

THE BIOLOGICAL AND CULTURAL GROUNDS FOR ETHICS: HANS JONAS AND FRANCISCO AYALA

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ABSTRACT: Regarding the epistemological borderlines between science and philosophy, this article approaches the human mind and ethics from biological and philosophical theories. For this purpose, the Darwinian theory of evolution by natural selection provides a scientific foundation to understand the human mind and ethics. However, not only Charles Darwin has studied mental faculties and ethics, this is also a topic researched by eminent contemporary paleontologists and biologists. Prior to modern biology, going back to Greek philosophy, philosophers have traditionally studied the human mind and ethics, separating human beings and the rest of nature ontologically. Following modern biology, the philosopher Hans Jonas has developed a philosophical biology from the perspective of hermeneutical phenomenology to understand life. With the help of his hermeneutical phenomenology, Jonas has presented an ontological theory of *organism-metabolism* to understand the phenomenon of life from simple living beings to the human mind in relation to nature, based on the body. Recently, the evolutionary biologist Francisco Ayala has proposed a coherent scientific and philosophical theory about biological and cultural roots for ethics, considering the evolution of human mental and intellectual capacities and the three conditions for ethical behavior as a part of human intellectual capacity, which scientifically complements and informs Hans Jonas's philosophical biology and ethics of responsibility.

KEY WORDS: Darwin; Ayala; Jonas; *The Phenomenon of Life*; Hermeneutical Phenomenology; Ontology; Bioethics; Natural Sciences.

Los fundamentos biológicos y culturales para la ética: Hans Jonas y Francisco Ayala

RESUMEN: Con respecto a los límites epistemológicos entre la ciencia y la filosofía, este artículo aborda la mente humana y la ética desde teorías biológicas y filosóficas. Para este propósito, la teoría darwiniana de la evolución por selección natural proporciona una base científica para comprender la mente y la ética. Sin embargo, no solo Charles Darwin investigó las facultades mentales y la ética, sino que también es un tema investigado por eminentes paleontólogos y biólogos contemporáneos. Antes de la biología moderna, volviendo a la filosofía griega, los filósofos estudiaron tradicionalmente la mente humana y la ética, separando ontológicamente a los seres humanos y al resto de la naturaleza. Siguiendo la biología moderna, el filósofo Hans Jonas desarrolló una biología filosófica desde la perspectiva de la fenomenología hermenéutica para comprender la vida. Con la ayuda de su fenomenología hermenéutica, Jonas presentó una teoría ontológica del *organismo-metabolismo* para comprender el fenómeno de la vida desde los seres vivos simples hasta la mente humana en relación con la naturaleza, basado en el cuerpo. Recientemente, el biólogo evolucionista Francisco Ayala propuso una teoría científica y filosófica coherente acerca de las raíces biológicas y culturales de la ética, considerando la evolución de las capacidades mentales e intelectuales humanas y las tres condiciones para el comportamiento ético como parte de la capacidad intelectual humana, la cual complementa e informa científicamente la biología filosófica y la ética de responsabilidad de Hans Jonas.

PALABRAS CLAVE: Darwin; Ayala; Jonas; *The Phenomenon of Life*; fenomenología hermenéutica; ontología; bioética; ciencias naturales.

INTRODUCTION

Hans Jonas has developed his philosophical biology in Canada and the United States with an academic basis. Above all, it was the experience of human mutilation and death suffered during the Second World War what shocked Jonas into thinking about the phenomenon of life based on the body, that is, science as a personally incarnated experience: «*Wissenschaft als persönliches Erlebnis*» (Jonas, 1987). After the Second World War, Jonas read Darwinian and biological theories from a philosophical perspective, but he has criticized the nihilism and dualism in the modern biological explanations of living beings because it is mechanistic and reductionist of the body. Historically, modern philosophy and biology are the background of Jonas's philosophical biology to better understand organic beings. Of Darwin's books, Jonas has not only critically considered *The Origin of Species* (1859), but also *The Descent of Man* (1871), regarding the human mind and ethics.

However, beyond the simple objectivity of modern science, in his philosophical biology, Jonas has also considered the subjectivity of each living being expressed through the body in a dynamic and dialectic relationship between objectivity and subjectivity. More than a scientific and mechanistic rationality to explain living beings, what is necessary is to understand the ontological process of life and death manifested in the body. Certainly, a modern human can explain nature objectively by scientific theories thanks to his or her reasoning, but since they are part of nature, they can also understand living beings from the subjective phenomenon of life. From a basic level of subjectivity, a human being is able to objectify ontologically living beings, thereby making an interpretation of the phenomenon presented by the body. This hermeneutical phenomenological approach could be a complement of scientific biological theories to *understand* the human being.

In this research, the term «Homo» explains some biological and cultural characteristics of modern humans that I discovered in Hans Jonas's philosophy and Francisco Ayala's biology. The subject «Homo» is not related to the paleontological «missing link» used to explain the evolutionary bridge between fossils of higher primates and humans, but at least, it helps us to explain some characteristics of modern humans expressed by the body. I attempt here to understand Hans Jonas' philosophical biology with contemporary biological theories related to the human mind and ethics presented by the biologist Francisco Ayala. But, I pay special attention to some scientific critiques of «vitalism» in Hans Jonas's philosophical biology made by the evolutionist Ernst Mayr. Notwithstanding, in order to understand the complexity of the human being in nature, not only regarding physical objectivity, but also subjectivity in the body, it is possible to go beyond the empirical «fact».

From the very beginning of his book *The Phenomenon of Life. Toward a Philosophical Biology* (1966), Hans Jonas says that it «offers an “existential” interpretation of biological facts» (Jonas, 2001, p. xxiii). When Jonas considers

«biological facts», he clearly refers to «scientific biology». For Jonas, science is the criterion of any knowledge about living beings, of what one can perceive as «outward facts». He not only focuses on «outward facts» following the scientific rules of the study of physical phenomena, but also on the «dimension of inwardness» of «organic existence» following an existential interpretation. The inward dimension of every living being expresses the life that animates the existence, which is subjectivity. Inward dimension is not a characteristic that belongs only to human beings; it belongs also to every organic existence. Outward and inward dimensions of the body are the ground where the dynamic between human beings and other living beings in nature is shared. What is interesting in the existential interpretation made by Jonas of biological facts is that a human being is able to know and understand the inward dimension of organic things, i.e., the phenomenon of life, because it is expressed in the living body by «outward facts». In the case of the human being, he himself is able to learn about the organic world, since he is also a living being, and about himself thanks to «awareness of self». Human beings can understand life and discover themselves in relation to the world, their freedom and survival requirements and, finally, they become aware of death.

