BACK TO EARTH:

A PHILOSOPHICAL APPROACH TO THE HUMAN RELATIONSHIP WITH OUTER SPACE

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Abstract

Outer space first came into the spotlight after the second half of the XX century. Nevertheless, its problem is rooted deeper and covers a wider chronology: outer space does not only affect the atmosphere and beyond, but also our planet and the human being itself, including our own past, present and future. The objective of this coursework is to realize an approach to the ethical, political and moral problems that raise our relationship with outer space from different perspectives. Considering this approach, a critique of the hegemonic conception of nature will be necessary, as well as an outline of different alternatives to this conception.

Keywords outer space, spatial research, nature, time

Resum

L'espai exterior pren importància a la darrera meitat del segle XX. El seu problema, però, posseeix unes arrels més profundes i una cronologia més llunyana: no només afecta allò més enllà de l'atmosfera, sinó també el nostre planeta i l'ésser humà, inclosos el seu passat, present i futur. Aquest treball té com a objectiu realitzar una aproximació als problemes ètics, polítics i morals que planteja la nostra relació amb l'espai exterior des de diverses perspectives. Partint d'aquesta aproximació, es farà necessària una crítica de la concepció hegemònica de la natura, així com un esbós de diferents alternatives a aquesta.

Paraules clau espai exterior, recerca espacial, natura, temps

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"You won't set foot on the moon, unless you learn how to manage the Earth"

A banner in a demonstration in Barcelona, 2016.

1. Introduction

In 1958, Hannah Arendt, in the prologue of the *Human Condition,* described the launching of the *Sputnik* satellite in 1957 as an historic event for the human species and our relationship with the planet, it was – in her words– "second in importance to no other, not even to the splitting of the atom". The launching of the first satellite expressed, according to Arendt, the desire to escape Earth: it was the colossal expression of a rebellion –nowadays on course– against our own *human condition*, deeply rooted on Earth (Macauley, 1996: 104). It is this rebellion developed in outer space –which Arendt mentioned back in the late fifties– the main object of interest of this article. If we consider that our current relationship with outer space is more than a mere scientific investigation area, there are a lot of ethical and political questions that arise, like "Should we abandon our planet to search a new inhabitable one?" or "Why should we spend so much money on space research", which I will try to analyse to understand better the motives and interests that lie behind them.

In order to do so I will mainly use philosophical bibliography, predominantly from the environmental ethics discipline. However, I will also refer to Heidegger's critique to the contemporary concept of nature and, when necessary, I will examine selected social science bibliography as well. The outer space has been a major theme in the natural sciences area, but in philosophy, the social sciences and humanities, the bibliography available is relatively scarce and sparse.

The main objective of this article, then, will be to analyse our relationship with outer space and –in pursuance to conduct this inquiry– I will firstly focus on our ethical relationship with it: both as a scientific object and as a place where we can perform ethical actions. Since these actions are *quintessentially human* – and subsequently, political too– I will try to examine the discourse that legitimates and sorts these actions (including research) as appropriate or inapplicable, as valid or unfounded. Finally, I will attempt to explain why the main causes of this discourse, where our ethical actions are embedded, may not be found beyond our planet's boundaries but deeply rooted in it instead.

2. The ethics of outer space

On the 22nd February 2017, the National Aeronautics and Space Administration (NASA) offered a press conference in which announced the discovery of a planetary system, named TRAPPIST-1(NASA, 2017a), composed by seven earth-sized planets. Three of them were said to be rocky, with a hydrogen-dominated atmosphere, tidally locked, but most importantly: within a habitable zone. A triad of planets, perhaps capable of sustaining life, which became instantly cherished and celebrated by the scientific community, the media and the public opinion. But why were they so important? These planets were supposed to be about 40 light-years from Earth (378.4 billion kilometres), however they were mostly celebrated as a probable place where we could reach within the next decades or at last in a few centuries. This rejoicing atmosphere, led NASA to unveil a retro-styled poster (NASA, 2017b) titled: *Planet Hop from TRAPPIST-1e: voted best "hab zone" vacation within 12 parsecs from Earth*. We can see there a family discovering, looking through a window, what seems to be a distant landscape with six moons in the sky.

There is no doubt that this discovery was of an enormous scientific relevance: planets that reassemble ours in their physical conditions are perfect objects to study the behaviour of our own atmosphere or lithosphere, for example, and given the specific circumstances they might be home to life as well. Nevertheless, I think we should assume that the global attention set on this issue did not obey these scientific criteria of research. Even when these remote planets are unreachable, as a one-way trip on the fastest spaceship available today would take about 817.000 years (Weitering, 2017), the chance of them being a future home was in the spotlight. Three possible home planets, that like those wishes that grants the genie of the lamp, persist only in the geography of fiction and in NASA's poster.

