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What is "The End of Nature"?: Modernity and Ambivalent Heterotopias[1]

ABSTRACT: *The paper aims to clarify the meaning of the diagnosis 'the end of nature', which Anthony Giddens distinguishes as the most important characteristic of late modernity. This view assumes that modernity frames our questions about nature in such a way that makes them appear as a problem of control. Revealing the manner of this framing is the paper's major objective. It begins with an examination of the meaning of the end of nature as a diagnosis announced by McKibben and Giddens; then it seeks to foreground the roots of modern outlook in modernity, which shaped self-reflective thinking; and moves to an analysis of the structures of high modernity as described by Giddens. The reflexivity of modern institutions, the disembedding of time and space, and the colonisation of nature are distinguished as the aspects that most crucially determine contemporary attitudes towards nature. The paper concludes that the end of nature should not be understood as the decay of natural territories and species but, rather, as the absolute hegemony of modern outlook so that even the territories of wilderness are managed in terms of internally reflexive modern systems. The territories of wild nature turn into ambivalent heterotopias subjected to modern protection and control, both of which, in the Anthropocene epoch, turn out to be limited and questionable approaches.*

KEYWORDS: *end of nature, modernity, heterotopias, Giddens.*

1. Introduction

The last male northern white rhinoceros on earth, named Sudan, died on 20 March 2018. He is survived by only two female animals of the kind, his daughter and his granddaughter, which means that the sub-species are no longer able to reproduce naturally and will soon be extinct. Neither the substantial resources used to protect the rhinoceros from poachers nor repeated attempts to breed them proved sufficient to stop the process of their extinction. The fact that the three aforementioned rhinos were no longer able to breed because there were too few of them left was established back in 2016, and it inspired an effort to organise a team of scientists to work on an advanced technology for preserving endangered

species. The plan was to boost the production of eggs by using hormone injections, then extract them and fertilise with the sperm taken from Sudan and frozen some time before. These efforts, unfortunately, proved fruitless: the fertilisation did not work and Sudan was put down in 2018, as he was no longer able to stand and his skin wounds would not heal[2]. He was buried, with the honours of a ceremony and a memorial plaque, next to the other rhinos at the Ol Pejeta Conservancy, where he spent the last days of his life.

What did exactly happen here? This case may be regarded as a manifestation of 'the end of nature,' or 'nature after the end of nature' in the Anthropocene. It shows the consequences of harmful human activities, as well as human efforts and failures to mitigate them. And yet, the philosophical concern here is not primarily with the physical extinction of a particular species but with the attitude towards it. Why is this event approached in this rather than any other way? Why does it inspire this rather than any other kind of effort to get the situation under control and find the best solution for it? What is endowed with value here and what isn't? What objectives do we expect to achieve, what do we regret, and for what do we take responsibility? It is not nor should be self-evident that Sudan was used in breeding programmes, that he was put down rather than left waiting for his 'natural' death, that responsibility was taken for the extinction of all species, and that there was an effort to recreate them by the means of advanced technologies. Hence, it is indeed the attitude that must be the focus for a philosophical investigation, especially since philosophical investigation itself is conducted in the atmosphere of loss, peril, and apocalyptic anxieties. This atmospheric background has become self-evident and significantly shapes philosophical discussions. This article, for example, opens with a description of the extinction of a rhino sub-species rather than, say, a picture of butterflies in the jungle oozing with life, and this is unlikely to take the reader by surprise. I would assume that, for many, a picture of, say, the white bear will evoke a corresponding image of melting ice. It is easy to believe that even butterflies in the jungle may remind of dying rainforests. The extinction of wildernesses and species, environment pollution, and global warming permeate the atmosphere of contemporary debates about nature and guide our questions and discussions on nature in specific ways. An atmosphere constitutes a horizon, in which particular cases, analyses, interpretations, and entire discourses acquire direction and meaning. In the present-day atmosphere, it seems that to identify threats, to conserve what is left, and to try to recreate what has been destroyed are attitudes that are valued in themselves and adopted in daily routines as well as in theoretical discourses. However, as Martin Heidegger teaches us, interpretations conceal things as well as revealing them, especially those that have become self-evident. Hence, the atmosphere of threat and loss endows the issue of nature with special importance and, at the same time, paradoxically veils it. Ted Toadvine elaborates on this in his diagnosis:

2 H. Ellis-Petersen, *Last male northern white rhino is put down*, in *The Guardian*, 20 March 2018, internet edition, <https://www.theguardian.com/environment/2018/mar/20/last-male-white-rhino-is-put-down> (accessed 12 July 2018).

in our time, the philosophical question of nature is almost entirely forgotten. Oddly enough, this amnesia parallels a rising public consciousness of the fragility of the natural environment. Corporate executives, political leaders, and informed citizens are increasingly aware of, even alarmed about, the rate of anthropogenic environmental degradation, including the loss of species, the disappearance of undeveloped land, the contamination of air and water, and the effects of fossil fuel use on the earth's atmosphere. Today, this concern for the environment, locally and globally, is reflected in any issue of a major newspaper. [... However,] our myopic focus on solving "environmental problems" distract us from asking the most fundamental questions at stake, questions about how these "problems" have been framed.[3]

