Research Article

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The Meaning of Human Life in the Context of the Evolution of the Universe: V. I. Vernadsky and P. Teilhard De Chardin

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Abstract: The authors of the paper reflect on the meaning of human life in relation to the universe, drawing on scientific knowledge about evolution and highlighting interconnections between anthropological and cosmological issues. The paper considers the inspiring ideas of V. I. Vernadsky and P. Teilhard de Chardin, especially their understanding of the noosphere. Despite Vernadsky's and Teilhard's contrasting interpretations of the noosphere, the authors conclude that both consider the meaning of human life to be about self-improvement and taking responsibility for future evolution.

Keywords: meaning of life, evolution, universe, noosphere, V. I. Vernadsky, P. Teilhard de Chardin

1 Introduction

The meaning of human life is a key topic in philosophical,[1] theological, psychological and other research. In our paper we will focus on a philosophical-anthropological approach

1 M. R. Johnson, in a thought-provoking and inspiring article, states that the first European philosopher to engage in a systematic philosophical exploration of the problem of the meaning of life was Aristotle. "From an Aristotelian perspective, in asking about life's 'meaning', we may be asking either a theoretical question about the definition of the term life (and this either generically or with specific reference to human life), or a practical question about the final end or purpose of life (or human life)" (Johnson, 2018, p. 56). In our article, we concentrate primarily on the question of the meaning of human (humanity's) life, but we also link it to the question of the evolution of the universe and of life, and thus to the question of the meaning of life in general.

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and distinguish between the theoretical and the practical level. Both concern the understanding that humans are individuals and a biological species (*Homo sapiens*).

The starting point for the various philosophical anthropological approaches to understanding the meaning of human life is the definition of a human being.[2] Our understanding of humans is founded on the simple yet fundamental statement that humans are above all *relational beings*. That means that they are formed, essentially constituted, because of their ability to relate: to themselves, other beings, nature, society, God and the like; in other words their capacity to relate to both the internal and external world.[3]

From the existential practical point of view, the meaning of a person's life can be characterised as the experienced state of their present (and perhaps also potential) connection and unification with the existing world; they accept things that are meaningful to them, that hold value and fulfil them. Individuals can understand themselves and the world around them only because they have both the possibility and ability to unify with the world, whilst also maintaining distance. This allows them to maintain their own life dynamics and personal integrity, even in harmful or painful situations that cause them suffering. This mental capability has evolved through adaptation to the environment and out of the basic instinct for self-preservation.

When considering the meaning of humanity at the biological species level, or its meaning or place in the universe, not every person has to have or experience this relationship and unifying with the world.[4] Nevertheless, from a philosophical-anthropological point of view, one can quite justifiably talk about the meaning of human life (both as an individual and as a biological species) in the context of the entire evolution of the universe, that is, to link philosophical-anthropological investigation with cosmological investigation. We agree with the Polish cosmologist, physicist and theologian Michał Heller that the meaning of human life and the meaning of the universe should be approached as two sides of the same question (Heller, 2018, p. 203).

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2 The basic definitions of human vary enormously and so there is no point comparing them here. We shall simply note that each of them concentrates on a key characteristic that is integral to humans, e.g. reasonableness, intellect, morality, the ability to sympathise, love, be a free and responsible being, etc. The definitions of human complement one another and on that basis we implicitly accept them.

3 The relationship between humans and the world both differentiates them from the world and in some essential way enables them to connect, "unify" and identify with it. At each moment in life, the individual has to examine not just themselves, but also the external conditions of their existence (more details, see Plašienková, 2015, pp. 35–50.

4 The loss of the feeling of unity with the world in which humans have "their place" for a full life can often lead to the complete loss of the meaning of life.

In our paper, we draw on general scientific knowledge on the evolution of the universe and humans to reflect on the meaning of human life in relation to the universe by considering the inspiring ideas of two contemporaries and important representatives of world science and philosophy in the 20th century. They are the Russian geologist and scholar of Russian cosmism, Vladimir I. Vernadsky, and the French palaeontologist, philosopher and theologian Pierre Teilhard de Chardin. Both thinkers (albeit through different lenses) highlighted the need to understand the relational context between humans and the universe and considered humans to be the primary cosmic phenomenon and force. And that has a significant effect on the ongoing evolution of humans.