However, there are several questions that arise from the fact that these planets were mostly celebrated for their capability of sustaining human life, but in this essay, I will focus in the ethical and political ones. In regard of the ethical dimension of outer space, we can divide these questions into two possible groups: one in which we discuss the ethical problems of outer space itself (a genuine ethics of outer space), and another where we discuss the ethical problems of the research of outer space (an ethics of the scientific research of space). Questions such as "Does space has value for itself?", "Is space an environment?" or "Should we modify other planets so we could inhabit them?" would fall into the first group; while if we ask, "How should we spend money in outer space research?" or " Should we send humans to space or just unmanned missions?" we would therefore be in the second group. A genuine ethics of outer

space requires scientific knowledge about space so its answers can be formulated solidly. On the other hand, an ethics of the scientific research of space demands a profound insight on the relationship between science and society. There is a third type of questions that emerge from the tension between these two groups: those that consider outer space a problem for the Earth itself and its environment, for example, "Why would we need to inhabit other planets different from Earth?" or "If the Earth is not the only place where humans can live, can we treat it as a disposable resource?".

In the next two sections I will develop further on the two categories of ethical problems that emerge from the first two types of questions: a genuine ethics of outer space and an ethics of scientific research of space. Then, I will comment on why a new sort of problems regarding Earth cannot be classified neither in the first group nor in the second one and, finally, I will argue that we should consider them a part of the environmental ethics discipline.

2.1 A genuine ethics of outer space

Given that space is a place much devoid of life, an ethics which makes space its object of thought must take some questions regarding its value and nature into consideration. Such inquiries have mostly escaped the philosophic reflection as they have been transferred to the physics and astrophysics experts' opinion. But these questions are not scientific ones, so their answers should not be scientific but moral or political. In this section I will review a few exceptions to this kind of oblivion. Firstly, I will comment on the article *Is space an environment?* by the Finnish philosopher Saara Reiman (Reiman, 2009), from the department of Social and Moral Philosophy at the University of Helsinki, who has deeply thought about the nature of space, mainly trying to answer whether we should apply to outer space the values we find on the terrestrial environment or not. After that I will focus on James Schwartz, an American philosopher of science, from the Wichita State University (Kansas), who has tried to draw the first outline of an ethical theory of outer space (Schwartz, 2011).

Both Reiman and Schwartz are analytical philosophers greatly inspired by Holmes Rolston III Environmental Ethics theory, where he defends –among others– a pluralism of values rather than a unique supervalue that forces us to preserve our environment. This means that we can definitely find in the environment an economic value, but not only: scientific, historical, aesthetic, and character-building values, for example, are to be found as well, and there is no ultimate hierarchy which classifies or grades them.

This concept of plurality of values is what Saara Reiman deeply explores in her article applied to space. Given that our actions' consequences are expanding their Earth-bound sphere of influence, a lot of new questions are to emerge as well: "Do we need to worry about the moral implications of our actions in the vastness of space?" or "What kind of explorers will we be - and what kind of explorers should we be?" (Reiman, 2009: 81); as Reiman points out, these questions will not be solved by the acquisition of more scientific knowledge alone but by the development of an ethical theory that examines the moral status of outer space as well. Regarding this moral status, the issue which is raised in this article is whether we should consider outer space an environment or not. After exploring a variety of plausible scenarios and hypothesis, Reiman concludes offering an ambiguous answer to the question about the moral status outer space should enjoy: "space at large should not enjoy a moral status equal to Earth. However, some environmental ethical viewpoints are still important". This different moral status makes environmental ethics theories not entirely valid nor applicable to outer space: a new ethical theory of space – believes Reiman– should be built from some of its principles re-examined.

On the other hand, James Schwartz, one of the pioneers in the philosophic reflection of outer space, has defended in an article titled *What is Philosophy of Space Exploration?* (Schwartz, 2015a) that some of the current environmental ethics values should be applied to space, but given the lack of scientific knowledge we found ourselves lost in, we do not really know yet which ones will play an important role and which ones will not. He argues that "only after we have gained more knowledge about space and developed more proposals we can begin, in a systematic and principled way, to theorize about *judgement* in space.". Thus, there is a lack of scientific knowledge that needs to be fulfilled to theorize about the moral status of outer space. This necessity of increasing scientific research, which is the only way to gain this kind of knowledge, is what I will explore in the next section.

2.2 An ethics of the scientific research of space

We have seen in the last section that more scientific knowledge is generally said to be required to theorize about the moral status of outer space. This prerequisite requires a justification as well: why should there be even more scientific research of outer space? And, in case there is, should this research be theoretical or perhaps one based in enormous spaceships driven by humans and footprints on the soil of the moon? These questions that arise entail a serious justification not merely based on science, but on socio-economic restrictions and technical and moral limits as well.