That is, 'hotspots' – environmental issues that demand immediate decisions – instantly direct all questions on nature towards concerns about what must be done, how to get hold of the situation, and how to restore the damage, using most advanced scientific technologies, thereby distracting us from the premises of our attitudes and fundamental philosophical questions about our relationship with nature. The result of this is that, as Foster puts it, "[t]he environment presents a class of problems specifiable in physically reductionist terms, tractable in principle to scientific, managerial and economic methods of control"[4]. That is, in the atmosphere of threat, nature is identified with the environment, the issues of nature are reduced to environmental problems, and these turn into effectively technological questions about controlling crises in terms of the latest scientific discoveries.

My aim in this paper is not to answer the question what kind of nature is obscured by these scientific, political, or economic viewpoints. This calls for a new philosophy of nature, which exceeds the limits of a paper by far. My objective here is, rather, preparatory to such philosophy. I will focus on ways of framing our questions about nature. Why do our discussions about nature predominantly take place as discussions of environmental problems that need urgent solutions? Why are these problems considered in terms of control and management, guilt and responsibility, loss and technical recreation? Why are such problems nearly always identified in physically reductionist terms? Toadvine locates the issue in the positivist tradition, which placed the ontological and epistemological problems of nature in the domain of natural sciences, leaving ethical issues to ethics as an entirely separate discipline. I think we need to take a much deeper look and search for even earlier origins, in the beginning of modern thinking, for it is indeed modernity that frames our contemporary questions. Further, modernity is worth special attention because, according to Anthony Giddens, 'the end of nature' is a symptom of modernity itself, for it does not simply show as the decay of nature but marks the full hegemony of modern outlook. In this attempt to foreground the framing of our questions about nature, I will first examine the notion of the end of nature, then

3 T. Toadvine, *Merleau-Ponty's Philosophy of Nature*, Evanston, Northwestern University Press, 2009, p. 3.

4 J. Foster, *What Price Interdisciplinarity?: Crossing the Curriculum in Environmental Higher Education*, in "Journal of Geography in Higher Education", XXIII (1999), n. 3, p. 360 (quoted in T. Toadvine, *op. cit.*, p. 3).

define modern thinking in relation to reason and institutions, and, finally, move to natural heterotopias that, as a result of modern thinking, emerge on the plane of physical reality and appear as the forms of nature after the end of nature[5].

2. What is the end of nature?

On the philosophical plane, various 'ends' have been announced before, so the book *The End of Nature*, published in 1989 by the journalist Bill McKibben, did not really introduce a particularly new or disturbing concept. On the other hand, this has been a certain diagnosis and an attempt to name both the physical condition of nature and the spiritual atmosphere. McKibben associates the end of nature with the disappearance of nature as an independent force. As he puts it,

> for the first time human beings had become so large that they altered everything around us. [...] we had ended nature as an independent force, our appetites and habits and desires could now be read in every cubic meter of air, in every increment on the thermometer.[6]

To start with, the end of nature has a physical ground. There is no nature untouched by human. Even though human beings do not occupy all territories of

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5 Notably, contemporary discussions of the present-day forms of nature use the term Anthropocene, which in the last decade has almost fully replaced modernity. Both modernity and the Anthropocene are epochal categories. Modernity must have lost its appeal because it characterises the dynamic of thought, society, and social order, while the Anthropocene is a geological category, which places a stronger emphasis on unplanned consequences of human activities and new living conditions that become a reality to cope with for the entire planet and not just human beings. The Anthropocene cannot be clearly defined because, as Timothy Clark notes, "there is no simple or unitary object *directly* to confront, or delimit, let alone to 'fix' or to 'tackle'. There is no 'it', only a kind of dissolution into innumerable issues" (T. Clark, *Ecocriticism on the Edge. The Anthropocene as a Threshold Concept*, London, Bloomsbury, 2015, p. 10). Nonetheless, it has an epistemological value "as an epistemic tool" (M. Arias-Maldonado, *Environment and Society. Socionatural Relations in the Anthropocene*, New York City, Springer, 2015, p. 76). This term is an epistemic tool used in an effort to get hold of all physical, geological, biological, social, political and other changes in new conditions. The Anthropocene also appears ethically charged: it marks the disturbing reality that the species of human beings dominate the world so much that they determine transformations down to the geological level. And the materiality of unpredicted consequences, which shows in the form of catastrophes, extinction, and pollution (such as the islands of plastic waste or climate change and extreme natural phenomena), occupies the centre of attention, demands action and becomes a new theme not only for natural sciences but for social sciences and humanities in general also. This theme seems to me too broad. It seems to me that it unjustly marginalises the theme of modernity and that we, rather than rushing into analysing unforeseen consequences of human activities and discussing ways of getting them under control, should (re)turn to the premises of our attitudes, asking what logic has enabled current changes in them and still remains in place, at this point in the conditions of the Anthropocene.

