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A holistic approach to addressing the global environmental challenge: the scientific-philosophical methodology

Цілісний підхід до вирішення глобальної екологічної проблеми: єдність науково-філософської методології

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Abstract

The search for a constructive strategy to overcome socio-economic and environmental imbalances in technogenic civilization is of great importance in modern science and philosophy. The article aims to discuss the scientific and philosophical potential of the holistic approach as a specific methodology and worldview. To achieve this goal, the authors clarify the understanding of the term "ecology" as an interdisciplinary field encompassing both natural and social aspects, which is the key to the modern analysis of environmental problems and the search for their solutions. The study of the doctrines of "new humanism", "world balance for mankind", and "new enlightenment", which were presented in the reports to the Club of Rome, allows one to find out the ethical and metaphysical foundations of the new paradigm of holism, its prognostic potential.

Keywords: global problems, Club of Rome, holism, "new humanism", alienation.

Анотація

Пошук конструктивної стратегії подолання соціально-економічних та екологічних дисбалансів техногенної цивілізації має велике значення в сучасній науці та філософії. Метою статті є обговорення науково-філософського потенціалу холистичного підходу як специфічної методології та світогляду. Для досягнення цієї мети автори уточнюють розуміння терміну "екологія" як міждисциплінарної галузі, що охоплює як природні, так і соціальні аспекти, що є ключем до сучасного аналізу екологічних проблем та пошуку шляхів їх вирішення. Дослідження доктрин "нового гуманізму", "світової рівноваги для людства", "нового просвітництва", які були представлені у доповідях Римському клубу, дозволяє з'ясувати етичні та метафізичні засади нової парадигми холізму, її прогностичний потенціал.

Ключові слова: глобальні проблеми, Римський клуб, холізм, "новий гуманізм", відчуження.

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Introduction

In the preface to the anniversary report to the Club of Rome "Come On! ...", its researchers excitedly diagnosed that, despite the precautions taken by the international community, the world is once again in a critical situation (Weizsäcker & Wijkman, 2018, p. 1). The uniqueness of this crisis lies in its progressive nature. Moreover, it affects not just one particular aspect of the world system but it is all-pervasive. The researchers of the report have identified disarray in various areas, namely in the natural environment (pathogenic changes in water, biosphere, atmosphere, and ecosphere). They also perceive the crisis in the Western social framework, highlighting the crisis of democratic institutions, ideology, morality, economics, and social sphere (Weizsäcker & Wijkman, 2018, p. 2). The alarmist predictions that we often hear these days have lost their sensationalism and social acuity since everyday life has long been in a state of turbulent and "molecular" social upheaval and conflict. However, when policymakers make statements about the crisis, it can produce a disheartening impact and bring a bleak tone to the mass consciousness. This mutual influence is theoretically grounded in the philosophical principle of the identity of thinking and being. Crises and deformations of social time turn into crisis tendencies of social consciousness, and vice versa, deformations and regressions of social consciousness lead to a "sick society" (Fromm). The fear and confusion of the global elites about the future, and their talk of an impending "abyss", is not just a tool for manipulation. It is a real indicator of their loss of strategic forecasting and control over global development. It is appropriate to recall postmodern critics who revealed the deceptiveness of rationalism's "metanarratives" and the failure of its "Great Promises" of progress, truth, and happiness. However, moving away from logocentrism and universalism leads to a situation of universal uncertainty and unpredictability. Empirical positivist vision, having rejected metanarratives, cannot deal with this situation effectively. Therefore, it is essential to comprehend and implement a new rationalist worldview to address the critical question: What can guide one in addressing the global crisis of the planet and humanity's evolution?

Literature review

Numerous scientific works and publications of modern researchers are devoted to the process of finding a constructive strategy for overcoming

the socio-economic and ecological imbalance of man-made civilization.

In particular, G. Hegel (2001), T. Shorina (2021b) explore the philosophical component of the potential of the holistic approach, representing the latter as a specific worldview concept. Instead, M. Hinner (2017), A. Linde (2002) focused on the study of the scientific component, clarifying the definition of ecology as a science. In continuation, V. Vernadskyi (2012) positions ecology as an innovative interdisciplinary field that synergizes natural and anthropogenic-social aspects of life. Some scientists (Oztruk et al., 2010) see it as a basic strategy for the modern analysis of environmental problems and the search for practical variations of ways to solve them.

