

ГЕОГРАФІЧНІ ДОСЛІДЖЕННЯ

УДК (UDC): 502.11:575.8:574.4

DOI: <https://doi.org/10.26565/1992-4224-2021-35-01>

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INFLUENCE OF GEOLOGY AND RELIEF ON THE SOCIETY EVOLUTION

The main aim of this article is to consider the way geological and geomorphological processes on the planet Earth have influenced intellect, language, mastering of tools, social studies and cooperative behaviour, which helped society develop agriculture, live in the cities and build civilization. The formation of society has covered a long and difficult way on the planet Earth.

Today society is regarded as a human being, stipulated by action and communication, a system of social living together, during which a person and his spirituality is formed as a result of a society's transformation into some kind of its social existence. Man is in the centre of a society, which cannot exist without him. Society is a system of social living together. It originated from nature's evolution, having acquired its characteristic features from the very beginning. Despite a wide interpretation of nature and society cooperation, we agree that the fundamental correlation of biological and social in our science are considered very simply. The biological is identified as the animal, the geological - as lifeless nature, but social - as human. The formation of ancient civilizations at the junctions of lithospheric plates confirms that the quintessence of inanimate (geological processes) development is precisely the surge of the living - human society. Particularly high concentration of the developed ancient civilizations is found on the Mediterranean-Himalayan-Indonesian seismic belt, where the network of lithospheric plates joins. Later, in the process of society's evolution, the influence of the "inanimate" on the quantitative and qualitative characteristics of the "living" is increasingly manifested. It has been proved that the relief as a result of geological factors "work", acts as the essential lever in it. The isolated development of ancient societies is singled out, caused, first of all, by the environment of mountain systems.

Conclusion. We notice that the idea of socio-natural world's character, the coevolution principle as productive means of cognition and solution to the problem of the society and the Earth planet cooperation acquires an important methodological and world outlook meaning.

KEY WORDS: society, Earth planet, coevolution, geological means, living substance, socio-natural systems

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ВПЛИВ ГЕОЛОГІЇ І РЕЛЬЄФУ НА ЕВОЛЮЦІЮ СОЦІУМУ

Головна мета. Розглянути як геологічні та геоморфологічні процеси на планеті Земля вплинули на інтелект, мову, майстерність у використанні знарядь праці, соціальне навчання і кооперативну поведінку, яка допомогла соціуму розвинути сільське господарство, жити в містах і будувати цивілізацію. Формування соціуму пройшло тривалий і складний шлях на планеті Земля.

Результати. Сьогодні соціум розглядається як людське буття, обумовлене діяльністю і спілкуванням, система суспільного співжиття людей, під час якого формується людина та її духовність, яка внаслідок трансформації суспільства формується в певну форму свого соціального існування. У центрі суспільства – людина. Без неї воно не існує. Соціум – це система суспільного співжиття людей, яка

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походить від латинського слова «соціо», означає з'єднати, поєднати, розпочинати спільну справу. Суспільство виникло внаслідок еволюції природи і з самого початку мало свої характерні риси. Попри всю широту інтерпретації проблеми взаємодії природи і соціуму, слід погодитися з тим, що фундаментальне співвідношення біологічного і соціального в нашій науці розглядається занадто спрощено. Біологічне ототожнюється з тваринним, геологічне з неживою природою, а соціальне з людським. Зосередження давніх цивілізацій на стиках літосферних плит підтверджує, що квінтесенцією розвитку неживого (геологічних процесів) є саме сплеск живого – людського соціуму. Особливо висока концентрація розвинутих давніх цивілізацій приурочена до Середземноморсько-Гімалайсько-Індонезійського сейсмічного поясу, де стикається мережа літосферних плит. Надалі, в процесі еволюції соціуму все частіше проявляється вплив «неживого» на кількісні та якісні характеристики «живого». Доведено, що суттєвим важелем в цьому виступає саме рельєф, як результат «роботи» геологічних чинників. Виокремлено ізольований розвиток давніх соціумів, що зумовлений, у першу чергу, оточенням гірськими системами.