6 B. McKibben, *The End of Nature. Humanity, Climate Change and Natural World*, London, Bloomsbury, 2003, p. xiii.

the Earth, the effects such as the depletion of the ozone shield and climate change may be identified in every natural process, which means that there is no nature unaffected by human activities and that all its transformations are determined by the consequences of human actions. This is the physio-biological side of the end of nature. Yet it is just as vital that an end marks a change in attitude. McKibben preserves a nostalgia for wild intact nature and foresees a bleak future. In contrast, the scholar of modernity Anthony Giddens, while drawing on McKibben's insights, associates the end of nature with far more significant transformations of modern society. He describes the end of nature as follows:

> it is often said that the overriding emphasis of modernity is on control – the subordination of the world to human dominance. The assertion is surely correct, but put thus baldly it needs considerable elaboration. One thing control means is the subordination of nature to human purposes, organised via the colonising of the future. This process looks at first sight like an extension of 'instrumental reason': the application of humanly organised principles of science and technology to the mastery of the natural world. Looked at more closely, however, what we see is the emergence of an internally referential system of knowledge and power. It is in these terms that we should understand the phrase 'the end of nature'. There has taken place a marked acceleration and deepening of human control of nature, directly involved with the globalisation of social and economic activity. The 'end of nature' means that the natural world has become in large part a 'created environment', consisting of humanly structured systems whose motive power and dynamics derive from socially organised knowledge-claims rather than from influences exogenous to human activity.[7]

Giddens, then, links the end of nature not so much to the extinction of species and wild areas but, rather, to its subjection to the control of "an internally referential system of knowledge and power" of which it becomes a part. What used to be external to knowledge is now internalised through science and control. Although nature is understood as something completely different from the so-called human world, its externality nonetheless becomes merely a region of the internal, which then is subjected to ever increasing levels of control and management in terms of modern logic. Yet what does it mean? The question to be raised here is what premises of modern thought determine this attitude. I will examine only two aspects of this extremely broad question, which seem to me most important to our understanding of the end of nature: I will first consider what theoretical positions are taken in relation to nature by modern *thought* – which is the domain of philosophical discourse; and then I will examine what logic of modern knowledge is characteristic of *everyday* attitudes put into effect through institutions – which constitutes the plane of common knowledge, decision-making, and action.

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7 A. Giddens, *Modernity and Self-Identity. Self and Society in the Late Modern Age*, Cambridge, Polity Press, 1991, p. 145.

3. Modern reason

What are the characteristics of modernity? According to Jürgen Habermas, "modernity can and will no longer borrow the criteria by which it takes its orientation from the models supplied by another epoch; *it has to create its normativity out of itself*"[8]. This is a common feature of modernity in all its forms[9]. According to Habermas, modernity emerges in the late eighteenth century as a site of "reflective awareness within the horizon of history as a whole"[10]. Taking this position, the mind also perceives itself as something radically new in relation to the tradition. As Welsch notes in turn, modernity is bound to the figure of Descartes and its vital moments are the principle of self-consciousness and *mathesis universalis* ensuing from it. These are precisely the factors to which Welsch links the civilisation of science and technology and the systematic hegemony of the human being in the world[11]. It may seem that nature has been conquered as a result of a successful development of sciences and that this turn took place when theoretical interests were replaced by practical ones. However, since a number of thinkers highlight the technical aspect of modern science, the question arises as to why it is modern reason specifically – the reason concerned primarily with the grounds of knowledge – that must be associated with the technological conquest and control of the world.

I will concisely account for several moments that clarify this link:

1. Conquest originates in epistemology, namely, in an effort of reason to find within itself grounds for all kinds of knowledge. The best representative of this effort of modernity is Descartes. The Cartesian radical beginning means that modern reason has no intention to take any knowledge seriously unless it is created out of and remains grounded in 'the natural light of reason'. Thereby reason itself sets the measures and criteria for all knowledge and hereafter the point of departure is the self-reflective subject.

2. Immanuel Kant, with reference to Galileo, reinforces the primacy of reason in even clearer terms. Kant says that Galileo and other naturalists "comprehended that reason has insight only into what it itself produces according to its

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8 J. Habermas, *The Philosophical Discourse of Modernity. Twelve Lectures* (1985), Engl. transl. by F. Lawrence, Cambridge, Polity Press, 1990, p. 7.

9 Different thinkers define modernity in different terms in relation to both its epochal-temporal boundaries and its contents. Wolfgang Welsch distinguishes between modernity of the Modern Age (*neuzeitliche Moderne*), modernity of the 20th century (*Moderne des 20. Jahrhunderts*) and postmodernity (*Postmoderne*) (W. Welsch, *Unsere postmoderne Moderne*, Berlin, Akademie Verlag, 2008, p. 82). Habermas considers modernity an unfinished project and Giddens emphasises that we live in the conditions of high modernity. For the purposes of this paper, I distinguish between the Modern Age modernity (identified with philosophy and theoretical reason, as defined by Welsch) and contemporary modernity (which extends the positions of the modern mind into the spheres of everyday life and institutions, as described by Giddens).