A philosophical approach to this question has been extensively done by the philosopher of science James Schwartz in the article *Our Moral Obligation to Support Space Exploration* (Schwartz, 2011), where the author tries to make an argument to justify the funding and the continuity of the space program: this argument is based on three different sub-arguments that though driven through different pathways lead to the same place: we should support space exploration "from our obligation to protect the environment and survive as a species". Why should we? Schwartz argues there are at least three important reasons that should make us invest money to this kind of programs: first, there is a necessity of securing resources which our planet does not possess in enough quantities; second, we need more space technology in order to contest a possible extra-terrestrial meteorite menace; and lastly, we are obligated "to pursue interstellar colonization in order to ensure long-term human survival".

These are the three main arguments we can see through all the bibliography (constituted primarily by natural scientists) that support space exploration funding. (Schwartz, 2015b) Bearing in mind that science is not a neutral object or knowledge, but a social construct in which the scientific method is applied (Chiriguini, 1999), we ought to know which are the social motives or cultural preconceptions which upkeep and sustain these arguments. An examination of these presumptions cannot be roofed with a genuine ethics of space nor with an ethics of the scientific research of outer space: "Why should we abandon our planet?" or "Is it there a necessity of extra-terrestrial resources?" are questions in which our planet, considered as a unique home must be taken into consideration: we are not speaking about space any longer, but about the Earth and its environmental boundaries.

To sum up, the three arguments James Schwartz claims should oblige us to support space exploration are the same arguments that lead us to believe we should consider moving to another planet, or at least, having one in storage. Of course, there are threats that are extra-terrestrial and should be considered in the long-term, such as a solar flame burnout or a meteorite impact; however, I doubt this requires space exploration alone, but scientific research in all its forms as such problems would require a holistic, diverse and profound approach. These extra-terrestrial problems then, are not human caused nor can be solved by social, cultural or economic change. But there is one that could be: the resource problem. Schwartz does not only consider all these problems as non-human related but he also tries to solve them all by exploring the space to find other planets that could be inhabitable, or at least exploitable. We see a major problem here and we feel that this problem cannot be discussed anymore as a one that regards

solely the *ethos* of science, but as a social and cultural one which inevitably leads to the relationship between the human species and the environment surrounding it.

3. The abandonment of Earth. An environmental ethics problem.

We have already seen some of the questions that arise when we ask ourselves about outer space; we have classified them, generalizing, between questions which their answer imply a genuine ethics of outer space, such as "Is outer space an environment?" and those that inquiry into the spirit of the science of outer space, for example: "Should we send humans to space or just unmanned missions?".

However, there are a few questions regarding outer space which do not fit in neither one of these categories. For example, "Why should we leave Earth to colonize other planets?" or "Do other planets contain needed resources that are not to be found on Earth?". These questions are only understandable from a social context of deep ecological crisis where the hegemonic logics alert almost every day about the lack of resources our planet suffers from. I will discuss in the next few pages that this is an interested point of view and not an absolute fact as it is intended to be.

Furthermore, in this section, as the environment takes a fundamental relevance for the analysis of these questions, I will be dialoguing outer space with a branch of philosophy that has made the environment and our relationship with it its object of thought: the environmental ethics discipline.

3.1 The resource problem

It goes without saying that the resource problem we face is one of the main arguments used to justify the discovery of other planets. It is important to notice that this kind of encounter would produce a dual reification of either this new planet (which would be considered as a means only) or of the Earth, as our future next home would probably make us contemplate our current one as a disposable container of resources. The eyes who scrutinise the night sky through the lens of a telescope trying to come across with a singularity that solves all its problems, often forget they are standing on this singularity: the home, *oikos*, where we live.

Oikos is an ancient Greek word (οἶκος) that refers to family, the family's property, and the house. This is important, as two contemporary words are formed by it: economy and ecology. Economy is the administration of the house, and ecology, its science [of the house]. Both have

theoretically in common their object of study, this *unicum* we dwell in, but we can see that this is no longer true when not speaking about grammar: economy and ecology have been discursively separated for a long time. This dissociation has a lot to do with the resource problem in such a way that some consider it the justification of exploring space.

Although I will not primarily discuss here the necessity of growth the capitalist economy has in its beating core (Kallis, 2017), in the next few lines I will be using some arguments that imply that, at least, our current economic system classifies growing as a good thing and not growing a not so good one. Regarding the fact that there is, or it is possible that there will be, a lack of resources if things remain structurally similar as they are now, we can formulate this scarcity as a relational statement: if there is a lack or a surplus of resources it is only related to how much of them we spend and in which rate. We must be clear then and add a conditional that changes it all: *if* the current way of producing and consuming does not change, there will be a lack of resources. Resources do not lack *per se*: the Earth is not getting any smaller year by year but our appetite and population growing larger. This almost obvious statement is significant, as the hegemonic common sense sometimes tries to close the possibilities labelling as impossible those things that, in fact, would imply a structural and radical change and meanwhile builds on the imaginary of probable those implausible things that are suitable in their system (Garcés, 2002): a colonization of a planet (which is nowadays nothing more than science fiction) has more sense than a radical change on our economy and society. This common sense then, may be a nonsense.