Висновки. Відмічаємо, що важливого методологічного та світоглядного значення набуває уявлення про соціоприродний характер світу принцип коєволюції як продуктивний засіб пізнання і розв'язання проблем взаємодії соціуму і планети Земля.

КЛЮЧОВІ СЛОВА: соціум, планета Земля, коєволюція, геологічні чинники, жива речовина, соціоприродна система

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ВЛИЯНИЕ ГЕОЛОГИИ И РЕЛЬЕФА НА ЭВОЛЮЦИЮ СОЦИУМА

Главная цель. Рассмотреть как геологические и геоморфологические процессы на планете Земля повлияли на интеллект, язык, мастерство в использовании орудий труда, социальное обучение и кооперативное поведение, которое помогло социуму развить сельское хозяйство, жить в городах и строить цивилизацию. Формирование социума прошло длительный и сложный путь на планете Земля.

Сегодня социум рассматривается как человеческое бытие, обусловленное деятельностью и общением, система общественного сожительства людей, во время которого формируется человек и его духовность, которая в результате трансформации общества формируется в определенную форму своего социального существования. В центре общества – человек. Без человека оно не существует. Социум – это система общественного сожительства людей, которая происходит от латинского слова «социо» означает соединить, объединить, начинать общее дело. Общество возникло в результате эволюции природы и изначально имело свои характерные черты. Несмотря на всю широту интерпретации проблемы взаимодействия природы и социума, следует согласиться с тем, что фундаментальное соотношение биологического и социального в нашей науке рассматривается слишком упрощенно. Биологическое отождествляется с животным, геологическое с неживой природой, а социальное с человеческим. Сосредоточение древних цивилизаций на стыках литосферных плит подтверждает, что квинтэссенцией развития неживого (геологических процессов) является именно всплеск живого – человеческого социума. Особенно высокая концентрация развития древних цивилизаций приурочена к Средиземноморско-Гималайско-Индонезийскому сейсмическому поясу, где стыкується сеть литосферных плит. В дальнейшем, в процессе эволюции социума все чаще проявляется влияние «неживого» на количественные и качественные характеристики «живого». Доказано, что существенным рычагом в этом выступает именно рельеф, как результат «работы» геологических факторов. Выделено изолированное развитие древних социумов, которое обусловлено, в первую очередь, окружением горными системами.

Выводы. Отмечаем, что важного методологического и мировоззренческого значения приобретает представление о соціоприродном характере мира принцип коєволюции как продуктивний способ познания и решения проблем взаимодействия социума и планеты Земля.

КЛЮЧЕВЫЕ СЛОВА: социум, планета Земля, коєволюция, геологические факторы, живое вещество, соціоприродная система

Introduction

A number of papers, exploring the problems of humanity creation on Earth, have appeared in recent years. Of particular interest is the work of Lewis Dartnell, a researcher and professor at the University of Westminster, "How the Earth Shaped Human History" [1].

The author claims that the Earth has its own biography, and it influences human history. Landscapes, climatic zones, movement of tectonic plates, thrust of glaciers - all these facts from the life of the planet have irreversibly changed the existence of mankind. In the

introduction to his work, the researcher writes: "We are all literally made of the Earth - like all life on the planet. The water in your body once flowed in the Nile, fell in monsoon rains on India and raged in the Pacific Ocean. Carbon in organic molecules of your cells was extracted from the atmosphere by the plants we now eat. Salt in your sweat and tears, calcium in your bones and iron in your blood - everything was once the rocks of the earth's crust. Sulfur in the protein molecules of your hair and muscles was spit out by volcanoes. Earth gave us raw materials that we extracted and processed into tools and technology - from primitive hackers of the early days to modern computers and smartphones " [1]. If you make a survey,

covering a huge period of time, you may notice that the whole of human history unfolded as a film, capturing certain shots in its development. In these shots we can see that although the shape of the continents and oceans is changing relatively slowly, the ancient structure of the Earth has dramatically influenced the formation of a society on the planet. "We will learn how the last ice age helped us settle all over the globe, and why humanity moved to the settlement and development of agriculture only in the current interglacial period. How man learned to extract from the crust of the planet and use a huge amount of metals, which led to a number of revolutions in the production of tools and development of technology " [2].

