Biotechnological Processes in the Changing Evolution of Life on the Planet Earth

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Abstract. At the beginning of the 21st century philosophy is increasingly concerned with understanding the relationship of humanity and of the second nature – technosphere created by humans and compared in mass with the remains of the living matter on the planet. The philosophy of social and technological development of the world and the formation of the technosphere allows us to analyze the changing nature of modern natural and biological processes in the biosphere. The climatic factor plays an important role in changing the biosphere, but it is not decisive in the modern growing transformation of life on the Earth. Nowadays the interconnected social and technological transformation of the world and the degradation of the biosphere are in the forefront. This results in changing the biospheric and biological evolution of life for the artificial postbiospheric life without the biosphere as a self-developing system.

Scientific and philosophical understanding of evolutionary processes allows us to identify new approaches to the industrial development of the world and their role in maintaining life processes, including such areas as cottages and gardens in urban households. The paper deals with the radical measures which new philosophy is to solve in conjunction with many sciences to overcome the ecobiospheric disaster our planet is facing in the near future, which can lead to the destruction of the biospheric life and its transformation into a global artificial nonliving world.

1. Introduction

Speaking about the change in planetary life we deal with, first of all, significant changes in the upper shell of the Earth. In 1963 the analyst of the developing world, the Soviet scientist G. F. Hilmi foresaw: "In the near future the surface of the Earth, the atmosphere, the hydrosphere and the biosphere will be so saturated with technology and large-scale structures created by the will of man that the outer shells of the Earth will become a new object of reality and will develop according to the laws we do not know yet" [11, p. 58]. But even today, as many centuries ago, the world is evaluated through the prism of material and financial wealth of society and man. This wealth is created and appropriated by people who impoverish the developing biospheric nature. Half a century ago even G. F. Hilmi did not speak about the change of the entire life shell of the planet. He mentioned only the created artificial shells, which will develop according to their own laws. Two centuries ago it was said about the destruction of nature by people in J. Lamarque’s works [12].

Now it is possible to single out three main theoretical approaches to the understanding of interconnected social and natural phenomena by means of extensive "techno" – an artificial thing which includes on the one hand tools and technologies and on the other hand an artificial inanimate planetary shell called the new term "technosphere".
The first approach is anthropocentric: the world belongs to man who should master it in his own interests, get wealth out of it with the help of labour technology and in accordance with the relations that the society has developed for the entire historical period of its development [9; 15].

The second approach is religious. The essence of the approach is the following: the world was created by God and he will decide whether the biosphere will continue to evolve and whether man will exist in it.

The third one is critical interpretation of the development of the world and its progress. People are only trying to comprehend the existing socio-historical "progress" leading to the destruction of the biospheric life. They write about it, but do not do much to preserve it, although half of the populations of living organisms have died on the Earth just for the last four decades (1970-2010) [2, p. 136; 7]. We can find a lot of conflicting theories that the humanity is following now. The authors dwell on the formation of new philosophy, on the content of which the author's school under the guidance of one of the authors (E. S. Demidenko) has worked for four decades (1974-2018). It is called the philosophy of social and technogenic development of the world and life [3; 5]. The paper grounds the fundamental measures to be solved by the new philosophy in conjunction with many sciences to overcome the ecobiospheric disaster our planet is facing in the near future, which can lead to the destruction of the biospheric life and its transformation into a global artificial nonliving world.

2. Methods. On the formation of new philosophy – the philosophy of social and technological development of the world

At the end of the 20th and beginning of the 21st centuries philosophy has been increasingly penetrating issues and problems of the relationship of the humanity and of the second nature created by humans. Artificial nature becomes a demonic force. The technosphere becomes comparable in mass with the remains of living matter on the planet and even surpasses the natural remains in field radiation and effects.

Indeed, in the early XIX century the vast majority of the world's population (95%) were gatherers and farmers and lived in the country in buildings made of natural materials and performed work with their hands (30%) and with the help of domesticated animals (68%). But the rapid industrial development has changed the old proportions of productive forces in the world. Now the share of socio-biological energy does not account for 99% of labour operations, as it was two centuries ago, but so much falls on technical energy. For 10-12 thousand years of farming based on domesticated animals the humanity has changed the world more than for the whole period of its previous life. But for two centuries of industrial progress the Earth in its upper lithospheric shell has changed more than for the past 10-12 thousand years of agricultural development.

Now the urban world is prevailing on the Earth. In 1800 city dwellers accounted for 5.1% of 910 thousand earthmen. Now 3.9 billion of 7.7 billion people on the Earth live in cities and towns in buildings made of artificial materials built on the basis of scientific and technical productive forces that have replaced natural - biological and agricultural ones. These and other factors demanded from philosophy based on the fundamental achievements of world science the expansion of the space of philosophical reflection. In the 20th century, the philosophy of the biosphere and noosphere, technology, science, industrial, postindustrial and information development appear. At the end of the 20th century a completely new scientific and philosophical direction of research – the socio-technological development of the world was developed. A research school of integrated socio-technonatural processes was formed on the basis of Bryansk state technical university, which leads researchers to new levels of outlook and worldview. The scholars study the new patterns and trends of social and natural development formed over the years of industrial progress and create appropriate paradigmatic theories in different areas of life. Among the new directions of this school we can mention the philosophy of changing life evolution from biospheric-biological to socio-technobiological, postbiological life; the philosophy of urbanization, technospherical and sociotechnonatural globalization, etc. [6; 8; 13; 18].
3. Results & discussion. About changes in life evolution on the Earth

Urbanization begins with the transition to industrial development, which is concentrated in growing cities and is characterized by a powerful overflow of population from villages to cities and towns forming the world of technosphere and other artificial life. Only later comes the understanding that such overflow leads to changes in life evolution. V. I. Vernadsky viewed this process only as a transition from the biosphere to the noosphere, that is to a higher level of development of the biosphere, based at the same time on the collective mind of mankind i.e. science. Vernadsky draws attention to the fact that scientists "do not consider the laws of nature of the biosphere – the only Earth's shell, where life can exist. Man is inseparable from it spontaneously " [19, p. 326].