Regarding nonsenses, David Harvey, a British geographer and Marxist theorist, in his article *The right to the city* (Harvey, 2008), analyses how capitalist economies require the destruction or assimilation of capital surplus to avoid its possible devaluation and crisis; they also need the expansion of markets, and the constant discovery of natural resources. He conceives the urbanization processes of the Second Empire Paris by Haussmann and the 1960s' New York by Robert Moses as ways of *creative destruction* of capital. Another important way of accomplishing this – Harvey says – is through war:

> Paris became "the city of light" the great center of consumption, tourism and pleasure - the cafés, the department stores, the fashion industry, the grand expositions all changed the urban way of life in ways that could absorb vast surpluses through crass and frivolous consumerism (that offended traditionalists and excluded workers alike). But then the overextended and increasingly speculative financial system and credit structures on which this was based crashed in 1868. Haussmann was forced from power, Napoleon III in desperation went to war against Bismarck's Germany and lost, and in the vacuum that followed arose the Paris Commune, one of the greatest revolutionary episodes in capitalist urban history. (Harvey, 2008: 26)

We see now how overproduction leads to crisis whenever the surplus capital cannot be destroyed or absorbed through the conventional mechanisms of our economy. I think we can analogize David Harveys' thought to the so called *spatial conquest* in these three aspects: it absorbs overproduction capital (as these programmes require massive amounts of public money), they are also the perfect symbol of the expansion of markets (terrestrial and extra-terrestrial) and in this sense, they enable the discovery of new natural resources. I am not trying to say here that these are the only purposes of spatial exploration, as the scientific research one remains true and maybe it is the major one, but I also consider rather naive to dismiss the fact that these spatial exploration programmes must have economic interests in mind and to think in terms of an ideal uninterested scientific research projects.

However, what I am reviewing here is the argument that we need to explore space because, on Earth, there is now (or will be soon) a lack of resources. Because, how can there be a lack of resources if multiple crisis have been produced and are being produced –sustains Harvey – by the impossibility to absorb all this surplus capital? And even if there was an actual lack of resources, which ones lack? I am certain that if it was food or water what was lacking, we would not be able to find now or in the near future a sustainable way of transporting them from outer space (wherever they are) to Earth. If there were required raw materials as rare minerals, iron or precious metals, which are not essential to our survival but required supplies to the viability of existing industries and the emergence of new ones, then the main argument (there is a lack of resources that potentially threatens our survival on Earth) is not any more feasible. We can conclude, then, that the problem is not a hypothetical lack of means on our planet but a political and economic system that demands destroying or absorbing surplus capital and, at the same time, calls for new natural resources and the expansion of its markets. This is not quite the same, and this is called to crash as this limitless economic system is embedded on a limited holistic ecological system, our planet, which is governed by entropic laws that are quintessentially different to the economic ones. This future clash between these two systems was analysed extensively in the *Limits to growth* by Donella H. Meadows and her team (Meadows *et al.,* 1972); one of their conclusions was that there must be applied constraints to growth as it is not possible an endless growth in a bounded biosphere; if restrictions are not to be applied, the question is not *if* we are going to face a global crisis, but *when*. (Meadows *et al.,* 1972: 183)

Nevertheless, if we look closely, we will see that there is something that is indeed lacking and that though we increasingly require it more and more, we could not get it even if we had the

fastest spaceship. We have plenty of matters on Earth but, as some philosophers and social scientists have pointed out, this crisis – that forces us to anxiously explore distant galaxies looking for a new home – is a matter of time.

3.2 A matter of time

As I have been saying, we live in a limited planet. *The Blue Marble*, one of the first images of our planet from outer space, taken by the crew of the Apollo 17 spacecraft on 1972, became the symbol of a rising environmental activism during the 1970s: the Earth was seen for the first time as a fragile, exposed and remote planet within the vastness of space (Petsko, 2011). This limited planet is, as said before, ruled by different laws than the economic ones and, therefore, by different temporalities as well. In this section I will follow the arguments made by the Spanish philosopher Jorge Riechmann in his book *Gente que no quiere viajar a Marte* (Riechmann, 2004), in order to explain why this crisis cannot be solved by adding more matter to Earth, or even by abandoning it, but – among others – by formulating radical changes to our liveable time, now identified with the time of production, which comes across – in some ways –to a physical-chronological time, born with Newton and the invention of the mechanical clock, and mostly dissociated from natural cycles. (Riechmann, 2004: 197)