Theory and discussion

Mankind came out of the environment that gave birth to us and taught us to build our own artificial living environments - villages and cities, tools to make it easier to stay in it. The earth has affected humanity and still does so most unexpectedly. In addition to creating conditions, contributing to the spread of humanity around the world, past periods encouraged development of new landscapes, climate change, etc. They had a significant impact on the existence of the society on the planet, its spread (Fig. 1). Society increasingly cultivated plant species and domesticated animals, leading to the development of agriculture.

The formation of ancient civilizations at the junctions of lithospheric plates confirms that the quintessence of inanimate (geological processes) development is precisely the surge of the living - human society. Of the geological structures, tectonic plates play a particularly important role in the formation of a society. If we look at a map of tectonic plates with their junction lines and map it to the locations of the world's oldest civilizations, we see an obvious connection: most peoples settled very close to the boundaries of the plates (Fig. 2). Plate tectonics traversed almost all continents, moving most of the land to the Northern Hemisphere, while the southern half of the world became a predominantly open ocean. Given the amount of land suitable for living around the planet, this correlation is impressive. Some of the largest cities in the modern world

thrive on tectonic faults, and most ancient civilizations emerged at the junctions of the earth's crust. Particularly high concentration of the developed ancient civilizations is found on the Mediterranean-Himalayan-Indonesian seismic belt, where the network of lithospheric plates joins. (Fig. 2). Thanks to the Earth, people extracted the first raw materials and made the first tools [3].

Later, in the process of society's evolution, the influence of the "inanimate" on the quantitative and qualitative characteristics of the "living" is increasingly manifested. It has been proved that the relief as a result of geological factors "work", acts as the essential lever in it. The isolated development of ancient societies is singled out, caused, first of all, by the environment of mountain systems.

Ancient Egypt is probably the most striking example of how the development of civilization has been influenced by the amount of limitations and opportunities of the geographical location and climate of the region. Stable summer floods of the Nile fed the plains on both sides of its bed due to rich mineral sediments washed from the mountain capes of Ethiopia, forming a ribbon-like center of the oasis in the desert. The Nile served as a convenient transport route. The dominant northeastern trade winds in North African latitudes blow continuously, which helps boats sail south to Upper Egypt, and the weak current of the Nile is easy to return down. It is the combination of the terrain advantages, a simple