10 J. Habermas, *op. cit.*, p. 6.

11 W. Welsch, *op. cit.*, p. 69.

own design; that it must take the lead with principles for its judgments according to constant laws and compel nature to answer its questions rather than letting nature guide its movements by keeping reason, as it were, in leading-strings", and that reason must seek "to be instructed by nature not like a pupil, who has recited to him whatever the teacher wants to say, but like an appointed judge who compels witnesses to answer the questions he puts to them"[12]. Hence Kant establishes the position that reason must itself frame its questions, without expecting them to come from elsewhere.

3. While Kant's primary focus was on the certainty of knowledge, Edmund Husserl is rather critical of it, for he sees it as a reduction of nature to a single plane, as its mathematisation, which lays the grounds for a reductionist technical attitude towards it. Husserl maintains that nature is mathematised by changing the horizon of meaning and re-clothing nature (and the entire life-world) in a different 'garb of ideas' (*Ideenkleid*): "mathematics and mathematical science, as a garb of ideas, or the garb of symbols of the symbolic mathematical theories, encompasses everything which, for scientists and the educated generally, *represents* the life-world, *dresses it up* as 'objectively actual and true' nature"[13]. This means that the facts of nature that manifest themselves in a multiplicity of dimensions and phenomena of experience are being reduced to quantified data of nature as a mathematical universe. Such approach endows knowledge with certainty and rigour, but, as Husserl warns us, by pursuing them in this way "we take for true being what is actually a method"[14]. This lays the foundation for reducing nature to scientifically calculable physical, chemical, and biological processes.

4. Husserl, however, does not explicitly state that the nature of mathematisation is technical – it is Martin Heidegger who shows that mathematisation indeed comes with the technical attitude to nature. His notion of modern technologies goes beyond the sphere of technical equipment and machines because he defines machinery as a particular manner of revealing nature. Heidegger reminds us that the Greek *techne* designates know-how – that is, practical knowledge how to make, produce, or build things; so modern technologies embody an attitude towards nature as a resource to be exploited for making what is useful, as opposed to its perception as independent existence. This also means that modern technology works as the kind of 'unconcealment' (*Unverborgenheit*) that subjects nature to 'enframing' (*Ge-stell*) and reveals nature as 'standing-reserve' (*Bestand*), a resource to be calculated and preserved in order to have it in one's disposition. "In Enframing," Heidegger writes, "unconcealment comes to pass in conformity with which the

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12 I. Kant, *Critique of Pure Reason* (1781), Engl. transl. and ed. by P. Guyer and A. W. Wood, Cambridge, Cambridge University Press, 1998, p. 109.
13 E. Husserl, *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy* (1936), Engl. transl. by D. Carr, Evanston, Northwestern University Press, 1970, p. 51.
14 *Ibidem*.

work of modern technology reveals the real as standing-reserve"[15]. The challenge that enframing meets is to produce, out of nature, "the maximum yield at the minimum expense", and it is the modern mathematical physics that enables this kind of production: "modern science's way of representing pursues and entraps nature as a calculable coherence of forces"[16]. Thus, Heidegger continues, modern physics, "as pure theory, sets nature up to exhibit itself as a coherence of forces calculable in advance"[17]. While physics itself should not be identified with exploitation, it enables the enframing of nature as standing-reserve: as resource to be used for the production of the maximum out of what can be planned by calculation.

5. Surely, a project such as damming the river Rhine for the hydroelectric power plant[18] would not be possible to conceive without a shift in ethics. It was characteristic of the thinkers of modernity to assume the stance of a master. Modern reason sees itself not only as the ground of all knowledge but also as "*the masters and possessors of nature*"[19]. As soon as nature is reduced to the *res extensa* and the whole fauna turns into living mechanisms, they lose the kind of otherness that demands an ethical relation to them. Things are no longer other, they are there for free disposition and manipulation.

These positions show that modern reason is the kind of reason that finds every grounding, principle, normativity, and measure exclusively within itself and does not expect any answers from nature but instead shapes knowledge according to its own principles. This exposition has not elaborated on the aspiration of modern reason to create *mathesis universalis*, yet it is important to note as a general position that knowledge here is understood as a universal, total, and internally coherent system. Thus reason, grounding knowledge within itself, is also equipped with the means to know and conquer all external reality.