Riechmann identifies four distinct temporalities that are not coordinated nor governed in the industrialized societies: (1) *the time of the body*, based on biological-circadian rhythms; (2) *the time of nature*, based on regeneration cycles such as seasons, animal migrations or the oscillation between the number of prey and hunters; (3) *the time of social life*, of *otium* as opposed to *neg-otium*, which includes freely meeting with others and political action or cultural activities inter alia; and finally (4) *the time of the industrial and financial system*, this is the abstract, homogeneous and chronological time that we carry confined inside our clocks, which has become a unique global time, accelerating itself with the emergence of the digital data and thus destroying traditional times such as day or night. (Riechmann, 2004: 202)

Nowadays one of our most significant problems is this clash of temporalities. Each clash corresponding to a major crisis, for example, the subordination of the time of body and social life to the time of the industrial and financial system turns out to be a care's crisis, which can be analysed from various perspectives: class, gender, ecology, etc. These times are colliding with the time of nature too. The crisis of care we are living has a deep ecological impact in the current context of cheap oil: households are now consuming – and polluting– more than ever (up to three times more than in the 1990s) but at the same time we see women working more

than their previous generation while men's work has almost not been increased (D'Alisa & Cattaneo, 2010).

Regarding the clash between the temporality of nature and that of the industrial and financial system, we see, in Riechmann words, how "the long times of our biosphere, with its equilibriums and transformations, collide against the "global time" of financial markets, cyberspace and telecommunications" (Riechmann, 2004: 203). As Riechmann points out, one of the first academics to theorize about this collision of times was Enzo Tiezzi, an Italian scholar, politic, and environmentalist, who identified this global time of instrumental rationality as opposed to the natural time (Tiezzi, 1990: 65). The natural temporality, which was described before as regenerative and cyclic, is ruled by entropy laws: in simpler words, as our bodies cells die gradually and locally to renew itself and therefore live more time, the Earth does the same; we cannot speak about a constant production but about a re-production. If we do not respect these re-production paces what we are doing is destroying and not simply producing or consuming resources.

Two examples Riechmann uses, and which I consider very clarifying, are the rate of production and consumption of fossil fuels and the loss of biodiversity our planet is suffering from. On one hand, we have fossil fuels that required around three-hundred million years to be *produced*, and which we have *extracted* almost completely in two hundred years: a million times faster. If we slowed down one million times our rate of consumption of fossil fuels we could consider them renewable sources of energy, as nature would re-produce them, but that is not very likely to happen. On the other hand, biodiversity is not something given we are losing now: biodiversity is self-re-produced at a very slow pace; Tim Ingold, a British anthropologist, calls this re-generation of difference *ontogenesis* (Ingold, 2011): an inclusive differentiation process instead of the so-called process of diversification of Nature. This biodiversity, a key element to our survival, is being devastated so fast that recent studies alert that if we do not reduce the destruction of wild habitats and stop the increasing temperatures we will have as many as the thirty to fifty percent of species headed to extinction by mid-century (Thomas *et al.,* 2004).

To conclude, our problems on Earth cannot be solved by abandoning it and looking for a new home, neither by acquiring more resources from outer space. The argument used that spatial exploration is a survival issue – which is based in a space-time confusion– cannot be sustained as long as it is grounded on Earth's false lack of resources or its human-caused degradation. As I said before, an exception would be made only on those extra-terrestrial threats (such as solar flares and meteorite collisions) that require further investigation. We have seen that our

crisis is not a resource crisis but a global crisis with multiple dimensions which require a deep thought and a radical swift in some essential concepts such as time, limits and regeneration, but most importantly nature itself.

We cannot import time from space, but we sure can steal it from future generations: and this is exactly what we are doing in order to sustain our economic and social systems, and thus our ways of life embedded on them. I suggest this should be called *temporal extractivism*: when facing the solidity in the walls of time, we: the human species, try to evade ourselves through the cracks of a space with no limits, not even caring that this space is essentially void. And, as we cannot get rid of time, we decide to dispose our limited space: the same space that supports life, joy and, of course, death and sorrow. I think we could compare this attitude to the figure of the ascetic that torments and sacrifices its own body (unique and singular) so as to achieve the eternity in some heaven invisible to the naked eye. But, maybe, we can also try to think once more our planet as what Nietzsche said about the human being in *Schopenhauer as Educator* and make an effort to formulate new answers:

> In his heart every man knows quite well that, being unique, he will be in the world only once and that no imaginable chance will for a second time gather together into a unity so strangely variegated an assortment as he is: he knows it but he hides it like a bad conscience - why? (Nietzsche, 1876: 127)

4. Our relationship with nature. The roots of the ethical problem.

The embryonic abandonment of Earth, as we have seen, responds to a lot of causes and not only to the immediate or long-term survival of our species. This possible *exodus* we have been discussing about is both physical: its outcome is a *colonization* of other planets, and psychological: when we admit that there is no other way but to depredate the resources of our home planet, and look for new ones that may sustain human life, we are abandoning it by our own actions. This abandonment is the same as neglecting our planet: we do not care anymore, and therefore, we do not dwell in the Earth but *use* it.