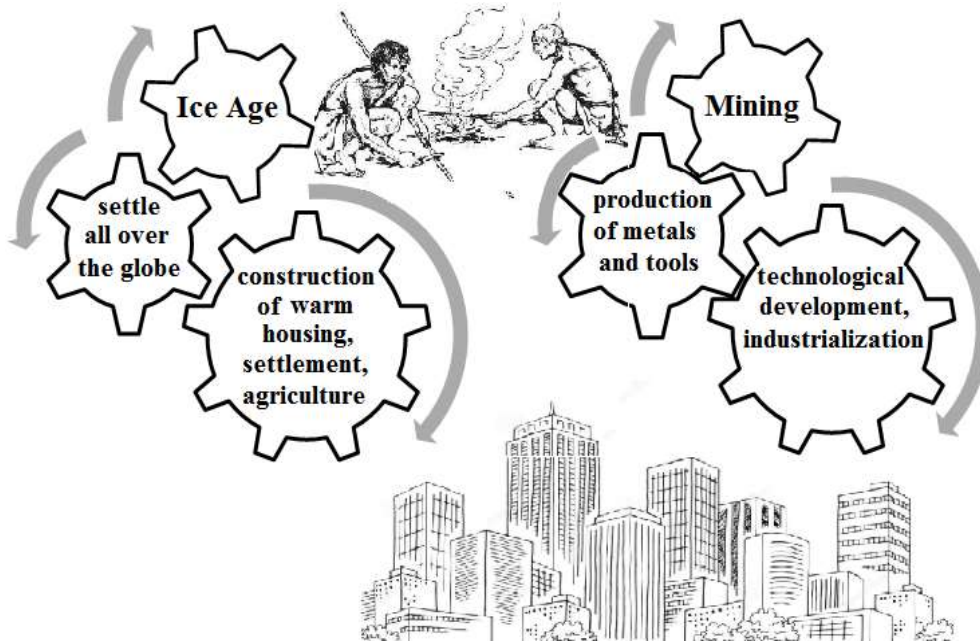


Fig. 1 – Evolution of society in the millstones of nature use

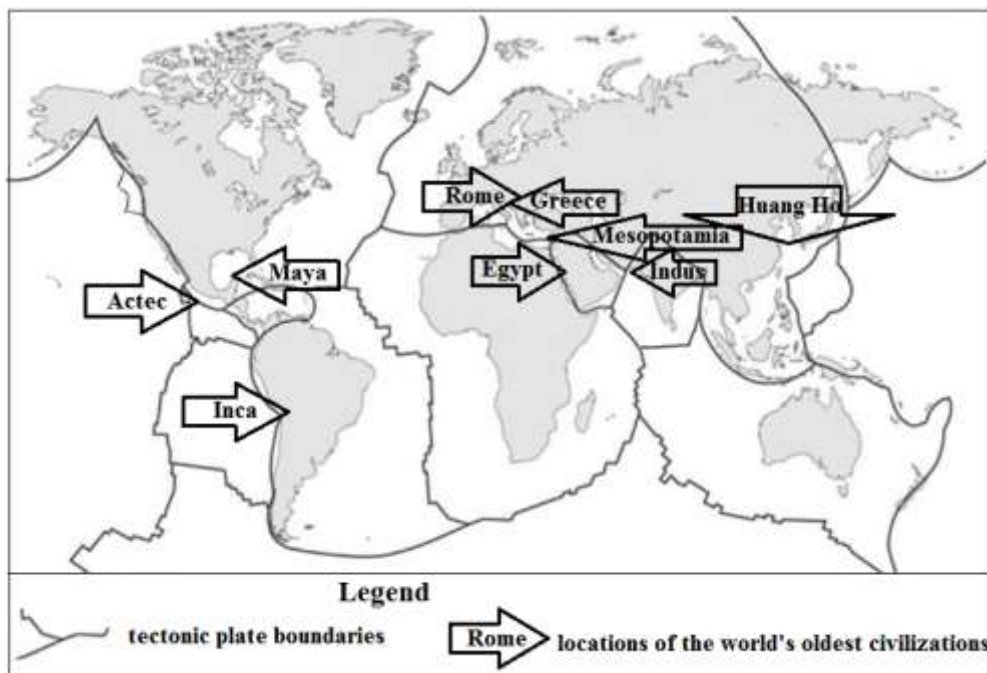


Fig. 2 – “...most ancient civilizations emerged at the junctions of the earth's crust.”

internal transport system, ecological stability of agriculture due to the Nile water. It is also a natural protective barrier of the desert that ensured a stable long life of the Egyptian civilization. The main prerequisite for the prosperity of the region was still the river. As the Greek historian Herodotus wrote in the fifth century B.C., Egypt is a "gift of the Nile" [4, 5].