According to Hans Jonas, the phenomenon of life cannot be understood correctly separating the functions of body and mind. For Jonas, the modern dualism of body and mind inaugurated by René Descartes does not permit an understanding of life because the Cartesian paradigm is materialistic and anthropocentric. What are important to understand life are the philosophy of the organism («Philosophie des Organismus») and the philosophy of the mind («Philosophie des Geistes») (Jonas, 1994, p. 15). In Jonas' words: «A philosophy of life comprises the philosophy of the organism and the philosophy of mind» (Jonas, 2001, pp. 1, 282). The phenomenon of life may be understood generally in living organisms and in the human mind particularly, thanks to the body. Life is comprised in the human being. Human beings belong to nature together with other living organisms and their own organism has the same basic characteristics of other living beings, such as metabolism.

Hans Jonas is not only concerned particularly with human beings, but also with living beings generally. In a certain way, in the «primitive» or «lowest forms» of life expressed in living beings there are traces and pre-figurations of the human mind, but the human is not simply the culmination of all forms of life, as the French naturalist Jean Baptiste Lamarck (1744-1829) explained in the book *Philosophie Biologique* (1809) where he postulated that the human being was the last, perfect step in nature (Mayr, 1997, p. 228). First, what Jonas wants to stress is that the human body and mind also belong to nature, as does every living being, and second, to distinguish the human being from the other living beings without separating them completely. In fact, the human mind works organically, and it depends on the metabolism of the body in relation to nature. This description provided by Jonas is the development of a hermeneutical phenomenology in order to establish a new ontology of living beings and, later on, human beings.

For Jonas, there is an Aristotelian organization of living beings «as an ascending scale» or «hierarchy» according to the forms, sensations, desires and movements until one reaches the culmination in the human capacity of «reflection of consciousness and the reach for truth». However, Jonas has found a different model to understand life in relation to the grades of perception of the body; it is the «progressive freedom of action». That means that the more evolved the organism is the freer it is. This new model follows the Aristotelian organization of living beings supported by the scale and degree that culminates ontologically in the human being, but it includes perception and freedom of the body as the capacity to move. The organic freedom of human beings is the ontological basis to develop an ethics of responsibility. In anthropological terms, «biology turns into ethics» (Jonas, 2001, p. 2). If the human mind is anticipated in every organism according to the scale of perception of the body, freedom should also be there. Even in basic levels of the organism, metabolism expresses freedom in relation to the world or nature. «Life is essentially relationship» and «transcendence» (Jonas, 2001, pp. 4-5). Consequently, a philosophy of life must deal with «the organic facts of life, and also with the self-interpretation of life in man. It must interpret both: it has an existential stake in both» (Jonas, 2001, p. 6). Hans Jonas has developed a hermeneutical phenomenology of *organic facts of life* and the human being in an existential manner, because he is biologically able to understand nature.

1. *HOMO PICTOR*

If the human being also belongs to nature like other living beings, because he has a body able to metabolize, the question now is about the human being and how he/she differs from other living beings in the animal kingdom. This question is biologically plausible given that there is a close relationship of humans to the apes (Mayr, 1997, pp. 228-230). In fact, there is a «hominid lineage» (Ayala, 2012, p. 130). Philosophically, for Jonas the main distinction of human beings from animals is their organic capacity of producing images in the mind and the eidetic freedom which relies on their hermeneutical clarity as an organic capacity. Scientifically, for biologists, even if human beings and apes are similar, the brain represents a radical difference: «Humans and chimpanzees are extraordinarily similar (...) while in brain development and associated behaviors they differ profoundly» (Mayr, 1997, p. 230). Even if we have external evidence of the human capacity for producing images by the mind and objects by the hands, such as tools, hearths and tombs, what is important for Jonas' understanding of human beings is the interpretation of the human internal experience. In other words, he has speculatively taken some evidence shown by scientific records, for example archeological and paleontological discoveries, and then he has made an interpretation of the external phenomena, since tools, weapons and tombs express the human capacity for producing images of

objects in the mind and in reality thanks to the body, distancing oneself from the objective world.

In the essay «Image-making and the Freedom of Man», Jonas described his philosophical approach: «A certain hermeneutic advantage, from which I wish to profit, lies in the relative simplicity of the phenomenon as compared, for example, with speech» (Jonas, 2001, pp. 157-158). The human faculty to produce images in the mind is a phenomenon that requires an interpretation from external evidence separate from the body, prior to the linguistic analysis. In fact, Jonas is more concerned with images than language, because images produced by the mind provide a more reliable and simpler ontological explanation of the world. Certainly, language is important to transmit culture, but the evolution of human language is not more important than «his large power of connecting definite sounds with definite ideas; and this obviously depends on the development of the mental faculties» (Darwin, 1981, p. 54).

However, there is something that biological facts alone cannot explain for an understanding of human beings, because the scientific evidence is insufficient, there are many gaps in fossil records and thus some «missing links» between bodies. In fact, Jonas is not dealing with the origin of humanity, neither the capacity of producing objects by hand nor the enlargement of brain. However, according to Jonas, the interpretation of the pictorial phenomenon of the human mind has displayed many elements to develop a new ontology of the human body. In a certain way, images of the world produced by the mind are a reflection of the human being himself and biologically this is only possible in the brain. Human beings have the capacity to produce images from the perception of reality to make a series of representations of objects in the mind, thanks to the perception of the bodily senses, and then to reproduce new objects in the world through their ideas. This is a hermeneutical process in the human mind that makes human beings unique in nature for Jonas. The results of this organic process in the human mind are the development of ideas about the world, the body and the human being him or herself as consciousness of their own existence in the world. Biologically, «in an important sense, the most distinctive human features are those expressed in the brain, those that account for the human mind and for human identity» (Ayala, 2012, p. 115).