We said in the beginning of this dissertation that the problem of outer space is not only scientific, but ethical and political as well. The consequences of our current relationship with our natural environment are one of the main causes we want to *escape* from Earth even though we do not really know where we should escape to. It is needless to say that the values we confer to the environment play an important role in our relationship with it. As a matter of fact, in the scientific research of outer space we have described before it is not the life on Earth or Earth

itself we want to save – these may not be valuable enough – but human life alone. When talking about colonizing other planets or exploiting their resources we are understanding nature as a resource which can be used whenever we want to. These ethical problems we have mentioned before: the resource problem and the matter of time, are both embedded in the same conception of nature which makes plausible a human quest to space but, at the same time, labels as unthinkable an economy not based on growth.

The conception of nature as a resource is a topic some philosophers have actually been working on for decades. We see examples in the *Dialectic of Enlightenment* by the Frankfurt School philosophers Max Horkheimer and Theodor W. Adorno, likewise in the works of some *Deep Ecology* movement authors like Arne Næss and George Sessions, and in the later works of the German philosopher Martin Heidegger (*Building Dwelling Thinking*, *The Question concerning Technology* or *Serenity*). If we believe that this comprehension of nature is one of the central issues of the ethical problems we find in the research of outer space, I think there is a need to make clear that an ontological swift, or a collective transformation of our own comprehension of nature, is necessary to confront this problem. In the following section I will develop on the conceptions of nature we find in Heidegger's thought and I will comment on the possible answers given by some philosophers to a more respectful and caring relationship with our environment and, therefore, conceive our planet not as a disposable resource but the home it actually is.

4.1 The concept of nature as a resource

In this part, I will assume and develop the consequences of the idea that our conception of Nature – the way we understand it and the values we recognize in it– has a crucial relevance in the ethical problems we find in our relationship with outer space. Our own contemporary concept of Nature was analysed deeply by the German philosopher Martin Heidegger, who affirmed that there are at least five ways –historically set– to understand nature: (1) nature as *Vorhandenheit* (presence-at-hand), (2) as a subjacent essence, (3) as life that emerges from itself, (4) as a physical matter on Earth and (5) as a cosmic home (Lack, 2014: 94). In this dissertation I will focus on the first one to consider if there is a link between this dimension of Nature as presence-at-hand and the current intention to abandon Earth.

In the *Question concerning Technology* (Heidegger, 1954) Heidegger sustains that this dimension of Nature is revealed as the one and only truth expressed by modern technology. In contrast with the handicraft and non-modern techniques which are more related to the Greek

póisesis and *emerging from itself* conception, the revealing we see nowadays, through the lenses of the modern technology –says Heidegger– is a "challenging [Herausfordern], which puts to nature the unreasonable demand that it supply [sic] energy that can be extracted and stored as such" (Heidegger, 1954: 14). Here Heidegger does not say we should weave our own clothes again, but that the modern technology makes us conceive nature in such a way that other possible –and more authentic– disclosures may be left hidden in the dark. We see more clearly this comprehension in the following fragment:

> What kind of unconcealment is it, then, that is peculiar to that which comes to stand forth through this setting-upon that challenges? Everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Whatever is ordered about in this way has its own standing. We call it the standing-reserve [Bestand]. The word expresses here something more, and something more essential, than mere "stock." The name "standing-reserve" assumes the rank of an inclusive rubric. It designates nothing less than the way in which everything presences that is wrought upon by the challenging revealing. Whatever stands by in the sense of standing-reserve no longer stands over against us as object. (Heidegger, 1954: 17)

We see how the way we currently understand nature: as this standing-reserve that must be stored in such a way so that it may be "on call for a further ordering", relates to the one we use when discussing about outer space and our planet. The reification of the Earth –or nature– that is produced when we scrutinize the night sky looking for new planets to inhabit (as ours has not enough resources) primarily corresponds to the disclosure of Nature as an *enframed* standing-reserve that is both replaceable and valuable only for its position in mechanical systems like the social and economic ones. The Earth and its limits become something that must be *taken into account* but not essentially cared about: they are revealed as functional elements and not the main boundaries of the economic and technological modes of organizing ourselves as a society.

