² The notion of planetary boundaries have been proposed by Röckstrom *et al.* (2011) and it actually entails the renewal of the limits-to-earth perspective that has permeated environmental thought since its inception.

Thus seen, domination can be rephrased as the control –a transformative control– of the human interaction with nature. Nature’s processes and entities do not have to be thoroughly manipulated for that dominion to be carried out. Likewise, a domination so conceived does not have to be equated with nature’s *destruction*, inasmuch as it can designate its active and conscious *transformation*. In fact, the history of socionatural relations is the story of human stewardship and human-nature symbiosis *as well* (cfr. Radkau 2000) . Insofar as a conscious and deliberate purpose is applied onto an inherently dynamic relationship, domination acquires a *reflective* condition that makes full sense in the context of a refined socionatural relationship (one which dominion itself has made possible). Maybe the problem lies partly in the word’s connotations. We might then rather talk about human *control* of nature. We could even say that a blind domination of nature is replaced by a conscious effort to exert control of the socionatural entanglement.

6. Sustainability in the Anthropocene.

This project is directly related to the search for sustainability. The latter concept has gained complexity as more and more challenges have been added to it –from climate change to the loss of biodiversity and the respect of planetary boundaries. As Rasmus Karlsson (2013) has argued, there seems to be, on a theoretical level, two principle options or strategies to achieve it, either (i) through the development of advanced technologies that would allow humanity to transcend its planetary boundaries or (ii) through the political and economic enforcement of those boundaries. Naturally, some combination of them could also prove useful. However, the limits imposed by nature on us are not fixed or unchangeable. They have been historically challenged and enlarged as human beings have developed new technologies and refined their knowledge of natural system’s inner workings. Yet is it not a lesson of the Anthropocene that we cannot go back to any state of purity nor even of frugality? We live in a world of almost 10 billion people that, as the economic crisis shows, do want to enjoy a certain quality of life. Thus it seems that the challenge of the Anthropocene is to use human ingenuity to set things up so that the planet can accomplish its 21st-century task respecting *and* enlarging planetary boundaries.

This involves posing some uncomfortable questions that have to do with the extent to which human control of nature can and may be exerted in order to achieve sustainability, as well as about the political means by which this decision can be made. Sustainability is then taken as the central concept *and* practical goal around which the reflection on socionatural relations revolve. In this regard, a postnatural sustainability involves a conscious control of a complicated socionatural relation and an acceptance of the role that science and technology have to play in our attempt to re-arrange such relation.

If we conceive sustainability as the attempt to exert a conscious control of socionatural relations, instead of claiming that nature itself should be controlled, we would be in a position to refine such dominion, without falling into the trap of believing that society can still be separated from nature. The socionatural entanglement is a *fact* rather than a normative ideal or a simple hypothesis. What climate change shows is how deep such entanglement has become.

Therefore, correcting the side-effects of the human colonization of nature involves the management of a system that has emerged from socionatural interactions and mixture. This, in turn, is a technologically mediated process—we would not even know about climate change had we not the scientific instruments that stem from the same process that provoked it in the first place. It is here that the notion of *technonatures* can be usefully employed. It is a term proposed by White and Wilbert in order to emphasize the central role that social power has played in the constitution of landscape and our environment, thus

casting a sceptical eye “over the idea that a politics of the environment can be usefully grounded in terms of the rhetoric of defending the pure, the authentic, or an idealized past” (White and Wilbert 2009: 5). Such term

“seeks to highlight a growing range of voices ruminating over the claim not only that we are inhabiting diverse social natures but also that knowledges of our worlds are, within such social natures, ever more technologically mediated, produced, enacted, and contested, and, furthermore, that diverse peoples find themselves, or perceive themselves, as ever more *entangled* with things –that is, with technological, ecological, cultural, urban, and ecological networks and diverse hybrid materialities and non-human agencies” (White and Wilbert 2009: 6).

As mentioned earlier, this perspective also underlines the fact that agency is not confined to human beings, because non-humans of all kind can also be active in the production and reproduction of our world. Let us stick to our example: the climate has always been a major environmental factor in shaping the social life and has forced humans to adapt to very different conditions. As a result of industrialization, it was unintentionally altered by human beings in a way that is forcing them to adopt radical measures if the catastrophic consequences of an ever-growing Earth temperature are to be avoided. It can be thus said that climate has become an agent of environmental *and thus* social change. Moreover, just as the natural world has become *the* human environment, climate itself has *become* a technonature, as it has been influenced – and is measured and studied– by technological means.

Therefore, human strategies to deal with this entanglement cannot be the traditional ones advocated by classical environmentalism. Anthropocene itself can be said to *be* a technonature. In fact, human beings are mostly cyborgs -but that is another story. Hybridization, fungible capital, ecological restoration, technological interventions, even climate engineering: these are the instruments that the control of socionatural relations in the Anthropocene seems to call for (cfr. Arias-Maldonado 2013). A more enticing narrative for environmentalism -or for sustainability beyond environmentalism- seems then to be in order. The richness of the human species should be emphasized, a richness that is material as much as it is intellectual (cfr. Kersten 2013). Up to now, the colonization of nature has helped to provide that wealth, the corollary of that historical process being, precisely, the Anthropocene. Now, it is time to *refine* the human control of nature, rearranging the socionatural entanglement in a more enlightened, reflective way. It will not 'liberate' nature, but it will protect the remaining natural forms in the context of a highly technological world that is rapidly in the making.

In sum, nature is ended, but the Anthropocene is born. It would be desirable that environmental thought does not shy away from the challenged posed by the latter.

7. Conclusion: An ending that makes sense.

Although it may sounds preposterous, the Anthropocene is both the reminder that nature has ended and the best hope for its resurrection. By measuring and emphasizing the degree of the human colonization of nature, the Anthropocene states the obvious in a powerful way: that there is almost no nature left untouched. This is not surprising nor absurd, but rather the logical consequence of the aggressive adaptation to the environment that signals the human presence on Earth. An although that also means that the separation between humanity and nature is ontologically untenable, it also explains the historical emergence of a dualism that the Anthropocene somewhat reverses: whereas human beings came out of nature, now nature becomes humanized and morphes into *human* environment. The whole socionatural entanglement that follows therefrom may end up being a gigantic maladaptation that leads to ecological

apocalypse -but it may as well not. Be that as it may, the normative implications of the Anthropocene are yet to be elucidated, after the notion itself is weighed and discussed. On my part, I have stressed the need to rearrange socionatural relations departing from the *fact* of hybridization, that is, taking into account that nature is a gradable reality mixed up with human beings and social products in an inextricable and promiscuous way. In that context, the Anthropocene calls for an enlightened control of nature, that is, a reflective control of socionatural relations that includes the protection of the remaining natural forms and processes (those that are less affected by social influence and retain a greater appearance of naturalness). The experiment, after all, cannot be stopped. It might thus better be successful.

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