2 Cosmology Yesterday and Today

The nature and organisation of the universe has fascinated both philosophers and astronomers for millennia. Hence it is quite natural that their efforts to understand the "architecture of the universe" have led to various types of cosmology. The dawn of cosmology in European culture can be considered the dawn of philosophy itself. Polish-American philosopher Henryk Skolimowski even claims: "There are many different cosmologies as there are many different philosophies." (Skolimowski, 1992, pp. 6, 7). He is not of course saying that it is impossible to talk about contemporary physical cosmology, but merely wishes to remind us that no one has a "monopoly" on the term cosmology.[5] He believes that speculativeness is common to all cosmologies, including contemporary physical cosmology. Consequently the basic questions about the universe (where it comes from, where it is heading, whether it has a beginning, what came before it, etc.) posited by all types of cosmology is metaphysical.[6] "In their very nature, past and present [physical] cosmologies are similar in structure. They are speculative and highly conjectural" (Skolimowski, 1992, p. 6), but cannot be denied the effort of knowing the truth. They differ in inclination to seek a certain perfection and beauty in the universe, which was derived from the Creator.[7]

But perhaps the most important difference between the past and present understanding of the world (its origin and development), according to the German

5 The author defines cosmology as any coherent or "semi-coherent system of beliefs that tries to explain the structure of the universe, and to explain our place within … Historically, therefore, we have had, and still have, hundreds of different cosmologies." (Skolimowski, 1992, p. 9). He adds: "In the twentieth century, before astrophysicists rallied round the term, 'cosmology' had been resuscitated in philosophical literature by Teilhard de Chardin, particularly in his opus *The Phenomenon of Man*." (Skolimowski, 1992, p. 9).

6 However, the question remains unanswered: Which metaphysics is the right one?

7 Here we have in mind such astronomer-philosophers as Copernicus, Kepler, Galileo and others.

philosopher Mutschler (2000), rests in the fact that the classical cosmologies, aside from explaining celestial phenomena, also underpinned human actions, "lent" meaning to them, which is something contemporary physical cosmologies no longer do.[8]

One could say that the gradual loss of the idea that the mutual interconnection between humans and the universe went hand in hand with efforts to find a more "objective" scientific description of nature (the universe).[9] That may well be why contemporary physical cosmology and science cannot provide answers to the basic question about the meaning of the universe (and so do not even attempt to identify how this relates to the question about the meaning of human life). Ultimately, that is not their mission. Seeking answers to questions about the meaning of the universe and human life is the realm of philosophical research, although the latter of course takes into account the conditions and possibilities of the existence of the world and human beings. In other words, it also posits questions about the evolution of the universe, life and human. To talk about the meaning of human life in the context of the evolution of the universe therefore requires natural science knowledge (mainly astrophysics, biology, and astrobiology).

From the existing research conducted into our earthly world and the universe, we know that there is no evidence of the existence of life in our planetary system apart from that found on Earth. Although the research on comets and meteorites[10] has confirmed the existence of certain elements and compounds that we associate with the Earth's primordial atmosphere and therefore with the origin of life (carbon, carbon monoxide and carbon dioxide).[11] Although science has yet to unequivocally

8 As the author states, even for Kepler, the mathematical ratios in the universe expressed meaningful connections and so the universe itself was not devoid of meaning (Mutschler, 2000, p. 12).

9 But the cosmos is not like other natural physical objects; it cannot be circumnavigated or seen in its entirety from a distance; it does not appear to us as a real substance; often it is revealed through relations in mathematical equations, i.e. as a construct. One should also remember that many of the generally accepted principles of simplicity were introduced into physics as metaphysical assumptions, based on the assumption that nature is simply built within its foundation.