There is no discussion that nature might possess an economic and social value in some worldviews. At least, this is not the argument I am sustaining here when using this analysis of our comprehension of nature. The question that is important here is not whether nature has economic value or not, but if its main value should be the functional one. My intuition is that, if we find ourselves prepared to assert this, then we should re-examine the idea of nature we hold. Such a conception –as we have already seen– is related to our economic and political systems as well: when our ways of living are organized in such a way that we *consume* nature as a standing-reserve, it is obvious that the easiest way of maintaining them is to increase this storage which is commutative and can be easily substituted. We can momentarily grasp here

that the same operation that reveals the land as a coal mine (Heidegger, 1954: 14), or our food as caloric and nutritional input, uncovers the Earth as a spherical container of resources stockpiled waiting to be used, permanently present-at-hand, so that our current economic system– based on material growth and consumerism – does not change.

This hegemonic disclosure of Nature – Heidegger alerts – precludes other revelations, perhaps more authentic and original. We will not positively discuss here which ones should be taken into consideration when radically asking ourselves about Nature as the way modern technology uncovers it is something which according to Heidegger we cannot deliberately change: the essence of technology is not entirely human. Nevertheless, asking ourselves about its essence may save us (and the Earth) from the world this revelation is taking us to: "when asking ourselves about the technology we proceed towards its comprehension and we found ourselves, and the truth. Here, asking saves because it opens, it breaks totalities, dogmatisms and everydayness" (Esquirol, 2009: 101). We can conclude, then, that our mode to comprehend Nature — which is not an individual standpoint or worldview– is something we must ask ourselves about radically if we want to solve these outer space ethical problems without abandoning Earth: when we start asking ourselves we are –at the same time– taking care, and not *into account*.

4.2 A different approach to nature

In the last section I developed on how asking ourselves about our own concept of Nature, even if we do not have a definite answer, contributes to partially solve the problem of outer space. We must bear in mind, but, that despite not having a solution that might solve all the problems, there is a growing need for new philosophical and ethical propositions that help us understand better our relationship with our planet. These new proposals –as we have already seen– cannot be scientific alone, as the problem is not merely scientific, but should be sustained by scientific evidence when necessary: an ethical and political approach to our relationship with the planet that does not take into consideration the reality of climate change, the loss of biodiversity or the acidification of the oceans: all in all, the anthropogenic destruction we are responsible for, may be hiding rather than revealing new ways of living and thinking more sustainably.

In the last few decades, since the beginning of the ecological movement in the later sixties, we have seen a lot of proposals trying to establish a new mode of thinking and relating ourselves and our activities with the environment, usually in a more respectful and limited manner. Ecofeminism or the *Deep Ecology* movement, for example, partook in an important intellectual

effort to change our relationship with nature in both theory and praxis. However, this effort is not historically located and terminated: we are nowadays still discovering new ways of understanding the Earth and nature, from the degrowth movement to the dark ecology proposal by Timothy Morton, which considers obsolete the distinction between artificial and natural (Jiménez, 2016). Even Yves Charles Zarka, a Tunisian philosopher from l*a Sorbonne Université Paris Descartes*, who has tried –among other intellectual works– to formulate and give substance to a new ethical and political cosmopolitanism, published in 2013 an essay titled *L'inappropriabilité de la Terre: Principe d'une refondation philosophique* where he defends that when destroying the Earth, the human species is destroying itself as well (Zarka, 2014).

These proposals, though diverse and very different from each other, have something in common: while a few ones may be supporting ecocentrism or biocentrism and others may still be defending the predominance of human interests above others', they all coincide on the necessity of setting limits on these interests and their footprint in the world. The degrowth strategy, for example, through sharing and narrowing the productive activities, establishes a biological limit to the economic system; in the other hand, we see that the Platform of Deep Ecology states in its fourth point that "The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of non-human life requires such a decrease." (Devall, 2001: 23).

As we see, limits to the increased human interference with the natural world are an essential characteristic we must locate in any serious ethical answer to the abandonment of Earth. Nevertheless, this limited attitude towards our environment is not something that was born in the later sixties nor a character that should be built today; in fact, this approach to nature has been dwelling in philosophy for a lot of time: we find it, for example, in the works of philosophers like Ralph Waldo Emerson or Henry David Thoreau. Thoreau's writings, for instance, despite having been written in the beginnings of the industrialization of North America, have a lot in common with some of the principles we can see nowadays in the Platform of Deep Ecology or in the rewilding proposal by George Monbiot (Monbiot, 2013). We discover in Thoreau's work an ahead-of-his-time deep critique of the industrial society values we currently live by: though years have passed, his thought remains –in this aspect– fully valid today. Thoreau believed that the industrial civilization would lead people to a tripartite alienation: man and nature, man and others, and man and himself (Ma, 2009: 388). The human being in this industrial civilization –according to Thoreau– had started to see nature as a source of economic benefit and recreational value alone and had forgotten to breathe its

actual scent. We see in some of his views something that the Frankfurt School would work on a century later:

> By avarice and selfishness, and a grovelling habit, from which none of us is free, of regarding the soil as property, or the means of acquiring property chiefly, the landscape is deformed, husbandry is degraded with us, and the farmer leads the meanest of lives. He knows Nature but as a robber. (Thoreau, 1854: 165)

In Thoreau's critique to the current instrumental way of conceiving Nature we see one of the seeds that would eventually grow to be the forest that shades and gives shelter to a lot of the ethical, political and ontological proposals we have gone through in this last section. The defence of nature that some of these propositions share, can be understood as a commitment and a compromise to conserve the wild side of the world, so that we can relate to it in a more humble and non-dominant manner. These approaches have nothing in common with those conservative ideologies that try to go back to an ideal and rural past –rooted in the protection of both the small community and the national state– but with all those movements that fight against the political, economic and cultural forces that disaggregate and weaken our relationship with nature, others and ourselves. We consider that this conservation of Nature should be regarded as a resistance and not as a return: when we resist, we take a stand against something, we set limits to the outreach of our cultural, economic and political systems in such a way that we can co-exist and permit the flourishing of nature, others and ourselves. On the other hand, returning is most of the time a failed pathway: the eyes that look back may be turned into salt. This genuine co-existence –or letting things be– we discover and treasure not only in Thoreau's works, but in a wide range of both old and new philosophies, can only work when embedded in a self-limited mode of living, acting and thinking: as individuals and as a society living on a bounded planet. The abandonment of Earth apparently seems to vanish when its limits –as they were what we were escaping from– are not only honoured, but fused with our lives, actions and thoughts.

5. Conclusions

Outer space is a vast place much devoid of life as far as we know. Nevertheless, at the same time, it is a field of opportunities for science and mankind. Our relationship with it –as we have seen– is not a neutral one: as it strongly responds to our ethical, cultural and political principles and concepts. In the beginning of this work, I explained how a genuine ethics of outer space is needed to understand the implications of our own limited actions in the limitlessness of the cosmos, and how an ethics of the scientific research of space is indispensable if we want to understand the methods and beneficiaries of this research. Both ethical theories complement

each other, but concurrently, they are blind in their actions if they do not ask first the motives of this research: what do we see in outer space? Knowledge or a way out?

Whereas scientific knowledge of outer space is something we should never neglect, when its origin and destination are both the abandonment of Earth –first psychologically and finally physically– we must take a closer look and examine its motives and defences. As shown before in the *ethics of the scientific research of outer space* section, this survival or salvation discourse –which sometimes resembles the religious one– is used to justify some of these scientific investigations. This discourse is based on the solution of social problems by scientific methods, as it confuses the scientific problems with those that are social, ethical and political, as said in *the resource problem* section. We must overcome this discourse and try to build a different one, because "if we would survive and preserve both our natural heritage and our own humanity, we must at last discover how to solve, by social means, the social evils that threaten both" (Commoner, 1973).

A distinctive approach to answer our social difficulties – as the one of the lack of resources or the matter of time– requires a thought that not only wants to resolve the effects that our political, economic, and cultural systems are responsible for, but that also tries to modify the conceptions that sustain these systems as well. In this article, I have tried to synthesize a critique to the contemporary conception of nature as a standing reserve, and show some alternative proposals that are both old and new from a philosophical perspective. A different conception of nature, though, is not enough: in order to return to a more honest research of outer space, we must also try to build different concepts of progress – dissociated from the scientific and technological one–, and knowledge, among others.

To sum up, in this article we have seen how outer space is not only a scientific object, but a place where present and future, human and nature, meet in such a manner that when there is the first, the latter disappears. This is not the end of the railway: outer space is not determined to be our future home no matter we do. In fact, what we do, and the way we do it, is not only important, but essential if we want to see the sky, once again, as the starry roof of our unique home, and not as the dusty graveyard of the human species– and those we sweep away with us too. We may not need an apocalyptic discourse that leads to inaction, nor an optimism that once again states that this world we dwell in is the best of the possible ones: we can live, temporarily, in an in-between: a refuge to act locally, while we think again our planet and its future, so that *our* problems can be responded once again with the power of *our* own words

and not by the inertia of others'. As René Dubos wrote in his book *Celebrations of life* (Dubos, 1981):

> The human beings have always been and are creative because they are capable of integrating the pessimism of the intelligence with the optimism of the will […].
>
> In the course of history and prehistory, we have enjoyed the freedom to choose our pathway, to change the direction, and even to walk again our steps to achieve goals we have proposed ourselves. The determinist future operates in human life as in other forms of life; but it has been continuously and increasingly complemented by the desired future based on values and human aspirations.
>
> Like other human beings at all stages of prehistory and history, we are still on the way. We constantly renew ourselves by moving on, to new places and new experiences. Wherever human beings are involved, trend is never destiny because life starts anew, for them, with each sunrise. *Demain, tout recommence* (Dubos, 1981: 253).

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