4. The everyday of modernity

Let us move to the everyday knowledge that, once implemented in the form of institutional infrastructures, directly transforms nature and the environment. In Giddens's terms, we live in the late, or high modernity. Leaving aside the broader question as to whether our society is modern or post-modern, I will note that Giddens links contemporary modernity with social order and modern institutions,

15 M. Heidegger, *The Question Concerning Technology* (1953), in *The Question Concerning Technology and Other Essays*, Engl. transl. by W. Lovitt, New York and London, Garland Publishing, 1977, p. 21.
16 *Ibidem*.
17 *Ibidem*.
18 *Ibidem*, p. 16.
19 R. Descartes, *A Discourse on the Method of Correctly Conducting One's Reason and Seeking Truth in the Sciences* (1637), Engl. transl. by I. Maclean, Oxford, Oxford University Press, 2006, p. 51.

which determine our daily life. It is in this aspect that he convincingly shows that
"[w]e have not moved beyond modernity but are living precisely through the
phase of its radicalisation"[20]. This is not to identify daily life with modern reason
but, rather, to note that the everyday does take over and radicalise its essential
structures: its relation to the tradition, orientation towards the future, the con-
stitution of the self through reflection, the premise that decisions originate in the
self, an aspiration for universality and globality, and the dynamics of knowledge.
Obviously, these structures are brought into life not so much by an autonomous
theoretical reason but by institutions – governments and administrations, various
organisations, research centres and the like – that organise and sustain social or-
der. While they certainly do not always appear rational, they do have to them a
characteristic rationality and logic whose fundamental premises indeed draw on
modern reason.

What are, then, the most important characteristics of knowledge and social
order that determine the relation to nature now called the end of nature? Gid-
dens characterises modern society as living "after tradition" and "after nature"[21].
Life 'after tradition' means that institutions and individual both ground their
daily routine in reflexivity rather than tradition or the inertia of customs. Just as
modern reason refuses to conform to tradition, so here – except that this takes
place on the plane of the everyday – no customs can possibly work as self-evident
and activities must be grounded in the reflexivity of institutions and individuals.
Present activities depart not from the past ("I think and do as my forefathers
did") but from the present and its orientation towards the future. Even tradition
itself must be legitimised in relation to the present (as, for example, in consider-
ing whether or not it is worth keeping to a certain custom or rite). To specify the
meaning of reflexivity, it designates the condition that, for the outlook of high
modernity, reflection is the measure for itself, as opposed to any dimensions of
evaluation and world perception taken from tradition. Giddens sees this origi-
nating in the fact that modern institutions incorporate the tenets of modernity –
namely, that reason is the only valid ground, and doubt is the method – through
"expert systems"[22]. Hence, just as Descartes distrusts all knowledge and over-
comes his doubt by turning into himself and relying solely on the criteria of rea-
son, modern institutions constantly reflect on their own motives, activities, and
decisions, redefine criteria, procedures, and timelines, recalculate risks and the
like. The internal orientation of modernity guides modern everyday knowledge
and modern institutions as well. The formative influence of the method of doubt
manifests itself in the forms of a remarkable flexibility of this, as well as properly
scientific, knowledge: it knows that it can change. On the one hand, this knowl-
edge is highly sensitive to new facts and information; yet on the other hand,
knowledge transforms only in content but not in principle. Along with repeat-

20 A. Giddens, *The Consequences of Modernity*, Cambridge, Polity Press, 1991, p. 51.
21 A. Giddens, Ch. Pierson, *Conversations with Anthony Giddens, Making Sense of Moder-
nity*, Cambridge, Polity Press, 1998, p. 208.
22 A. Giddens, *Modernity and Self-Identity*, cit., p. 19.

edly restated need for 'a new approach' and the fact that both institutional and individual attitudes towards the social and natural environment indeed change very often, the principles of knowledge and action remain the same.

This kind of reflexive knowledge deals with the surrounding space accordingly. As Giddens puts it, "the overall thrust of modern institutions is to create settings of action ordered in terms of modernity's own dynamics and severed from 'external criteria' – factors external to the social systems of modernity"[23]. This implies an objective to break free from the restrictions of the given environment and create an environment in terms of modern knowledge itself. Hence the point of departure here is not determined by external motives, order, or principles in relation to either time or space but is established by modern institutions themselves. The condition for this is, according to Giddens, the "emptying out of time and space"[24]. In pre-modern societies, place was inseparable from time: a particular custom was maintained by communities living in particular places. They adjusted to the demands of natural environment and thereby built a unique cultural world, in which tradition and environmental requirements perform the crucial function of structuring daily life and a worldview in general. Modernity breaks away from the parameters of tradition and place. Daily agenda, for example, is no longer shaped by the natural processes characteristic of the place or traditional measures of time but is framed instead in an abstract time introduced by modern institutions: a working day does not begin with the sunrise but starts at, say, 8 am. By emptying space and time, as Giddens has it, modern institutions can "coordinate social activities without necessary reference to the particularities of place"[25]. And as soon as place loses its vital significance, nature itself loses its significance too. Technologies enable the creation of environments in which daily life is determined by the requirements of modern institutions. While climate demands cannot be ignored completely, working environments are designed to prevent natural conditions from hindering our capacities to do the work in the eight working hours set for it. Thus, thought and action begin with the questions what limits are best to set and how to rearrange the environment to make it fit the chosen goals if it is not conducive to them, as opposed to starting with the question what are the best ways to adjust to the environment in order to survive and achieve one's aims.