What is the essence of the change in life evolution on our planet? We will give only the main conclusions in this paper. When the reasonable man appears on the Earth, he begins to influence many earth’s processes with his mind and labour . As noted by V. I. Vernadsky, the Russian academician geologist A. P. Pavlov (1854-1929) wrote about the "anthropogenic era" [20, p. 173]. Indeed, since the time when man began to act a social being, new elements of life in the biosphere, which we can call socio-biospheric begin to emerge in different regions of the world. Biologists including Charles Darwin call the very form of life biological. But since artificial forms of biolife appear along with the natural ones, the authors of the paper call this form of life biospheric-biological for the entire period of self-development of the biosphere, mentioning different historical forms of life that are reflected by biologists in various life eras and periods. With the advent of man a new global form of life is born, which is developing in organic association with the life of social organisms. With the transition of humanity to agriculture there appear such a transitional form of life as sociotechnology. At this stage the biospheric development continues, but it is essentially transformed by the social organism not only with the help of "living technology" (domesticated animals), but also technical and technological means of production on the basis of handicraft production, concentrating more and more in the urban industry. And finally, with the development of industrial production and urbanization, there is a new form of life of the population, which is gaining a rapid run. It is sociotechnological form of life, in fact, postbiospheric, which is gaining a foothold among those who live in large cities and urban agglomerations of the planet.

The change in life evolution on the Earth is quite clearly confirmed by a number of global transformational changes. The first of them is the degradation and ongoing destruction of the biosphere as a complete self-developing earth system. V. I. Vernadsky did not describe the boundaries of the biospher. The biosphere is likely to be what biologists call biostromes (the "film of life"). The destruction of this film will mean that the self-developing biosphere has come to an end.

What are the constituent parts that the biosphere loses? First, living things: plants, animals, microorganisms in the combined mass and the total number of populations of living organisms. Thus, the largest losses of forests (about two thirds in the world) and more than half of the populations of organisms are noted.

Second, civilizational changes in natural biogeochemical metabolic processes, which have been forming, changing and becoming more complicated for 4 billion years. Nowadays natural biogeochemical processes are being replaced by socio-technogenic ones. N. N. Moiseev presented them as an artificial or social cycle of substances [14, p. 86].

Thirdly, there is a rapid reduction in soil cover, which provides people and domesticated animals with food. Soil-green cover of the planet began to change in many regions at the border of formation of the Cainozoic era forest cover. V. I. Vernadsky called this change a big evolutionary stage [20, p. 177]. It is here, where on the one hand, trees pull nutrients which the body needs from the depths of the Earth, and on the other hand they also turn them into a huge mass of wood forest matter, giving a new life wealth to the Earth with its relatively poor forest soils. Over a period of 10-12 thousand years (the era of the agrarian revolution up to 2000) the humanity relieved 2 billion hectares of land of soil bioinert substance [16, p. 339]. Calculations show that the residual soil in agriculture will be enough only for a century and a half [4].
Where does life "go" in this case? Many people speak of its death if the world community does not take appropriate measures [1: 10]. But studies by philosophers and scientists of Bryansk scientific school of philosophy show that the core of the postbiospheric life has been formed on the planet. This is a system of world large urban settlements and agglomerations where man's life and the life of his "companions in misfortune" – animals, plants and microorganisms is moving. This is evidenced by the fact that in the early 21st century, the humanity and domesticated animals accounted for more than 40% of the biomass of all terrestrial animals, and a third of all vegetation is represented by the cultivated species.

4. Conclusion. New approaches to the development of suburban cottages
In the circumstances which have not been investigated yet there is an issue of gardens and cottages, located in the zone of rapid formation of future postbiospheric life. No one has paid special attention to these issues yet, but some scientists have paid attention to their specific features. In particular, at the end of the 21st century, Alvin Toffler predicted that people will create their own family nests, as cities will more and more adversely affect the physical health of man. He noted that people will be able to grow ecologically clean products in electronic cottages, because the mass production does not meet their needs [17]. In 1960 the area of arable land per capita was 0.50 hectares, in 1995 it was 0.24 hectares [16, p. 339] but at the end of the 21st century, it will amount to 0.04-0.05 hectares. The facts show that the preserved garden areas would mean a lot for supporting the family diet this century. At a time when the natural biological substance on land and water is reduced, it is very important to protect it and reuse it, because it is full of a wide range of useful chemical substances necessary for the human body, compared with artificial biotechnologies.

As the analysis of the increasing degradation of the biosphere and the change in the life evolution shows, it is now very important to pay attention to the need for the development of truck farming and gardening in cities, not only taking into account changes in climatic conditions, but also unapparently coming new, more significant and tragic events. It is the experience gained in this regard that should be consolidated and implemented. It is advisable to organize a European research club to study the transformation of the biospheric life on an international level with a constant exchange of scientific research and publications. Unfortunately, the problems of reconstruction and development of cottages and gardens are considered by scholars and practitioners only in terms of climatic changes on the planet, without taking into account more fundamental changes in the society and the biosphere. This makes the humanity choose significant changes in the activity, concerning suburban collective and individual farms.

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