10 In critiquing the theory that life was "brought" to Earth from the cosmos – the theory of panspermia – Donald Goldsmith and Tobias Owen objected that there was a strong correspondence between the concentration of trace elements in today's living organisms and in sea water, which in their view could only be explained by the fact that life originated on Earth (Koltermann, 2000, p. 54).

11 In the volcanic regions of Iceland and the Italian island of Vulcano, scientists have discovered archaebacteria that convert hydrogen and sulphur into hydrogen sulphide, from which they obtain energy. They create their biomass from carbon dioxide and die in the presence of oxygen. In other words, these bacteria have adapted to the conditions of the primordial atmosphere. As Koltermann states in this context, "since free oxygen was lacking in the original atmosphere, due its occurrence in today's atmosphere, a repetition of the original origin of living organisms can never be achieved. As soon as it firmly established itself, life cut off the possibility of a new beginning." (Koltermann, 2000, p. 55).

provide an answer to the question of the origin of life, many scientists or thinkers assume there is an evolutionary connection between inanimate and animate nature.[12] Back in the first half of the twentieth century, Vladimir I. Vernadsky (1863–1945) and Pierre Teilhard de Chardin (1881–1955) described the differences between inanimate, living and living "thinking" matter as well as the mutual relationship and dependence between them. Moreover, they identified the direction of the evolutionary process and the role and position of humans within it. In other words, they attempted to explain the meaning of human life in the context of the evolution of the universe.

3 Humanity as a Cosmic Force

For both Vernadsky and Teilhard de Chardin their basic framework was the unity of the evolutionary process. A hundred years ago, Vernadsky[13] elaborated his conception that the biosphere was a biogeochemical phenomenon and that humans were the result of a complex cosmic process and a regular, essential part of the planetary mechanism, in which nothing happens by chance.[14] As Vernadsky states, his concept of a biosphere "inspired the Bergsonian mathematician and philosopher Édouard Le Roy to use the neologism 'noosphere' to designate the current geological stage experienced by the biosphere." (Vernadsky, 1989, pp. 148–149; also 1988b, p. 509).

In 1936, in a letter to his friend B. L. Lichkov (15.11.1936), Vernadsky announced that he had presented a new understanding of the noosphere – one that differed from the one that Le Roy and Teilhard had spoken about – "which enables us to see the historical process of humanity as a continuation of the biochemical history of living

12 Recently it became possible to synthesise an organic substance from an inorganic substance under laboratory conditions (see Haas et al., 2020).

13 Vernadsky's name is associated mainly with the founding of genetic mineralogy and geochemistry. He was the author of the evolutionary theory of the origin of minerals. His work would help reveal the relationship between the form of a mineral crystallisation, its chemical composition and its genesis.

14 Vernadsky worked in 1922–1923 at the Sorbonne. At that time, P. Teilhard de Chardin was working in Paris as well and was president of the Geological Society of France (Société géologique de France). Vernadsky's research stay in Paris resulted in the monograph *Géochimie* [Geochemistry] (1924) published in French, as well as the innovative article "L'Autotrophie de l'humanité [Human Autotrophy]" (1925) and later a monograph in Russian *Биосфера* [The Biosphere] (1926), the volume *Очерки геохимии* [Essays on Geochemistry] (1927) and other publications on problems in geochemistry, biogeochemistry and radiogeology.

matter." (Vernadsky, 1989, p. 178).[15] In 1943, he wrote that the noosphere is "a new geological phenomenon on our planet.[16] In it, man becomes the strongest geological force for the first time. He can and must through his work and mind reshape the area of his life, radically transform it compared to what was before. Wider and wider creative possibilities are revealed to him." (Vernadsky, 1989, p. 149). This rather naive faith in the power of progress even led him to wish that his grandchildren's generation would come closer to what these possibilities offered: "Quite fairy-tale dreams are proving to be possible: man is trying to go beyond the borders of his planet into the cosmic space. And he will certainly succeed" (Vernadsky, 1989, p. 149). Nonetheless, one has to acknowledge that many of his dreams eventually came true.[17]