It is in relation to the future that planning, reordering, and control that the modernity's internal logic manifests itself most clearly. As mentioned, the colonisation of the future is a characteristic of modern knowledge. "'Futures' are organised reflexively in the present"[26], Giddens writes, which means that the future is no longer anticipated but is organised instead; foreseeable events are no longer left for the nature's course, destiny, fortune, or the gods to decide. In Giddens's terms, modern society characteristically thinks in terms of risk rather than fate, so the future is predicted by way of precise calculation of specific outcomes and risks of

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23 *Ibidem*, p. 9.
24 *Ibidem*, p. 18.
25 *Ibidem*.
26 *Ibidem*, p. 30.

trying to achieve them. The future is envisioned as a risk control scenario rather than the time that will come. And the result of this is that, as Giddens puts it, "in conditions of modernity, for lay actors as well as for experts in specific fields, thinking in terms of risk and risk assessment is a more or less ever-present exercise, of a partly imponderable character"[27]. All of this keeps modern society in the "climate of risk"[28], while nature itself is turned into just another factor of risk and no longer thought of as the condition of living.

Reflexivity, the disembedding of space and time, and the colonisation of the future have thus turned into the underlying principles of control that determine the end of nature. As already noted, the end of nature designates more than the decay of natural processes and territories, even if this includes the extinction of particular species, and increasingly vaster territories are taken over by urbanisation and agriculture. These are visible physical transformations, while the notion of the end of nature more significantly draws on something else: as Giddens puts it, "[n]ature begins 'to come to an end' in the sense that natural world is increasingly ordered according to the internally reflexive systems of modernity"[29]. This aspect is best known from the sphere of the exploitative relation to nature. Here the means of control are being progressively perfected and reach increasingly deeper down. In agriculture, for example, the management and control of biological processes has gone down to the genetic level, led by the objective to gain from 'natural resources' all possible benefit: genetically modified crops yield richer harvest and show better resistance to 'external' pests, and new animal species 'produce' more and more of the food products they are kept for, such as meat and milk. Natural territories that have not been turned to agricultural lands are considered as either potentially resourceful or completely useless places that are simply not worth the effort of exploitation. As Giddens remarks, "[w]ildernesses now [...] are mostly simply areas where, for one reason or another, cultivation or habitation cannot effectively be maintained, or are simply areas set aside directly for recreational purposes"[30].

However, Giddens's view of the end of nature is one-sided: the definitive factor of the end of nature – control – goes far deeper than this because new challenges and shifts in understanding of these challenges call for control of natural processes themselves. The motive for control here is not exploitation but preservation. Although preservation may be driven by exploitative interests (resources must be used sparingly in order to let them restore themselves), ethical concerns that used to be rather sporadic are getting increasingly stronger. Nature for modern outlook is not just resource anymore but the vulnerable and suffering Other. Late modernity, nonetheless, characteristically understands nature exclusively from a perspective of controlling it in terms of an internally self-referential system of knowledge and power, be it for the purposes of preservation or exploitation. There clearly is an emergent ethical motive to preserve nature for its own sake because the effort

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27 *Ibidem*, pp. 124-125.
28 *Ibidem*, p. 115.
29 *Ibidem*, p. 166.
30 *Ibidem*, p. 167.

here is not to exploit natural resources but to preserve or even restore the life of a particular ecosystem without any exploitative objectives. Yet on the other hand, modern knowledgeability can protect the state of nature only by taking control over it in terms of the knowledge it has. The ethical motive is compromised by the manner of its execution, which is embedded in the frameworks that determine what problem is posed and what questions asked. Sciences – the fundamental basis of modern outlook – understand perfectly well that current knowledge and natural reality do not correspond to each other completely. Nonetheless, since the starting point is the reflexivity of modernity, the primary value is given not to the unknowable, mysterious, and transcendent nature but to the available knowledge and those decisions of whose necessity modern institutions are convinced. This is precisely where contradictions come into view. As long as modern viewpoint is purely exploitative, it is fairly coherent and if it errs, it does so only in calculations, while the objective to save the Other that is of another logic than that of modernity itself brings paradoxes. While natural territories (such as reserves) are protected as wild nature living by itself, modern viewpoint regards them in reductionist terms: as fields that can be saved only by resorting to science and control. Protected natural territories, then, must be considered not so much as places of wild nature or its remainders but, rather, as ambivalent heterotopias managed in modernity's terms.

5. Ambivalent heterotopias

Michel Foucault's notion of heterotopia will enable me to foreground some paradoxical moments in the modern frameworks of controlling natural territories. According to Foucault, heterotopias are

> emplacements [...] that have the curious property of being connected to all the other emplacements, but in such a way that they suspend, neutralize, or reverse the set of relations that are designated, reflected, or represented *[réflechis]* by them.[31]

It is this relation of suspension, neutralisation, and reversion that is most important to this examination.