In what follows, Hans Jonas has developed a hermeneutical phenomenology to understand human beings and animals. Certainly, Jonas has created a philosophical theory of the human mind, but it is important to understand the production of images by the mind, not confusing the brain biologically and the mind philosophically. In fact, «as biological understanding of the differences between humans and apes advances, there will surely be much left for philosophical reflection, as well as a plenty of issues with great theological significance» (Ayala, 2007, pp. 110-111). Ideas or images produced by the mind are also important philosophically for ethics like the brain carried along as a product or fact of evolution. Even if Hans Jonas has philosophically advanced the conception of eidetic freedom that affects the body and then the implications to develop ethics, it deals with some Darwinian theories about the similarities

and dissimilarities of animal and human beings. However, philosophically and biologically, the human being is different from animals because of the brain and the mind's capacities for human self-consciousness and identity, but both rest on the same ground of biological evolution. «Though Darwin believed that human intelligence and moral responses had their roots in the animal mind, he conceded that these faculties had yet developed far beyond those of our progenitors» (Richards, 2003, p. 109). Definitely, the human being has a special capacity to reflect ethically and objectively about his own actions, but he/she has also their subjective backgrounds in the animal ability to feel emotions and passions. In the book *The Descent of Man*, for example, Darwin was concerned with «fear» as a subjective dimension of morals, Jonas, as well, has considered «fear» related to ethics in the book *The Imperative of Responsibility*.

Normally, human beings can separate an idea from the object of reality and recreate it because of the mental mediation between the «organism» and the «environment». A human being has the mental capacity to take distance progressively and dynamically from the object to produce an idea. Ontologically speaking that means that the gap between the «organism» and the «environment» is filled-up for the human being. In a certain sense, it is metabolism, as an exchange of matter, which allows the mediation between the organism and the environment. Ontologically, the body here plays an important role as entity. For Jonas, «the growth of such mediacy can be observed throughout organic evolution» (Jonas, 2001, p. 183). For Mayr, ultimately «mind and consciousness do not form a demarcation between man and *the animals*», but there was a gradual emergence of the human mind «when language evolved» (Mayr, 1997, p. 241). However, «the faculty of language requires a prior substrate available only to humans: advanced intelligence as it exists in *Homo sapiens* and only in *Homo sapiens* among living beings» (Ayala, 2012, pp. 179-180). It is not only language as a biological capacity what makes the difference between animals and human beings, but also his *advanced intelligence*.

Philosophically, the case of human advanced intelligence is not enough to explain the particularity of human beings in nature, because they also have the capacity to produce and express their *ideas* as a result of a mediacy between the «organism» and the «environment». In fact, «the new mediacy consists in the interposition of the abstracted and mentally manipulable *eidos* between sense and actual object, just as on the level of animal mediacy the perception of objects was interposed between the organism and primary environment-relation» (Jonas, 2001, p. 184). Human beings not only have a perception of objects by the body's senses in relation to the world, furthermore, like animals, they also use this abstract mental capacity: *advanced intelligence*, to produce images and move the body between spaces, that is to say, the eidetic freedom. Freedom here plays an important ethical function, the responsibility for actions *vis-à-vis* the natural world.

Nevertheless, more than advanced human intelligence, from the subjectivity of perception by the bodily senses, like animals, human beings can build an objectification of images in mind from reality, as an organic faculty, and

then they can elaborate abstractly the idea of objects and the concept of the human being himself, when he becomes aware of his own existence in the world. «The fateful freedom of objectification, which confronts the self with the potential sum total of the “other”, the “world”, as an indefinite realm for possible understanding and action, can and eventually must turn back, with this burden of mediacy, upon the subject itself and make *it* in turn the object of a relationship which again takes the detour via the *eidos*» (Jonas, 2001, p. 185). The mediacy between the body and the world to take consciousness of him-self as a biological capacity requires also a question about the action of the subject «via the *eidos*». In the article «Evolution and Freedom», this principle is the so called «principle of mediacy» (Jonas, 1996, p. 72). The *principle of mediacy* permits not only the internalization in the human mind of the image of an object from reality according to the perception by the bodily senses, but also to externalize the idea towards the object with new features and the questions about his or her own behavior. Human beings not only use tools with their hands like most animals, but they can make new objects and tools more sophisticated through ideas because they can comprehend their value and usage for human action. Philosophically, the *principle of mediacy* will become shortly the organic foundation of ontology and ethics.

This relation and mediation to the world «via the *eidos*» permits a self-confrontation for the human being him or herself. A human being can *reflect* on itself in the world as an ontological image produced by the idea: «The new dimension of *reflection* unfolds, where the *subject* of all objectification appears *as such* to itself and becomes objectified for a new and ever more self-mediating kind of relation» (Jonas, 2001, p. 185). When the «*subject*» can and must make a «*reflection*» on him or herself thanks to their organic capacity, they also produce an «objectification» of their existence in the world as an ontology of the human being. In other words, they become «objectified» by themselves to create a new relationship with the world as a result of a self-mediation.

From the subjectivity of the perception by the body's senses, the human being can become self-objectified through the «idea of man» in relation with others as «the new entity, “I”. This is of all the greatest venture in mediacy and objectification» (Jonas, 2001, p. 185). This entity called «I» means mediation to the world and the ontological objectification of human existence. Thus «mind» and «consciousness» are not merely a fact; these constitute the reason why a human being can produce an image of him or herself in the world as well as the beginning of the ethical question. This externalized «image of man» constitutes the ontology of the human being, their own being in the world, as a result of a consciousness of being in the world related to others; it means here the origin of ethics. In fact, for Hans Jonas the *image of man* has three external dimensions of constitution and change related to society and culture:

- «1. “The image of man is worked out and entertained in the verbal intercommunication of society, and thus the individual finds it ready-made and thrust upon him”.

2. “As he learns from others to see things and to speak about them, so he learns from them to see himself and to express what he sees there ‘in the image and likeness’ of the established pattern”.

3. “But learning this, learning to say ‘I’, he potentially discovers his own identity in its solitary uniqueness. A private objectivity of the self is thus in constant rapport with the public image of man and through its own exteriorization contributes to the continuous remarking of the latter — the anonymous share of each self in the history of all” (Jonas, 2001, p. 186)».