Scientific publications by A. Peccei (1977), D. Meadows, J. Randers, W. Behrens (1972) are devoted to the study of the doctrines of "new humanism", "world balance for humanity", "new enlightenment", which were presented in the reports of the Club of Rome). The results of the scientific research of the cited scientists allow us to highlight and specify the ethical and metaphysical foundations of the new paradigm of holism, focusing on its prognostic potential.

Methodology

Throughout its activity, the Club of Rome has attracted the attention of leading scientists, politicians, and public officials through the concrete scientific elaboration of the problems of global world development and philosophical reflections on human behavior in the world. Since their first report in 1972, "Limits to Growth", the Club of Rome has recognized the inseparable connection between scientific research methods and philosophical assumptions and conclusions. This connection, first of all, was found in the choice and justification of the doctrine and strategy of studying world dynamics. In the Limits to Growth report, the choice was made in favor of a holistic view of the world. As postulated by the authors of the report, their epistemology was based on the principle that it is "through knowledge of wholes that we gain an understanding of components, and not vice versa" (Meadows et al., 1972, p. 186).

Therefore, it's not only technical and scientific solutions that are critical for global analysis, but also for understanding social processes and complex dependencies in human behavior in

general. The behavior of people, which is conditioned by economic, political, social, and thought determinants, shapes the context and forms of people's relations to each other and nature. Global environmental problems, such as the negative effects of industrial development and material wealth, testify to the negative anthropogenic interference in natural systems, which neglects the sustainable flow of nature.

They also speak to the specificity of human social practice, whose philosophy is exponential and anarchic material growth, profit-seeking, and wastefulness.

The proponents of holism view the world as an interconnected and interdependent network of systems that must follow sustainable patterns of conduct (Figure 1).



Figure 1. The holistic view of sustainability.
Source: (Oztruk et al., 2010)

This approach helps them establish criteria for determining what is acceptable, unacceptable, and tolerable. By doing so, they can identify our role in society in a forward-looking manner. The Club of Rome figures rely on the integrity of scientific and philosophical methodology to consistently criticize the negative tendencies of Western civilization. They advocate for paradigm and system shifts that can help society emerge from our current crises. The goal is to promote a new way of being human within a more resilient biosphere (Club of Rome, (n.d.)). Holistic approach is interdisciplinary in nature and is considered a modern methodology for socio-humanities and environmental sciences. As an epistemological approach, holism serves not only as a principle of critical analysis of social reality but also as a principle of scientific foresight.

The study aims to discuss the scientific and philosophical potential of a holistic approach as a methodology and worldview to solve ecological global challenges.

To achieve the aim of the study, the following research tasks are identified:

- clarifying the understanding of the term "ecology" and its current subject matter;
- clarifying the position of the ecology problem in modern humanitarian and social knowledge;
- indicating the connection between scientific rationalism and the philosophy of holism, supported by reports to the Club of Rome, such as "Limits to Growth" (Meadows et al., 1972) and "Come On! Capitalism, Short-termism, Population and Destruction of the Planet" (Weizsäcker, & Wijkman 2018);

- investigating the axiology and ethics of holism as a new social paradigm of development, using examples such as the doctrine of "new humanism" (Peccei), the strategy of "world equilibrium for mankind" (Meadows), and "new enlightenment" (Weizsäcker, & Wijkman, 2018);
- highlighting the problem of alienation of human activity and the social naivety of the rationalism of naturalistic thinking.

Results and discussion

The problem of the environment is a significant issue for humanity. Its global nature implies the unification of the efforts of the international community. This problem requires not only scientific and natural knowledge but also technical and humanitarian knowledge. Philosophy plays a vital role in this matter.

Philosophy studies issues related to the general foundations of existence, the essential characteristics of humans, and their interaction with society and the world around them. Methodologically, philosophical reflection makes it possible to consider a particular problem in its entirety, analyze the interaction of various elements, and study the relationship of the object of study with other phenomena. Moreover, the nineteenth-century positivists emphasized the integrative role of philosophy, i.e., the ability of philosophy to generalize the data of various sciences, thus obtaining new knowledge.