Modernity has a rationale of its own and tries to reorganise the environment according to its own logic, which is easily seen in the examples of cities, agricultural land, and recreational parks. Reorganised environment has a structure of relationships envisioned by modern institutions and modern knowledge. However, once there is an effort to save nature – that is, preserve the uniqueness of wild territories – the state of affairs turns self-contradictory. Why? Protectable nature is regarded as an 'independent force', a self-sustaining and self-reproducing being, something that exists by itself and according to its own laws. Human beings can understand these laws through science, albeit imperfectly and in a limited way,

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31 M. Foucault, *Different Spaces* (1967-1984), in *Aesthetics, Method, and Epistemology*, ed. by J. D. Faubion, Engl. transl. by R. Hurley and others, New York, The New Press, 1998, p. 178.

hence nature remains somewhat mysterious and transcendent. However, increasingly more carefully calculated effort to protect nature does not move towards understanding the limits of knowledge and letting nature be by leaving it to its own devices but instead leads towards even stricter control grounded in the notion of 'mathematised nature' and the technological mastery over it. Paradoxically, the objective of saving an ecosystem or certain species comes together with an understanding that it can only be achieved on condition of suspending and reverting natural relationships. That is, the conservation of nature does not preserve the selfhood of natural territories but turns them into objects of control whose natural processes are sustained artificially.

Of course, there are physical realities to justify it. For example, the expansion of urban and agricultural environments leaves many reserves too small for animals to move freely, be it for migration purposes or those of reproduction. Reserves often border with agricultural lands or even villages, which raises a whole range of issues, such as 'runaway' animals that must be returned back to the reserve and kept within it, or the question of calculating and sustaining their numbers that must be just right for the animals to live within the reserved territory without threatening to disrupt the balance of the ecosystem. Another set of problems comes up when, as was the case with the aforementioned northern white rhinoceros, the habitat of a species splits into small enclaves separated by urban and agricultural environments, so animals are no longer able to migrate, find partners that are genetically distanced from them, and have healthy offspring. Therefore, without artificial 'migration' of genes, ensured by breeding programmes, some species (such as pandas, rhinoceros, and tigers) would simply disappear. An effort to save endangered species also must solve questions such as how to ensure the health and continuity of a population, how to collect genetic material and calculate the risk of inbreeding, how to design a network of reserves, and how widespread across the globe breeding programmes must be. Clearly, it is not possible to prevent species from extinction in the wild and sustain the biological balance of ecosystems without suspending the natural course of events and reverting those natural relations that determine the identity of an ecosystem. Hence, while this effort aims at saving the uniqueness of wild nature, its success counter-effectively depends on what is understood to be worth preserving and the knowledge provided by scientific experts. This means that selection is made by modern institutions and no longer by nature itself.

Philosophically, this paradox manifests itself most clearly in attempts to save a particular ecosystem. In such cases, an ecosystem's inhabitants turn into a resource for the ecosystem itself as opposed to an agency 'external' to it; that is, an ecosystem with its inhabitants becomes a resource for itself. How does this happen? An effort to protect a particular ecosystem requires to choose a model of the ecosystem's biological balance. Since the system is vulnerable, damaged, or even completely destroyed, the first questions to be asked are: which individual animals will be able to sustain a biological balance, what should the ratio be between predators and their potential prey or between plant-eating animals and growth, which species should be removed as invasive, and the like. Hence the attitude

towards nature inevitably acquires a technical aspect in the Heideggerian sense of the word. A particular ecosystem becomes a measurable resource – a 'standing-reserve' – for itself, while modern institutions and 'systems of expertise' (particular research centres or individual scientists and supervising institutions) turn the chosen ecosystem model into reality. Thus, on the one hand, all animals are supposed to lead their natural life in a biological balance of their own, yet on the other hand, the entire ecosystem is subject to control aiming to keep it within the boundaries of the chosen model, which is itself based on the knowledge that was available at the time of making those choices (and which may change, demanding to reorganise the whole environment again). This is not to say that artificiality is vicious in itself or elaborate a critique of simulacral falsity à *la* Baudrillard but, rather, to expose artificiality as a trait of the characteristically modern point of view.

This, too, most clearly shows in efforts to save particular species or even individual animals. Such cases provide modern outlook with best conditions to subject everything to its control. When particular species are being saved within the boundaries of their native habitat, natural parks effectively turn into zoos because they are subject to the management according to the principles of the zoo. The zoo, as we know, is a fully artificial space designed to accommodate collections of animals that supposedly represent a species or an ecosystem. Nowadays, zoos have somewhat shifted their purposes and consider themselves not only as collections or places for keeping and representing animals but also as the contemporary Ark of Noah, with the only difference that they are not the biblical vessel Noah built to save animal species from the global flood but make a network of zoos, nature parks, and reserves, created trying to save and breed endangered species. Almost all individual animals of most endangered species belong to this network of zoos, sanctuaries, and breeding farms. The system collects data on the numbers, movements, and genetic health of individual animals, calculates the risk of in-breeding, and often enables animals to 'migrate' across the enclaves of reserves. The aforementioned rhino Sudan, for example, was taken to the Prague zoo in 1970 and returned to Africa 30 years later; he participated in breeding programmes and gave genetic data, most likely for the purposes of trying to recreate the species in the future. As to the circulation of genes, differences between zoos and natural territories have been erased completely: all endangered animals are regarded equally as genetic resources. That is, modern institutions – research centres, breeding programmes, zoos, parks, various organizations, and governments – decide what is and what is not worth saving, how to calculate the efficacy of the effort, and how execute it technically. Surely, not all processes are as artificial as they are in zoos, but the smaller the territory the more principles of zoo management must be put in place: endangered animals have security guards (Sudan, for example, was safeguarded from poachers by a team of armed watchmen) and they are constantly monitored by vets and moved from place to place trying to ensure their safety or for the purposes of reproduction. Further, protected animals that survive in small numbers are humanised and thus removed from the biological processes of an ecosystem yet another step. Sudan, yet again, is a paramount example of this. In the Ol Pajeta Conservancy, nobody can hunt rhinoceros or other protected