Ice ages in the history of the planet significantly influenced the formation of modern

landscapes on it. They contributed to the spread of humanity around the world and changed the course of human history. The deep imprint left on the landscape by cyclical glacial periods has had a significant impact on the development of the same humanity. The whole history of civilizations unfolded during the current interglacial period: there was a cultivation of wild plant species, domestication of animals and emergence of agriculture. Over the past 50 million years, the

world has become colder and drier. Today we exist in the interglacial period with a relatively warm climate, melting ice caps, and hence, higher sea levels. Today we live in a special geological era, when the planet is experiencing climate change, a change in weather conditions that has been observed for a long time. Each region or a natural area on the planet has specific weather for a specific time. If the weather in tropics is dry during one day during the rainy season or if there is no snow in Ukraine on a New Year day in one year, this is not a sign of climate change. However, when such deviations occur every year for at least three decades, they are already manifestations of global change.

The average global temperature has risen since the beginning of rapid industrial development in the mid-nineteenth century. [6]. Moreover, the most rapid rise in temperature has occurred in the last 40 years. The five warmest years in the history of observations occurred after 2010. The Arctic is losing its ice cover, and a minimum amount of ice was recorded in 2012. Extreme weather events and droughts are becoming more frequent. In 2018, for the first time, severe weather anomalies (floods, hurricanes, tsunamis) were recorded on all continents. These are all manifestations of a global rise in temperature.

The climate on the planet was constantly changing: from severe ice ages to more comfortable living spaces, in one of which we live now. The reasons for these changes could be different: changes in solar radiation or the Earth's orbit, changes in ocean currents or even volcanic eruptions. However, the temperature did not change so rapidly in previous periods. If for natural reasons the average temperature changed by 1o C in 1000 years, now such a change has taken place in just a century. By 2100, the temperature may rise by 2-7 o C from the pre-industrial level – depending on the path of economic development that the world chooses. Not all inhabitants on the planet, representing the animal and plant world, as well as the society – will have time to adapt. In addition to natural phenomena, climate change is affected by the composition of the atmosphere – the so-called greenhouse effect. It is the heating of the earth's surface, oceans and lower atmosphere caused by certain gases in the air. They let the sun's rays into the lower atmosphere, but prevent them from going back into space, as if covering the Earth

with a blanket. The greenhouse effect is a natural phenomenon due to which the temperature on the Earth's surface is able to support life.

Concentration of greenhouse gases in the atmosphere has increased over the last century and a half - now it is more than a third higher than ever before in history. The reason for this is human activity [7]. Among the reasons scientists note combustion of fossil fuels, which causes an increase in the concentration of carbon dioxide in the atmosphere. An important factor in raising the temperature is the destruction of the elements that should absorb this carbon. When we cut down forests - often to expand agricultural land - we lose our best ally in absorbing the large amounts of greenhouse gases, we have created. Deforestation accounts for 10% of all green-house gas emissions. The rest is caused by energy and transport, buildings, industry, agriculture, waste and land use.

Restructuring natural environment, adapting it to the nature-transforming capabilities of society seems dangerous even in the near future. This approach is openly technocratic and scientific (scientific direction, unlike anthropological, focuses not on the individual, but on science, which it considers the highest form of social consciousness) because it is based on the belief that man can know everything and can do everything [8].

Everything living in the biosphere forms living matter. Living organisms play a very important role in the geological processes that shape the face of the Earth. Chemical composition of modern atmosphere and hydrosphere is determined by the activity of organisms. Organisms are also important for the formation of the lithosphere – most rocks, not only sedimentary, but also such as granites, are somehow related to the biosphere. Inert mineral substance is processed by life, being transformed into a new quality. Living organisms not only adapt to environmental conditions, but also actively change them. Thus, living and non-living matter form a single whole.