Socially, the constitution and change of the *image of man* establishes ontology. First, the *image of man* is externalized by «verbal intercommunication of society» after achieving consciousness of himself in the world. The human faculty of producing images in the mind is not an isolated process for him; language is also important for Jonas because a human being can communicate his ideas in society, speak with others, and declare his existence to discover his identity. Hans Jonas would also affirm, as Ayala says, that «language is a distinctive possession of human beings» (Ayala, 2012, p. 180). Obviously, human intelligence is required on a prior basis to express his ideas by language. Second, a human being learns from others about them and then he learns to express what he sees «in the image and likeness» as a pattern discovering his human identity. From others, the human being also learns to see himself and discovers the human pattern. Third, a human being can discover his existence as «I», a «solitary uniqueness». In other words, it is a self-objectification of his existence in the world with others. The concept of self is related to the «public image of man» and his exteriorization saying «I» makes a contribution to others in history. Socially and culturally, the ontological *image of man* can be improved.

Biologically, according to Darwin, human «imagination» and «self-consciousness» were main topics of man’s mental powers (Darwin, 1981, pp. 34-69). The organic capacity of producing images and of taking awareness of him-, or her-, self is not simply a fact of anatomical traits and largeness of brain found in scientific records and theorized from fossils that makes the difference between animals and human beings. But rather, it is *language, verbal communication*, the encounter with others in society, the perception and the sight of others which permits the discovery of the *image of man*: the «human identity», as Ayala and Jonas have remarked. In fact, the *human identity* is a main issue in «ethical expressions» of Darwinian thought: «The manifest image of humankind thus takes a major hit at the hands of Darwin’s theory, and it is not clear how to maintain sensibly the central components of that image» (Flanagan, 2003, p. 378). For Jonas, the *image of man* is not simply the result of «imagination» and «self-consciousness», but an *ontological* production of the human mind that changes continuously through the history of humanity and in different cultures; it also establishes the ethics of responsibility because the human being becomes conscious of his existence in the natural world.

2. *HOMO CULTURALIS*

Even though human beings are able to establish an ontological *image of man* in history, this can change from society to society, after being part of a culture or civilization. According to the *image of man*, a human being is able to judge his own image internally and his conduct externally and then he can criticize socially the pattern produced by that image in a culture through history. Human beings can also produce a new *image of man* according to themselves and impose this concept of the *image of man* on society:

«In complete accommodation it [the history of all] may let itself be absorbed into the general model; in defeated non-conformity it may withdraw into its own solitude; in rare cases it may assert itself to the point of setting itself up as a new image of man and impose it on society, to replace the prevailing image (Jonas, 2001, p. 186)».

A particular idea of a human being can be immersed generally in the history of humanity; one can save his or her private identity, but in some rare cases the *image of man* can change in the process of evolution replacing the previous ontological image. Nevertheless, human beings are able to preserve the *image of man* ontologically, but they can also criticize and change rapidly their own image by genetic manipulation, as a matter of fact, when they are in disagreement with or dissatisfied by their own nature.

Scientifically, the paleontologist Steven Jay Gould (1941-2002) has also explained that *Homo sapiens* is an «entity», a distinctive existence from other living beings in nature, in spite of his biological contingency: «But only *Homo sapiens* shows direct evidence for the kind of abstract reasoning, including numerical and aesthetic modes, that we identify as distinctively human (...). Arguments of this form lead me to the conclusion that biology's most profound insight into human nature, status, and potential lies in the simple phrase, the embodiment of contingency: *Homo sapiens* is an entity, not a tendency» (Gould, 1990, p. 320). *Homo sapiens* has developed abstract, mathematical and esthetical reasoning as a fundamental characteristic in nature. Thanks to reasoning, human beings have arrived at a specific point in the evolutionary process by natural selection that permits a distinctive ontological characterization of their lives in nature. A human *being* is not a *tendency*, in fact he is an *entity*. Obviously, science here is very important to *explain* the process of evolution of human beings.

However, in his hermeneutical phenomenology of living beings, with the article «Tool, Image and Grave», Hans Jonas has criticized «Darwin's theory of man's *descent* from animals» because the process of natural selection was conceived reductively in mechanistic terms: «[Human] mental faculties are interpreted purely instrumentally, as means to this success, and the value, even the meaning, of what is specifically human is defined in terms of it» (Jonas, 1996, p. 76). The mechanical and instrumental viewpoint of the body does not permit an understanding of the human mind's internal characteristics. There

is something special in a human being beyond external animal characteristics of the body that mechanics cannot get to, such as the phenomenon of reasoning and imagination expressed by ideas and objects in human history and in different cultures. Philosophically, Jonas has tried to *understand* human beings considering human mental faculties according to his hermeneutical phenomenology. Actually, what is interesting in Jonas' perspective is precisely that he tried to connect the human internal specificity to reasoning and imagining with human external conduct in order to better understand human beings.

In a certain way, the hermeneutical phenomenology that Jonas has advanced to understand human beings philosophically, according to artifacts produced by the senses of the body and the human mind, in contrast to the Darwinian procedure in the theory of evolution by natural selection, is the process whereby a human being has used reason and imagination. Perhaps these organic capacities are similar to the anatomical characteristics of *Homo sapiens* that paleontologists search for in fossil records to distinguish those states with no change (equilibrium) and the sudden variation in short time (punctuation) of humans and cultures, that is the theory of «punctuated equilibrium» (Gould, 2002, pp. 952-957). This theory is supported by the fossil records, but it disregards the requirement of «missing links» between bodies.

In Jonas's words, «my choice falls upon tool, image, and grave, all of which appear among the remnants of the past long before the time of historical cultures, before the great temples of the gods and the written tablets» (Jonas, 1996, p. 78). These three artifacts show the creativity of the human mind and organic capabilities of the senses of the body to act in the world. But Jonas went beyond the faculty of producing images to distinguish states of what are human beings today: «With this intuitive evidence, *homo pictor*, the maker and viewer of images, teaches us that *homo faber*, the maker and user of tools, is as such not yet the complete *homo sapiens*» (Jonas, 1996, p. 79). Now, Jonas is searching here for the human purposes of using tools, the ideas separated from the object: *eidōs*. Certainly, he has a teleological perspective to *understand* human imagination and fabrication, but what is important for him after all is the idea of human beings expressed by the production of tools and artifacts. From this anthropological perspective, Jonas is not searching for scientific facts.