animals, which includes, in addition to poachers, all other predators. Sudan himself was put down when his suffering from open wounds seemed too great. No predator could have hunted him and no scavenger could have fed on his carrion. Humanised animals do not partake in natural circulation; they are given names and memorial services instead.

To manage nature conserves according to the principles of the zoos means to colonise their future, which is no longer destined by 'natural laws' but is determined by the calculation of risks. To give the last and controversial example, Copenhagen Zoo killed an eighteen-month young male giraffe, Marius, on 9 February 2014[32]. The giraffe was dissected and fed to lions in public, all of which was watched by visitors of the zoo and broadcast on the internet live. Although the international petition Save Marius managed to collect more than twenty-seven thousand signatures, the management of the zoo decided to kill the animal. There were nature conserves and a private individual who offered five hundred thousand euros for Marius, but these offers were rejected. The arguments were well calculated and justified. The decision to kill Marius was taken for the sake of Marius himself and the entire population of giraffes.

Copenhagen Zoo is part of an international breeding programme. Marius's genes were too close to those of other individuals, hence keeping him alive posed a threat of in-breeding. Castration or contraceptive medication were ruled out because they posed risks to Marius's health. Releasing him into the wild was not considered an option because he would have fallen prey to predators. Letting him live in another zoo was too risky because of a high possibility of in-breeding. Hence, the best way out was to kill the animal. No happy incident, no good fortune for Marius. His fate came down to the calculation of risks, and it was determined not by bad health, disease, or predators but by exceedingly good health, the genes, and the risk of in-breeding. This case in Copenhagen Zoo received a widespread response, yet keepers and scientists in natural territories often face the same kind of decisions that must be enforced by the same kind of actions.

6. Conclusions

The notion of the end of nature should not be reduced to the extinction of animal species and destructive consequences of human action, all of which eliminates nature as an independent force, but means instead the hegemony of modern outlook, which leads to the state of affairs when, according to Giddens, the natural world is subjected to management in terms of internally reflexive modern systems. In the Anthropocene epoch, this manifests itself in new forms. As long as the human being sought to become 'the master and possessor of nature', the major efforts were to eliminate natural hazards and exploit it for the satisfaction of hu-

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32 P. Rincon, *Why did Copenhagen Zoo kill its giraffe?*, in *BBC News*, internet edition, 10 February 2014, https://www.bbc.com/news/science-environment-26118748 (accessed 26 August 2018).

man needs, both of which involve the mathematisation of nature. However, new conditions, such as environmental pollution and the decay of natural territories, make modern reason aware of the damage ensuing from excessive self-gratification and consumption. Therefore, contemporary, or high modernity takes a protective approach to nature in addition to the exploitative attitude. Nonetheless, modernity frames its protective view on nature in its characteristic ways: modern outlook itself, with its characteristic understanding of solvable problems, remains in place in the grounding of knowledge, decision-making, and specific action, even if it also takes responsibility for protecting otherness. The issue of nature turns into questions of conservation, control, and technology. The case of the rhinoceros Sudan shows the specificity of modern outlook especially clearly. The extinction of the species is approached as a consequence of destructive human activity, but questions about what nature is for us and what we do with its wildness are not asked, taking instead a reductionist approach towards nature and turning it into a field of the problems of conservation, control, restoration, and the like.

On the other hand, the Anthropocene – an awareness of the scale of human activity and impact – points to an understanding that, in principle, these processes got out of hand. The view that all can be solved if only one has proper means for controlling the actual state of affairs is clearly inadequate, which demands we reconsider our assumptions about nature and reality on the whole. This implies establishing a distance from modernity, complicated by the fact that modern outlook itself is highly dynamic and changes very quickly. For the effort to keep such a distance, it seems that possible alternatives to the frameworks of control and conquest and to the reductive views will not be decisive because these factors are most likely to remain a significant, maybe even dominant condition of epistemological inquiry into nature and its protection. As to the ways of coexistence with nature after the end of nature, the crucial question is likely to be that of the departure point: whether it stays rooted in the reflexivity of modern reason and modern institutions or, on the contrary, thinking, decision-making, and action will begin from different starting points, including factors that decentralise and de-totalise modern outlook.

Translated from Lithuanian by Jūratė Levina