Vernadsky views the noosphere through geochemical transformations that both reshape and turn it into a transforming biosphere. In his view, a significant part of this new geological force is down to the enormous leverage that science and technology are able to exert in the hands of humanity. He incorporates both these forces – the power of thought[18] and the power of technology – into his model of the Earth, which represents five different but mutually interacting layers: 1. the lithosphere – the core consisting of rocks and water, 2. the biosphere – made up of life, 3. the

15 As Vernadsky states, his concept of a biosphere "inspired the Bergsonian mathematician and philosopher Édouard Le Roy to use the neologism 'noosphere' to designate the current geological stage experienced by the biosphere." (Vernadsky, 1989, pp. 148–149; also 1988b, p. 509). Le Roy popularised the term noosphere in his lectures at the Collège de France in 1927, but he emphasised that his friend, the distinguished geologist and palaeontologist Teilhard de Chardin played an important role too. Teilhard claimed to have proposed or co-proposed the idea of the noosphere in a letter to his friend Théodore Monod in 1954; however, he did not retrospectively exclude the possibility that Vernadsky could have come up with the same term independently. In fact, Teilhard de Chardin used the term 'noosphere' for the first time in 1925 in his essay *L´Hominisation* (Teilhard de Chardin, 1957, pp. 75–111).

16 In this context, it is interesting that Vernadsky mentions that the "geological role" of man had already been thought up by A. P. Pavlov, who used the term "atropogenic era" in this sense (Vernadsky, 1988b, p. 508). We might suspect that here lies the germ of what is now known as the Anthropocene, a term proposed by Crutzen and Stoermer (2000) at the end of the millennium to characterize the present geological epoch. The Anthropocene is now mainly used to refer to the fact that humans have become a significant reshaping force on planet Earth.

17 The hallmark of the 20th century is its boundless belief in progress and the subjugation of nature to human needs. As Gaviria Vélez notes, in the bipolar world of the time, neither capitalists nor marxists (with a few exceptions) thought nature could absolutely and objectively limit the expansion of the productive forces. In the USSR, Borodin, Vernadsky and others contemplated the idea that there were such limits, but they were silenced by Stalinism (Gaviria Vélez, 2018, pp. 306–308).

18 If we keep in mind the historical context of contemporary knowledge on the functioning of the brain, his thinking on this supposed mystery will not surprise us: "The mind is not a form of energy. So how can it change material processes?" (Vernadsky, 1988b, p. 509). Despite this doubt, Vernadsky recognises the power of the mind as the driving force of evolution.

atmosphere – a gas envelope constituting the air, 4. the technosphere – resulting from human activity and 5. the noosphere – the sphere of ideas.

Vernadsky's teachings on the geological role of living organisms, and especially humans, caused a genuine revolution in the natural sciences: living, thinking matter reshapes its surrounding environment. "The surface of the planet and the biosphere rapidly changes chemically due to the conscious, but mainly unconscious actions of man. The envelope of air over the land and all the land's natural waters are changing physically and chemically. In consequence of the growth of human culture in the 20th century, coastal seas and parts of the ocean began changing more and more violently. Man as a result must take ever more extensive measures to preserve for future generations the riches of the sea that do not belong to anyone" (Vernadsky, 1989, p. 149). As should be obvious, Vernadsky felt very strongly that the biosphere had to be protected from humans; he foresaw that human activity could potentially have a harmful effect on the environment given that previously unseen geochemical processes and substances were appearing on Earth, for example, a whole range of metals that had not previously existed in pure form on the planet (e.g. aluminium, potassium or calcium) are now being created in huge quantities. With the emergence of new species, flora and fauna are also changing radically; in the course of a few centuries, geochemical activity has greatly intensified and multiplied through agriculture, which uses vegetative matter. Human activity is leading to new kinds of actions affecting living matter and the processes of exchange between the atoms of living matter and of non-living matter. The creation of new compounds therefore represents an anomalous change to the surface of the planet.

Without the human brain, there would be no scientific thinking, and without scientific thinking there would be no geological effect – the transformation of the biosphere. In Vernadsky's understanding, the whole biosphere (including the anthroposphere and the noosphere) is a special kind of cosmic organism. This is indicative of a human role (in terms of responsibility and therefore also meaning) in the evolution of the universe: the effort to preserve life in it. "Scientific knowledge, which is expressed as the geological force forming the noosphere, must not lead to results that are in conflict with the geological process of which it is a creation." (Vernadsky, 1988a, p. 28).