Because of the production of images internally by the human mind and the manufacture of artifacts externally by the body's senses, it is possible to get some ideas about human beings and their culture in the past. Philosophically, *Homo pictor* is the anthropological point of convergence between *Homo faber* and *Homo sapiens*, since he manufactures objects by hand and he produces ideas by mind. From this anthropological viewpoint, the so called «missing links» or the complete collection of fossil records of *Homini* are not unconditionally necessary to *understand* human beings, but, rather, we have an interpretation of the phenomenon of producing ideas by mind and manufacturing objects by hand.

The grave expresses ideas about human beings, beliefs, cults and culture. In «Tool, Image and Grave», Hans Jonas has emphasized that the grave is related to the awareness of human death and human existence in the body in space and time:

«But the commemoration of the dead perpetuated in the cult of the grave and in other visible ways is uniquely human (...). Among all beings, man is the only one who knows that he must die, and in considering “the afterwards” and “the there”, he also considers “the now” and “the here” of his existence — that is, he reflects about himself (Jonas, 1996, p. 83)».

The human being has awareness and memory of his physical existence in the world, of his own existence and the existence of others from the *image of man*. The grave is thus a historical symbol of metaphysical reflection by a human being about physical existence in the world, the organic event of natality and mortality. In fact, Jonas says that «metaphysics arises from graves». It is about an «interpretation of the totality of existence and to find an answer to it» (Jonas, 1996, p. 84). According to Jonas, «tool, image and grave» also explains something about art and culture.

For the Spanish biologist Francisco Ayala, these are some traits of human beings specifically different from animals: intelligence, self-awareness and awareness of death, tool-making and technology, ethics, religion, political institutions, legal codes and many other elements that constitute a culture (Ayala, 2012, p. 117). Ayala is not reducing here the explanation of a human being to a single point of evolution, but he is also extending the understanding of the biological condition of human beings. The difference between human beings and animals is not simply brain and intelligence as physical fact, but it could be also the consciousness of existence and the awareness of death, religion, ethics and technology related to civilization, as Hans Jonas has also asserted philosophically in his interpretation of the human phenomenon. Speculatively, when the biological evolution of the human brain occurred, human beings also developed culture and then they could transmit artistic and intelligent ideas from their experience and knowledge of the world, as a heritage from generation to generation, thanks to their mental and intellectual faculties. This could be just the beginning of an accumulative cultural evolution that goes beyond biological heritage because it is transmitted by the idea of the human being.

The French biologist François Jacob (1920-2013) has described scientifically the process of encephalic development which led to *Homo sapiens* in the enrichment of the mental representation of the external world. Beforehand, the information coming from the senses of the body is integrated in coherent images of the world to understand objects in space and time. Human intelligence is fundamental to produce symbolic representations of the world, the human brain is capable of saving memories of objects and events of the past and then the human being can imagine and re-imagine the future from the present to understand the consequences of human actions:

«D'un côté, les images mémorisées d'événements passés peuvent être fragmentées en leurs parties composantes qui peuvent alors être recombinaées pour produire des représentations jusque-là inconnues et des situations nouvelles ; d'où la capacité non seulement de conserver les images d'événements passés, mais aussi d'imaginer des événements possibles et, par conséquent, d'inventer l'avenir. De l'autre côté, en combinant la perception auditive de séquences temporelles avec certains changements de l'appareil sensori-moteur de la voix, il devient possible de symboliser et de coder cette représentation cognitive de manière entièrement nouvelle. Selon cette manière de voir, c'est secondairement que le langage aurait servi de système de communication entre individus, comme le pensent de nombreux linguistes (Jacob, 1995, p. 73)»¹.

The human capacity to produce and memorize images of the past and prevent possible events in the future shows the importance of imagination as a fundamental characteristic of human intelligence. The use of the senses to produce images proves the importance of the body for knowledge. Perhaps François Jacob is one of the contemporary biologists who better described scientifically what Hans Jonas has explained philosophically from his hermeneutical phenomenology of the living being.

A consequence of the development of the human brain also permits toolmaking and technology. Technology was also a part of the culture from the beginning of human existence and today sophisticated technology is an intrinsic element of our civilization. At the beginning, tools and artifacts are just a kind of technological development as a result of adaptation and sophistication of mental faculties that have evolved during human history. «With the advanced development of the human brain, biological evolution has transcended itself, opening up a new mode of evolution: adaptation by technological manipulation of the environment» (Ayala, 2007, p. 110). The development of human mental and intellectual faculties opened the possibility for more rapid evolution because of the use of technology in the environment. In other words, cultural evolution has permitted an innovative mechanism of evolution because human beings can take control of the environment through sophisticated technology.

After the publication of *The Phenomenon of Life* (1966), taking conscientious care of the risks for the *image of man* and nature in «Immortality and the Modern Temper» and «Practical Uses of Theory», Jonas has also developed a study of the «moral challenges of modern technology» in the book *Philosophical*

¹ «On the one hand, stored images of past events can be fragmented into their component parts which can then be recombined to produce previously unknown representations and new situations; hence the ability not only to preserve images of past events, but also to imagine possible events and, therefore, to invent the future. On the other hand, by combining the auditory perception of temporal sequences with certain changes in the sensory-motor apparatus of the voice, it becomes possible to symbolize and code this cognitive representation in an entirely new way. According to this view, it is secondarily that language would have served as a system of communication between individuals, as many linguists think» (Jacob, 1995, p. 73).

Essays. From Ancient Creed to Technological Man (1974). In fact, in the essay «Technology and Responsibility», Jonas considered that modern humans require a new ethics for «issues posed by the works of *Homo faber* in the age of technology (...). *Homo faber* is turning upon himself and gets ready to make over the maker of all the rest» (Jonas, 1974, p. 14). For Jonas modern humans are *Homo faber*, the human being is a maker, and even if he has developed mental and intellectual faculties to call him *Homo sapiens*, he needs some wisdom to use technology, that is to say «ethics» (Jonas, 1984, p. 9). Today the process of evolution goes very quickly because of the progress and application of sophisticated technology; the ethical issue is that *Homo faber* wants to take on his own evolution by controlling his own body.