The essence of V.I Vernadsky's teaching is that the highest form of matter development on Earth – life – averages other planetary processes. Living organisms play a huge role in the accumulation of solar energy. For example, coal deposits are nothing more than solar energy accumulated by green plants of past geological epochs. It is also possible to determine the nature

of many minerals, in particular, calcium carbonate, which forms huge masses of limestone and is almost 100% biogenic in origin. Living organisms play an important role in the accumulation of many metals, such as iron, copper, manganese. The cycle of nitrogen, sulfur, phosphorus and other elements is of great importance for the biosphere and human economic activity. Living matter has significantly accelerated and changed the cycle of various substances in the biosphere – water, oxygen, nitrogen, carbon dioxide, etc. The main prerequisite for the possibility of abiogenesis, i.e. the emergence of organisms or at least only "living matter" from inanimate matter is, of course, the ability of the latter to certain changes, to evolution. V.I Vernadsky [9] argues that "the evolutionary process is inherent only in living matter" and that "it is absent in inert matter." Hence another of his conclusions: "living matter cannot arise from ordinary inert matter in the biosphere — abiogenesis from an ordinary inert medium is impossible [9].

At the same time, V.I Vernadsky does not deny the possibility of abiogenesis in the environment, which he calls "biocosmic" and which consists mainly of the products of life and decay of various organisms. These include soils, sea, river, lake water, oil, coal, bitumen [9]. Substances that are part of the bioactive environment are isotopically different from the substances of ordinary inert matter, but similar to the substances of living organisms. This is, according to V.I. Vernadsky, the main prerequisite for the possibility of abiogenesis in the above biocosmic bodies.

V.I. Vernadsky, referring to the summary of American geologists Schuchert and Dunbar, notes, "that nowhere on our planet do we have geological layers that would be formed in an environment devoid of life. Life, says V.I. Vernadsky, is geologically eternal" [10]. One of the fundamental scientific achievements of V. Vernadsky is his concept of the decisive role of living, "living matter in the development of global processes" (from the "bio-cosmic" sphere to the geological changes performed by human scientific thought). The organic world assimilates mineral bodies of the Earth, uses their energy and, at the same time, the "waves of life" of the past determine the nature of chemical processes on the planet.

As the basis for the latest approaches to this problem, we propose to use the analysis of

biological evolution as a holistic form of the planet Earth's development, characterized by mutual ordering. This approach, according to modern researchers, will analyze the living, which is not only opposed to the inanimate, but is also a derivative. That is, a kind of return to the scheme of V. Vernadsky – metabolism and energy, biogenic migration of atoms in the biosphere. Notable for V. Vernadsky's scientific work is his own version of the combination of natural science and socio-humanitarian knowledge, as already mentioned, and to this day are autonomous. Striving to fully understand these problems, he solved this extremely important problem for modern methodology of science, based on specific – scientific facts. In particular, he noted: "It is important that the deepening coverage of the human sciences is the main element of scientific thinking – determining the patterns of historical processes, their close connection with the historical process of nature, in this case – with changes in our planet" [11].

Interweaving problems, which are still considered separate and self-sufficient, require a significant correction in their understanding, high professionalism, the maximum possible understanding of their complexity and interaction. The impact of environmental realities on all aspects of political, economic, demographic, socio-humanitarian and spiritual-moral development of our state is now so obvious and large-scale that neglecting it, seems at best short-sighted and irresponsible. After all, history of nature, of mankind and of human spiritual achievements are a holistic process [12].

In particular, the American researcher William R. Catton proposes to solve all current problems of today, taking into account the real fact that human life, among other things, is a metabolic process. (Metabole – metabolism, Greek. Metabole - change of transformation) - is a continuous and self-regulating cycle of substances that occurs in the course of the living organisms life and is accompanied by their constant self-renewal. We should not abstract from this circumstance, and this should be of interest not only to the biologist, but also to the sociologist, the philosopher, because all our troubles, without exception, have an ecological basis.

We are now very concerned about the impact of humanity on the environment. Over time, our population has grown steadily, consuming more and more material resources and energy. Homo sapiens replaced "nature" as the

dominant force on Earth [13-16]. Construction of cities and roads, dams on rivers, industrial and mining activities – all this affects the global and long-term scale, leading to changes in the landscape, global climate and mass extinction.