4 The Universal Goal of the Universe

Although Teilhard's understanding of the noosphere is certainly better known than Vernadsky's, what is less well known is that Teilhard developed this concept over a long period of time. He was searching for the most suitable term for what he

considered to be the characteristic feature of planetising (or globalising, in today's vocabulary) humanity. He began with the *physical existence* of human unity, which he had felt on the front during the First World War.[19]

To understand Teilhard's conception of the noosphere requires us to remember that it is a particular type of project,[20] that, in Teilhard's view, describes above all a *spiritual* evolutionary direction. Teilhard points out that if the noosphere is still forming, then it is an evolutionarily forming sphere (a product of noogenesis) and relates to the entire species of *H. sapiens*; we can also view it as the continuation of *biological evolution* (on Earth and in space). In this sense, it is *the higher stage*, although it has to be rooted in the *pre-human* stage, just as all living things are rooted in the *pre-living* stage. From this perspective, the forming noosphere is the final stage of evolution on the anthropogenesis level, that is, the process of humanisation (which becomes the process of supra-humanisation).[21] Teilhard emphasises the dynamism and processualism of the noosphere in the sense of noogenesis, which cannot be reduced to, for example, the cultural creation and civilisational heritage of humankind. His understanding of the noosphere is semantically broader than *civilization* or *culture*; the noosphere is at the same time a structured system that represents the differentiated unity of many individual reflections combined into a single act of common reflection, or *co-reflection*. Here all human thoughts, feelings and desires are intertwined, and ever more intensely so in the successive stages of development. Teilhard put it thus: "Nations and civilizations have reached such a degree of external relations, economic dependence and spiritual communication that they can no longer grow in any other way than by intermingling." (Teilhard de Chardin, 1955, p. 280). According to Teilhard, the noosphere is created thanks to three basic properties of the biological species of humanity: reflection (the ability to think and self-awareness), creative invention (mental ingenuity) and the ability for

19 In his works from this and later periods, one can find very similar terms to noosphere: the great monad, the soul of the world, superhumanity, the collective soul, superhuman. One example is his *Écrits du Temps de la Guerre (1916–1919)* (Teilhard de Chardin, 1976) containing several of his essays (La Vie cosmic, La Christ dans la Matière, L' Union créatrice, La Grande monade, Mon Universe and many others).

20 In 1947, Teilhard wrote an essay on the noosphere in which he gave a pithy explanation of its birth and structure (Teilhard de Chardin, 1959, pp. 177–204).

21 In this context, the question arises: can an individual be a part of a being that arises as if *above them*? Perhaps this can be understood as a cell that is part of a collective (but organic) reality? This idea is typical of the intellectual framework of Teilhard's thinking, the idea that an individual can develop only within a common, collective reality as a higher organism – humanity. The individual is therefore one cell in a whole, but that whole has to be internally organised. He often calls this higher organism superhumanity or ultrahumanity. (But it is not the semantic equivalent of Nietzsche's term *superman*).

"conspiracy" (in the sense of common thinking, co-reflection).[22] For Teilhard the development of the future noosphere may proceed in three main directions: the organising of scientific research, focusing research on man as an object of knowledge and connecting science and religion.

As is evident from Teilhard's ideas, humanity can achieve spiritual growth only if we assume that individuals develop personal maturity, that is, they become personalities. Therefore, if the noosphere is a *higher* stage in the development of humanity's spirituality, it must be personalistic in nature (Teilhard de Chardin, 1955, p. 289); it has to be created by spiritually mature personalities. In Teilhard's view, this personalisation tendency is the *universal goal of the entire universe*. References to this can be found in his reflections on the process of personalisation.[23]

For Teilhard, the noosphere represents all that has survived from the past and that will ultimately survive all civilizations and cultures. It is therefore a form of collective spirituality that transcends the traditional purely religious or ethical anchoring because its values transcend this framing and include solidarity, mercy, responsibility and love. Deepening our spirituality in this direction can therefore be considered one of today's challenges; it is an inner dimension of our life that transcends all others. In Teilhard's view, the core value of human effort, which forms the noosphere, must be clearly irreversible and permanent.