The development of culture has also made a place for «the birth of civilization» as a «further division of labor and accelerated technological progress and particularly, in this century, medical progress» (Mayr, 1997, p. 244). From this scientific perspective, civilization should be also a part of the biological evolution of the human being, including contemporary technological and medical progress. Today our culture has developed a «technological civilization» as Hans Jonas has clearly remarked in his book *The Imperative of Responsibility*. The main risk that humanity takes today as a result of this technological and medical progress is that human beings may become punctuated as *Homo technologicus*, this is a technological being considered as the last step of biological evolution that may cease human nature abruptly or at least suddenly change the *image of man*, especially by genetic manipulation. That is why humanity needs responsibility today for a new ethics for *technological civilization*.

3. *HOMO MORALIS - HOMO ETHICUS*

According to Francisco Ayala and other biologists, ethics has its foundations in the biological evolution of the human mind, as Hans Jonas has also concluded in the transition and epilogue of *The Phenomenon of Life*, criticizing from his hermeneutical phenomenology of living beings, the mechanism, nihilism and dualism in some biological theories of his time such as evolutionary emergence or «emergence of forms» (Jonas, 2001, p. 51). For Jonas, the human mental faculty of producing images is a further degree of mediacy and freedom between the human organism and the environment through the interposition of ideas and objects: «The new mediacy consists in the interposition of the abstracted and mentally manipulatable *eidos* between sense and actual object» (Jonas, 2001, p. 184). By the *eidos* or idea of objects, human beings can establish a relationship between their organism and the environment in order to act in the world. Moreover, from the organic faculty of producing ideas from reality, human beings can also discover and establish ethics in ontology. In fact, in the «Epilogue: Nature and Ethics», Jonas has clearly said that «the ontological

quest may have carried us outside man, into a general theory of being and life, it did really move away from ethics, but searched for its possible foundation» (Jonas, 2001, p. 284). Later on, in *The Imperative of Responsibility*, Jonas would extensively develop his attempt to found ethics in the ontology of living beings as a connection with *The Phenomenon of Life*. Now then, from this ontological perspective, the interposition of technology between human beings and nature poses an ethical question today, because it can abruptly modify the state of biological evolution of the human body and human nature: «Man (...) is manipulating what the existing range of species makes available to him with the distribution of its mutant store and its further mutations» (Jonas, 2004, p. 571). Certainly, human evolution through technological manipulation could be successful because human beings have developed their mental and intellectual faculties, but for Jonas, in this technological civilization, technology represents a risk for humankind because of the manipulation of the environment and human nature. That means a certain type of transformation of the ontological *image of man*. Technology puts an ethical question to human freedom: «But now the whole biosphere of the planet with all its plenitude of species, newly revealed in its vulnerability to man's excessive intervention, claims its share of the respect owed to all that is an end in itself — that is: to all that is alive» (Jonas, 1982, p. 894).

Since the books *The Origin of Species* and *The Descent of Man* by Charles Darwin, morality and ethics has become a field of scientific study for the reason that the behavior and conduct of animals and human beings depends on their biological constitution (Darwin, 1981, pp. 70-106). For Darwin, morality deals with mental faculties, imagination, conscience, sociability, sympathy, instinct, feelings, and preservation. In a nutshell, morality deals with subjectivity. Obviously, the Darwinian conception of morals is not a philosophical theory of ethics to judge what is bad or good, correct or incorrect, but to understand the biological and cultural ground of our behavior and conduct. In the case of the human, he is *Homo moralis* like other animals because he has the biological capacity to learn from habits, customs and traditions, but he is at the same time *Homo ethicus* because he has the biological capacity to reflect and think abstractly about his own existence, behavior and consequences in the future. In fact, human beings reflect philosophically about human existence and behavior, thanks to their corporeal and mental faculties. This intellectual and ethical capacity was not given in a specific moment of history but in the process of human evolution: «*Homo sapiens* moves within the lifetime of the species from a state of amorality to one of morality» (Flanagan, 2003, p. 384).

In *The Origin of Species*, Darwin was concerned for the future of species, the «good of each being», for the integrity of body and mind, when he said in the last thought of his book: «Hence we may look with some confidence to a secure future of equable inappreciable length. And as natural selection works solely by and for the good of each being, all corporeal and mental endowments will tend to progress towards perfection. It is interesting to contemplate an entangled bank, clothed with many plants of many kinds, with birds singing on

the bushes...» (Darwin, 2009, p. 360). As a modern naturalist, Darwin also had a romantic perception of the ontological and good value of each living being, which *progress towards perfection* as a finality: «Despite having become a more reserved individual, Darwin yet portrayed nature in the *Origin of Species* in the manner that he had absorbed from his Humboldtian experiences during his youthful voyage of adventure, namely, nature as having a moral and aesthetic intelligence» (Richards, 2003, p. 101). From this Darwinian perspective, a human being also has a subjective approach to understand animal and human behavior and, thus, a biological and philosophical ground for ethics. Interestingly, Darwin is also dealing here with corporeal and mental progress and perfection. Nevertheless, «according to Darwin, having a moral sense does not by itself determine what the moral norms would be: which sorts of actions might be sanctioned and which ones condemned» (Ayala, 2012, p. 168). Certainly, there are biological grounds and mental capacities of human beings to reflect on ethics, but later on through history, culture defines values and norms from the basic level of the co-existence of human beings with nature.

Human beings are aware of their physical existence and actions in the world and so can reflect on their own behavior thanks to their «intellectual capacities» and «moral reasoning». In fact, «humans are ethical beings by their biological nature. Humans evaluate their behavior as either right or wrong, moral or immoral, as a consequence of their intellectual capacities which include self-awareness and abstract thinking» (Ayala, 2010, p. 530). In that sense, for Jonas, human beings also have the mental faculty to reflect on their physical existence and actions because of their being aware in the world. But more than a moral reason, a human being has the organic aptitude, from his subjectivity of the body, to realize the objectivity of «good» as an intrinsic «value» in living beings and, as a human being himself, to establish ethics due to his existence (Jonas, 1984, p. 50). This could be the fundamental biological capacity of a human being to judge his actions and behavior and then to generate norms, morality and laws in a culture or civilization.