Scientists have proposed to recognize the dominance of man over the natural environment and to identify a new geological epoch – anthropogenic, or "a new age of mankind." The last 70 thousand years can be called the era of mankind. Our influence can now be compared with the influence of the ice age and the shift of tectonic plates. But as a species, we are still inextricably linked to the planet. The history of the Earth has left the same imprint on our body as our activity - in the world of nature. Asteroids, tectonic plates and climate change may have affected organisms around the world, but their effects vary across regions. Our planet has never been made up of a single ecosystem, but rather a collection of many loosely interconnected ecosystems. Each species reacted to changes on the planet in its own way, evolving in different directions. Natural processes on the planet have changed the flora and fauna of every continent and island where they took place.

Today, more than ever, it is important to understand the concept of "going beyond." To go beyond means to go too far, accidentally and unintentionally cross acceptable limits. People face going abroad every day. Going beyond is common and exists in almost infinite forms. The change may be physical – an increase in oil consumption. Organizational – increasing the number of subordinates. Psychological – a continuous increase in the goals of personal consumption or to be expressed in financial, political or other form [6]. Boundaries are similarly diverse – they can be determined by the parameters of space or time or other characteristics inherent in the physical, biological, political, physiological and other features of the system. The result of going beyond is a perpetually impoverished environment and a much lower material standard of living than would be possible if the environment were never overloaded.

The term "environmental footprint" is often used in the scientific literature to describe the relationship between human needs and the ability to meet them. The term was popularized by a study conducted by Mathis Wackernagel and his colleagues for the 1997 Earth Summit.

Wackernagel calculated the amount of land needed to provide natural resources consumed by the population of different countries and to absorb their waste. Wackernagel's term and mathematical approach were later used by the World Wildlife Fund (WWF), which provides data on the ecological footprint of more than 150 nations in the Living Planet Report. In other words, the ecological footprint of global society has gone beyond the capabilities that the Earth can provide. Unfortunately, it continues to grow, despite advances in technology and institutions. This is becoming an increasingly serious problem, because humanity is already on the territory of instability. There are enough facts to support this conclusion, which we reveal in further research. In the conditions of incessant aggravation of the socio-ecological crisis and global problems of the present, the idea of sustainable development of mankind and the whole planet naturally arose as the only possible alternative to the danger of a global catastrophe. The necessary preparatory work was carried out, first of all, by the Club of Rome. The report of the UN Special Commission "Our Common Future" (1987) identified sustainable development as meeting the needs of the present, but not jeopardizing the ability of future generations to meet their needs. However, later this definition has been repeatedly criticized as insufficiently clear and in which there is no mention of the vital need to preserve the environment (i.e. the environmental problems of mankind).

The most notable steps in a sustainable development concept were the UN Conference on Environment and Development in Rio de Janeiro (1992) and the XIX Special Session of the UN General Assembly on the same issues with the participation of Heads of State and Government (New York), 1997 p.). The authors of the documents focused on such acute practical problems of mankind as the limited natural resources of the Earth, a difficult demographic situation, which is rapidly deteriorating, constant destruction of the environment, a growing threat to human health and life. Some steps have been proposed by the world community towards a deeper, more careful study and practical solution to these problems. Concentrated results of the analysis, conclusions and proposals of scientists of many profiles and areas of research were covered in the reports "Strategy for Saving the World" and "Our Common Future", documents

Rio – 92 or "Concepts of Sustainable Development of Ukraine". In this context, it is necessary to mention once again the important for comprehension works of the figures of the Club of Rome - A. Peccia, D. Meadows, J. Forrester, M. Mesarovich, E. Pestel, J. Tinberg, E. Laszlo, D. Gabora, U. Colombo, B. Gavrilishin and others who represented economics, sociology, philosophy, ecology, mathematics (classical and modern, applied), mechanics, energy, microelectronics, etc. [17]. In addition, they had many famous predecessors and like-minded people in science – such as D.P. Marsh, A. Schwetzer, O. Leopold, J. Dorst, B. Commoner, B. Ward. Later, when the difficult search for effective practical ways to solve these complex problems of mankind began, powerful scientific institutions were created to conduct relevant research. This process is not complete today. This is how the scientific aspect of forming the concept of sustainable development emerges.