Let us add that even Teilhard does not consider the gradual formation of the noosphere to be automatic. It is dependent on free choice so one can assume that *regressions* will occur. Teilhard warns that the entire process of noospheric *winding*, of *interconnecting and unifying humanity*, will become increasingly difficult. It will be confronted with cultural, intellectual and economic, but especially psychological obstacles, and hampered by the dangers of chauvinism, hyper-nationalism, xenophobia and possibly even wars.

Nevertheless, he anticipates humanity crossing a sort of imaginary symbolic equator and having the chance to unite authentically and voluntarily. The humanity

22 Teilhard used the term *conspiracy* in the same way his friend Édouard Le Roy did: to refer to the ability *to think together*.

23 Generally, personalisation is a process that expresses internal unification and is realised at both the level of individual and collective reflection and at the level of the universe in its entirety. The emphasis on this personalisation process is, after all, related to Teilhard's conception of the noosphere, whose spiritual centre is the Omega point. From a metaphysical point of view, Teilhard postulates the existence of this final point in the evolution of the universe, without which evolution would have no direction and no final goal (telos). Moreover, in terms of its function, the Omega point attracts the entire evolutionary process, fulfilling the role of a spiritual attractor; it is thus immanent to evolution, yet at the same time transcendent. In this sense, Teilhard also characterises it as the hyper-personal centre of the universe, calling it the cosmic Christ (Teilhard de Chardin, 1955, p. 289). We can therefore conclude that Teilhard's evolutionary cosmological-anthropological conception is both teleological and theological.

will move towards the pole of its unification and there will be even greater consciousness. The growing number of people on the planet, the *densification* of humanity, will mean greater spiritual, intellectual and emotional unification and will enable understanding of the transnational character of this unification; it will permit gigantic developments in science, technology and organisation, but on the condition that the point of unification (the *Omega point*) will always represent the final goal before humanity (Teilhard de Chardin, 1955, pp. 286–289).

5 Conclusion

One hundred years after the birth of Teilhard's notion of the noosphere and Vernadsky's elaboration,[24] it continues to inspire us and be interpreted in philosophy, as well as in biomathematics, geochemistry, environmental studies, informatics and so forth. The use of the term "noosphere" has, of course, changed. From a biological viewpoint, noogenesis is now understood to involve cephalisation, the process leading to the development of the frontal cortex in humans. The development of neuronal synapses in the brain gave rise to articulated speech and reflexive thinking and enabled the development of tools for abstract thinking, and this is also the source of current technological developments. Today, the noosphere is understood to mean all ways of processing and storing information, and it is approaching the convergent stage of mutual human penetration. Besides the data centres and the Internet, important discoveries have been made in artificial intelligence and its interactions with biological substrates (communication with the human brain is already being worked on and there is speculation that the hardware will be connected up to DNA).

Human cognition and knowledge, which began in the biosphere, now form the planet's mental envelope and are having a truly geologically transformative effect on the biosphere. These days many scholars use Vernadsky's term *technosphere* to refer to the service sphere of the noosphere, the effects of which are associated with energy exchange on the planet.[25]

24 As we have noted, there are conceptual differences between Vernadsky's and Teilhard's understanding of the nature of the noosphere. For Teilhard, the noosphere is mainly the Earth's spiritual thought envelope, which grows out of the biosphere and extends over it; for Vernadsky, it is an actual force, similar to geological forces.