According to this evolutionary perspective, morals have advanced in different cultures and civilizations as result of human evolution. Basically, a human being can judge his actions and the consequences for other living beings in time and space. For instance, there are three conditions for ethical behavior being part of the intellectual capacity of living beings: «the ability to anticipate the consequences of one's actions; the ability to make value judgments; and the ability to choose between alternative courses of action» (Ayala, 2012, p. 171). These three conditions deal with abstract thinking or mental imagination to control human actions and the effects or consequences thereof on others in the future (Marlasca, 2005, pp. 21-23).

First, to «anticipate consequences», humans can mentally link their finality and their effects on others by mental imagination of the reality. This biological ability is related to the construction and use of objects, tools with purposes or ends for survival and improving reproduction, for example: hunting. Even if this organic capacity was employed by human ancestors to hunt and survive,

it is concerned with «the ability to anticipate the future, essential for ethical behavior; is therefore closely associated with the development of the ability to construct tools, an ability that has produced the advanced technologies of modern societies and that is largely responsible for the success of mankind as a biological species» (Ayala, 2010, p. 532). In that sense, Hans Jonas was right to conceive a new ethics for technological civilization from his philosophical biology, considering the human mental capacities to produce images and objects as tools; it has to deal today with the responsibility for the production, use and consequences of technology in the future, for human evolution (Jonas, 1984, pp. 38-46).

Second, «the ability to make value judgments» is associated with mental abstraction and advanced human intelligence. Humans are able to judge values when they relate to others; «not dictated by one's interest in profit, but by regard for others, which may cause benefits to particular individuals (...). Value judgements indicate a preference for what is perceived as good and a rejection of what is perceived as bad» (Ayala, 2010, p. 533). If human beings are able to make ethical judgements, it is because they can discover values by reflecting on the existence of living beings as well as other human beings; they can also distinguish between good and bad. Hans Jonas has also asserted that human beings have the biological capacity to encounter ethics in the physical existence of other human beings, as was already mentioned in the three external dimensions to constitute the *image of man* (Jonas, 2001, p. 186). However, Jonas went further philosophically to base ethics on ontology, the ontological *image of man* and the intrinsic value of the corporeal existence of a living being as a «good-in-itself». Human beings are able to find a value for every living being from their teleology (Jonas, 1984, pp. 80-81). Briefly, mental abstraction and intelligence make it possible «to compare objects and actions with one another and to perceive some as more desirable than others» (Ayala, 2012, p. 173). So humans can make value judgements of objects, thanks to their mental and intellectual faculties.

Third, the last condition for ethical behavior is «the ability to choose between alternative courses of action». This statement includes two other aspects: the «personal conviction» to make decisions and the «exercise of our free will». These aspects based on human mental and intellectual faculties open the possibility to act with apparent freedom. However, this third condition is, in a certain way deterministic, because it places human free will in the «physical causal closure». In physical phenomena, human intelligence can predict the course of causes and follow their consequences. «A relevant point here is that free will is dependent on the existence of a well-developed intelligence, which makes it possible to explore alternative courses of action and to choose one or another in view of the anticipated consequences» (Ayala, 2010, p. 533). When a human being has the possibility to reflect and to act according to his intelligence, his decisions and actions may be assumed with responsibility because he can understand the finality. According to Hans Jonas, a human's freedom of the body also has a biological foundation; in his philosophical biology, freedom is

common to every living being in different degrees, but this is not deterministic. However, a human being's freedom demands responsibility because he can understand the finality of his ideas and actions beforehand. That is to say that human being can predict the consequences and so he must be responsible for his freedom (Jonas, 1984, pp. 90-98).

Finally, these three biological conditions for ethical behavior explained scientifically by biologist Francisco Ayala in «The Biological Foundations of Ethics» and paleontologist George Gaylord Simpson in «Biology and Ethics» (Simpson, 1969, pp. 130-148), are related in a certain way to *The Imperative of Responsibility*, because as Hans Jonas reflects in his hermeneutical phenomenology on the physical existence of human beings and other living beings in nature as the basic condition for an ethics of responsibility. In the appendix «Impotence or Power of Subjectivity. A Reappraisal of the Psychophysical Problem», Jonas has assumed two critical perspectives of that problem because the human mind cannot be condemned to determinism and physical restrictions:

«(1) that any action of mind on matter is *incompatible* with the immanent completeness of physical determination, that is, that the latter does not tolerate such an interference from outside: this I call the “incompatibility argument”; and (2) that the mental as such is also *incapable* of intervention, being nothing but a unilaterally dependent concomitant of physical events and lacking any force of its own: this I call the “epiphenomenon argument”. The first argues from the nature of physical, the second from the nature of the psychical» (Jonas, 1984, p. 207; pp. 205-231, 241-246).

This argument is very strong philosophically because the human mind is integral with the body. Refusing any dualistic explanation, the human mind is not compatible with matter, and thus, the human mind is not capable of intervention in physical events. Hans Jonas goes philosophically further than scientific determinism to establish an ontological foundation for the ethics of responsibility. That paleontological and biological understanding of morals must be considered prudently by the ethics of responsibility. Both theories are in accord in the sense that «moral codes, like any other cultural systems, cannot long survive if they run outright contrary to our biology» (Ayala, 2010, p. 536). Moreover, «the norms of morality must be consistent with biological nature, because ethics can only exist in human individuals and in human societies» (Ayala, 2012, pp. 174-175). Here, what Jonas and Ayala understand by biology is different philosophically and scientifically, but there is no doubt that ethics has a biological foundation and that morals can be transmitted and acquired by humans in culture or civilization.

Furthermore, the philosophical and biological question for Mayr is «what moral system is best suited for humankind?». Today one of the main ethical problems which concerns biology and philosophy is the relationship between humanity and nature or the so-called ecological crisis of our environment. According to Mayr, what is required today is «responsibility for nature as a

whole». But for him the concept of responsibility for nature is new in ethics: «The concept that humankind has a responsibility towards nature as a whole is an ethical notion that seems to have originated remarkably late» (Mayr, 1997, p. 268). Even if Mayr did not quote Hans Jonas here, this same statement was already established philosophically by Jonas in *The Imperative of Responsibility* when he said that «nature as a human responsibility is surely a *novum* to be pondered in ethical theory» (Jonas, 1984, p. 7).