It can be argued that at the present stage of interaction between a society and nature, the process of environmental management can be considered as a process of interaction of the society and the natural environment, conditioned by the needs of mankind, depending on the direction of their mind. The type of nature management is a reflection of the society's attitude to the natural environment. Changing types of

nature management means fundamental modifications of social consciousness in relation to nature, conditioned by the evolution of all aspects of the society. Nature as a socially managed process is characterized by the presence of object and object.

The object of nature management is a complex of relations between natural resources, natural conditions of a society's life with its socio-economic development. The subject is the optimization of relations between natural resources, natural conditions of life of the society and its socio-economic development, the desire to preserve and reproduce the environment. It is clear that the production potential which is the ability of natural environment to provide energy and raw materials for the production needs, always comes to the fore in nature management.

Thus, the modern era has naturally become a time of the most active development of epistemological, methodological, philosophical (in the broadest sense) views related to the problems of the influence and role of the planet Earth on the development of society and its role in the formation and functioning of planetary environmental problems. The diversity, complexity, and internal contradictions of this process reflect the unique historical atmosphere of the epoch.

Conclusions

The principle of the coevolution of its fragments acquires an important methodological and ideological significance. It acts as a productive means of cognition and resolution of unknown moments of life. The coevolutionary idea is to understand development as a coordinated, interdependent change of systems or parts in the middle of a whole. At the same time, the role of the geological factor in the formation and existence of society is constantly growing.

The present-day complex socio-natural system is not able to function according to the laws of both "wildlife" and "pure society". Such a system is dominated by new patterns, evolving with the development of economics, politics, culture, science, technology. Changes in interacting systems cause corresponding transformations in another system [18-20].

The strategic task of the modern scientific knowledge methodology is to understand man and his natural environment as a holistic phenomenon,

taking into account material and spiritual components. The necessary methodological basis for such an understanding is the development of inter-disciplinary links and integration of scientific with the socio-humanitarian knowledge.

The term "socio-greening" has come into scientific use as a synonym for bridging the gap between society and nature, which has been accumulating for many years, which was especially evident in the second half of the twentieth century. In order to preserve the planet's biosphere, it is necessary to radically change the nature of the activity, in particular to redirect all types of environmental management to environmentally safe ones. This change in organization is linked to a restructuring of the outlook and, above all, a scale of values.

It can be stated that socio-greening is a process of consistent saturation, filling in any possible objects with ecological content. Socio-greening of human activity covers a wide variety

of spheres: subject, spiritually - practical and theoretical, i.e. directly subject sphere, world outlook and science. Its purpose is defined as the achievement of correspondence between the main directions of social activity and the laws of the biosphere functioning as a coherent self-regulatory system. The criterion of compliance is the degree of equilibrium and reproduction of viable environmental conditions.

Greening of knowledge is the starting point from which greening of all other spheres of human activity begins. An important consequence of the greening of knowledge is shifting the emphasis of many sciences to their own environmental issues [18]. It is greening that becomes a universal

phenomenon transforming the ecological approach into a paradigmatic epistemological system that has great synthetic capacity and is heuristic. After all, one of the main functions of consciousness is to ensure the performance of human subjective – transformative activity. An important way to harmonize society with nature is to create deep understanding of nature importance in each person for his personal life, health of physical and spiritual enrichment. The moral feature of the interaction of society with nature is clearly traced to the development of man himself, formation of a new, comprehensively developed personality.

Conflict of interest

The authors state that there is no conflict of interest in the publication of this manuscript. In addition, the authors fully adhered to ethical standards, including plagiarism, data falsification, and double publication.

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Отримана 21.04.2021

Переглянуто 4.05.2021

Прийнята до друку 25.05.2021