25 The biomathematician Rafael Lahoz-Beltrá proposed a method for measuring the noosphere, for calculating changes in its size and energy demands, as well as mathematically postulating its crisis state in terms of the laws of thermodynamics. In his view, just as genetic information needs a DNA substrate, the noosphere and all the instruments operating within it require the Internet as their substrate. According to him, there are approximately 3000 exabytes (EB) of information circulating on the Internet. A third of that is in the US, and data centres double in capacity every two years. Using

In this article, we have shown how the anthropological and the cosmological question are in fact two sides of the same issue. The universe and humans are mutually inseparable phenomena. One cannot be understood without the other and vice versa. Agreeing with Teilhard, we conclude that just as a human cannot be understood in separation from humanity (as a biological species), neither can humanity be understood in separation from life, nor life in separation from the universe. And so the universe cannot be understood either, if we do not incorporate human and thinking into it. Within this paradigmatic framework, we can then speak about the meaning of human life in the context of the evolution of the universe and about the fact that human is the key to and starting point of knowledge about evolution in its entirety and direction. This perspective also permits us to understand the development of the Earth and its lithosphere and biosphere in the light of the forming sphere of human consciousness, freedom and responsibility.[26]

Both thinkers see the future evolution of humans in self-realisation and the realisation of all their potential, emphasise the creative invention of *H. sapiens* and the creative possibilities proffered by scientific knowledge of the surrounding world (including space), which ultimately enables not just human self-realisation, but also self-improvement. From this we can conclude that the meaning of humanity's existence in the universe is also about self-improvement.[27]

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a simulated computer model, he modelled the growing energy consumption of the Internet. He estimates that in 2062 the Internet will become an energy predator and require the energy produced by 1500 nuclear power plants. This enormous amount of energy will completely exceed the planet's capacity. One can therefore argue that the biosphere will constrain the development of the technosphere, which would lead to the unlimited growth of the noosphere (for more detail, see Lahoz-Beltrá, 2014).

26 Humanity's increasing responsibility for the evolution of the universe and the world was first outlined by Teilhard in 1950 in a short essay entitled "The Evolution of Responsibility in the World" (Teilhard de Chardin, 1963, pp. 216–217). One can infer from this essay (as well as Teilhard's other writings) that the normative aspect of human action is derived from the very fact of cosmic, biological, and spiritual evolution.

27 In this context, one may recall the Aristotelian reflections on the need for self-improvement, as pointed out by, among others, Monte R. Johnson: "Human beings can reflect on the meaning of their own lives in an Aristotelian way by reflecting on the capabilities that all living things possess, on the unique capabilities of their own species, and on the specific way that those capabilities may be employed in their own lives. These reflections aim to determine not just the theoretical meaning of 'life' but also the practical means of 'living well' and finding 'the good life'." (Johnson, 2018, p. 56). One can add that among the intentions of Aristotle's philosophy is the idea that the meaning of human life is based on humans (unlike animals and plants) having a rational component of the soul, which is specific and unique to them. Therefore, the meaning of a human life is specific in the sense that it is related to the rational (contemplative) way of life. That is the telos, the purpose or the goal of life. The specific purpose of a human life is to attain bliss (eudaimonia), by pursuing a contemplative way of life and that flows into a virtuous life. Therefore, according to Aristotle, the purpose of human life is to attain virtue, i.e. rational

At the same time, in the context of the current state of the planet, responsibility for its future evolution therefore appears to be a mission for humanity. This is conditioned by the need to enhance spirituality and the voluntary spiritual and moral unification of humanity, as postulated by Teilhard. In this direction, both Teilhard and Vernadsky assumed that human activity would increase in line with mental faculties. These two assumptions seem to be especially relevant given the state of the Western world today, as it is ever further subsumed into the culture of individual egoism. Under the guise of defending empty values and the idea that the supposed freedoms of the individual are the highest forms of freedom, individuals ultimately cease to experience the meaning of their own lives in the context of the evolution of the world.

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and moral perfection, which ensures human happiness (eudaimonia). In the twentieth century, Alfred Adler, for example, was thinking along similar lines. He considers self-improvement in self-actualisation to be one form of the meaning of life. In his view, people make decisions about their behaviour, and their decisions have a purpose (even if they do not always understand them). But the dynamic force of behaviour is individual logic, which, even if irrational, gives meaning to its bearer. Human life is the dynamic pursuit of perfection (more details, see Adler, 1998).

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