Both, Mayr and Jonas considered responsibility as a new paradigm of ethics. «Interestingly, both [Mayr and Jonas] consider themselves as enlightened, post-Darwinian anthropocentrists, with responsibilities to humankind foremost, intrinsically conjoined with responsibilities to nature both for its own sake and our intricate implication in and dependence on a resilient, well-functioning, nature» (Donnelley, 2008, p. 275).

Concisely, for Mayr, responsibility must deal with the preservation of species and future generations of humans, but Mayr has never made claims about the cause of the ecological problem, which is the misuse of technology, as Jonas has insisted in many articles and books, especially in *Technik, Medizin und Ethik* (Jonas, 1985, pp. 15-52; Jonas, 1979, pp. 34-43; Jonas, 1982, pp. 891-898).

Maybe a new paradigm of ethics of responsibility for nature and humanity could turn the current *Homo technologicus* into a *Homo oecologicus*. The process of evolution guided by cultural inputs, such as ecological education, can change our technological mind to consider the consequences on nature and future generations caused by human abuse of technology. According to Darwin, a human being is able to recognize the consequences of his actions and his own virtues: «With increased experience and reason, man perceives the more remote consequences of his actions, and the self-regarding virtues» (Darwin, 1981, p. 165). That is why a human being is also able to improve his ethical dimension concerning humanity and nature.

CONCLUSION

As a science, biology can *explain* the evolution of living beings as a «fact». But more than a fact, in order to *understand* human beings and the «life» manifested in the body of living beings, philosophy needs more strong reasons to justify the origin and the foundation of ethics. The scientific objectivity of modern biological rationality can explain living beings from the combination of the Darwinian paradigm and modern genetics, but uniquely from this regard it could be difficult to understand the subjectivity of life manifested in the body, because it establishes «a new dualism» of «organism and environment» for the «interpretation of life» (Jonas, 2001, p. 52). From the hermeneutical phenomenology of life developed by Jonas in his philosophical biology it is possible also to find an ontology of living beings and then discover the richness and the intrinsic value of every living being in nature thanks to the human mind.

Against the banalization of biology as a science by pseudoscientific approaches, Mayr has argued that evolution by natural selection is not simply a theory, but also «a fact» (Mayr, 1997, p. 178). Certainly, that statement is scientifically correct against pseudoscience, but the issue is that this *fact* could turn easily into a materialism of the body and nature. In other words, the phenomenon of life in living beings should not be reduced to a mere physicalist explanation of the body, life is more than a body explained objectively, since Jonas has paid attention to the interiority or subjectivity of the *organism-metabolism*. Respecting the epistemological domains, there should be no opposition between science and philosophy in understanding life as a whole. For the comprehension of life to be enriched reciprocally and for ethical proposes related to ecological crises, biology and philosophy must work together, even if both bodies of knowledge follow different methods and paradigms.

For instance, Ernst Mayr has explained scientifically the many uses of teleology in biology and he has rightly excluded cosmological teleology is not part of scientific theory (Mayr, 2004, pp. 39-66). He used to refuse the use of teleology in biology, but he has accepted lately the teleological explanation of some animal behaviors: «Much recent work in animal behavior has since convinced me that I was mistaken. Purposive behavior that is clearly goal-directed is widespread among animals, particularly among mammals and birds, and fully qualifies to be called teleological» (Mayr, 2004, p. 57). «Purposive behavior» has confirmed that Hans Jonas was also right when he has understood teleology in living beings from his hermeneutical phenomenology in *The Phenomenon of Life*, to then provide a basis for ontology and ethics in *The Imperative of Responsibility*, even if Mayr has considered *a priori* Jonas's philosophical biology as vitalism (Mayr, 1982, ed. 2003, p. 75; Mayr, 2004, p. 25). Mayr has criticized many biological and philosophical approaches to biology reducing to a mere scientific «fact» the meaning and understanding of life. However, Jonas has considered the phenomenon of life between the limits of modern philosophy and science going further than mechanistic and dualistic explanations of the body. According to Jonas, teleology elucidates the search for life in living beings (Trnka, 2015, pp. 45-48); teleology helps to understand the ontological value of living beings as a physical existence that «ought-to-be» (Jonas, 1984, pp. 83-84).

As a matter of fact, the botanist and ornithologist Alexander Frank Skutch (1904-2004), who studied birds for more than 60 years in Costa Rica, considered that birds have mental capacities, purposes, «protomorality» and «parental behavior» (Skutch, 2007, pp. 53-92, 79-87; Skutch, 2004, pp. 41-59, 52-56). His naturalistic viewpoint proposes that birds also have subjectivity; they have the capacity to take care of their offspring, they have memory and anticipation, they have a sense of *responsibility* and thus a *goal* or *purpose* in their behaviors (Skutch, 1997, pp. 6, 152). It is the search for life which demonstrates this finality or teleology, as also Hans Jonas has remarked to understand the phenomenon of life and the subjective aspects of the ethics of responsibility, even though it is the human being who can direct the ends mentally and consciously (Jonas,

1984, pp. 59-64). Hans Jonas's biological philosophy is not simply a vitalistic theory of external forces in nature because he has considered some biological backgrounds from the naturalist viewpoint provided by his hermeneutical phenomenology in order to better understand life. Scientifically, the theory of evolution by natural selection could also be explained from the teleological perspective (Morange, 2012, p. 71).

Even if other species, such as birds and apes have some biological disposition for ethics, it is only human beings who have the corporeal, mental and intellectual capacity to establish theoretically an ethics of responsibility for humanity and living beings on earth, in our technological civilization, in order to preserve human existence for future generations. Human beings are not a simple animal; unquestionably they are part of nature; however, they have the organic aptitude to go beyond mere animality thanks to their mental capacity for abstract thinking. Furthermore, humans create images, ideas, sophisticated objects and ultimately science and technology, as part of a culture and civilization. However, human beings have awareness of their own corporeal existence in the world and they can understand ontologically the existence of other living beings since they are also part of nature. For instance, human beings have established the ontological *image of man*, even though it can change drastically through the misuse of technology. According to their biological capacity, human beings are able to understand deliberately the world where they live with other living beings and so they are able to theorize and practice responsibility towards nature and the *image of man*.

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