The problem of ecology has always been in the focus of philosophy as it deals with the relations of man to nature. First of all, classical philosophy, which from ancient times and almost until the nineteenth century developed in close connection with natural science, recognized this problem. Since about the 1960s, the imperative of "greening" human knowledge and practice has become a general program not only of the scientific worldview but also of the philosophy that has not lost interest in the problems of ontology as a philosophy of nature and its modern variant, the philosophy of space. Due to the increasing need to combine knowledge in order to solve global environmental issues, the term "ecology" has become very broad and commonly used today. It has gone beyond its original use within the scientific community and is sometimes used in a less strict sense. This is because of the relevance of environmental problems to society as a whole.

The word "ecology" is now ubiquitous in the names of governmental or non-governmental

institutions, public projects, goods, products, services, and educational projects. For example, people talk about ecological festivals, eco-design, eco-style, ecology of language, media ecology, ecology of public space, and ecology of the urban environment.

The term "ecology" comes from two Greek words, "oikos" meaning house or dwelling, and "logos" meaning science or knowledge. Therefore, ecology means "the science of habitat". A naturalist researcher of flora and fauna is always an ecologist as well because studying an organism apart from its habitat is impossible.

The term "ecology" was coined by Professor E. Haeckel of the University of Jena in 1866. Ecology was initially viewed as a branch of biology that studied the interactions between living organisms, based on the condition of their environment. However, this perception changed with the realization of the consequences of the Industrial Revolution, which became increasingly apparent in the twentieth century. The use of hydrocarbon fuels such as coal, oil, shale, and gas, as well as the extraction of large quantities of metals and other minerals, has resulted in the inclusion of substances stored in former biospheres into the natural cycle. These substances, which were once locked in sedimentary rocks and have already left the cycle, are now being found in the biosphere, leading to pollution of water, air, and soil. This pollution is rapidly increasing in intensity.

Since the 1960s, environmental issues have been a topic of major policy discussions and international agreements. In 1964, an international biological program was launched under the United Nations, to evaluate the biological productivity of the planet Earth. Numerous scientific teams joined the program, and established field research stations, many of which still exist today. In 1972, the General Conference of UNESCO adopted the Convention Concerning the Protection of the World Cultural and Natural Heritage (Unesco, 1972), and the United Nations Environment Programme (UNEP) was founded. In 1985, the Vienna Convention for the Protection of the Ozone Layer (European Union, 1985) was adopted and joined by 197 countries. In 1992, the Convention on Biological Diversity (United Nations, 1992) was adopted, and many countries committed themselves to preserve biodiversity on their territory. In 1997, the Kyoto Protocol (United Nations climate change, (s.f)) was adopted as the first major agreement to limit greenhouse gas

emissions. Thus, at the end of the twentieth century, environmental issues became widely discussed in society, and humanity began to take an active interest in them. These issues include preserving biodiversity, maintaining the sustainability of ecosystems and the biosphere as a whole, environmental protection, and nature conservation. Although they are practical issues, their solutions are related to the knowledge that ecology as a science has accumulated.

From this global theoretical and practical overview, classical ecology or ecology as a biological discipline is only a natural part of modern ecology. The modern understanding of ecology provides a generalized understanding of the interaction between man and nature, society and nature, the biosphere and the technosphere, nature, culture and civilization in general, and therefore its subject matter goes beyond the scope of biological science (Shorina, 2021a, p. 78).

Hence, it can be summarized that modern ecology is the science of possible human behaviour that would allow the passing of Nature, the common human habitat, or biosphere, to the next generations to ensure humanity's survival on planet Earth. Since planet Earth is the only home of humans and everything in it is interconnected, we need to be able to combine the knowledge accumulated in different disciplines into a single coherent construct. As Michael B. Hinner writes about this, "the social ecological perspective provides a deeper and richer understanding of intercultural communication contexts" (Hinner, 2017), the same idea about the unity of environmental knowledge and cultural context is proved by Juan Carlos Miguel de Bustos: "this world is interrelated with human being" (de Bustos, 2009, p. 54). The science of how humans should live on Earth is naturally called human ecology, or simply ecology. In fact, this understanding forms the full content of modern ecology.

Ecology is a broad field that encompasses not only the study of nature and the environment but also the accumulated knowledge and current issues of philosophical research. In the twentieth century, several philosophical movements emerged that based their ideologies on scientific achievements and gave credit to science. These include the philosophy of positivism, modern analytical philosophy, the philosophy of Marxism, and the natural science direction of cosmism.

In modern times, a holistic view of matter (nature) in its interaction with humans, of the place and role of humans as active subjects of transformative activity and cognition in nature and cosmogenesis in general has been developed. This idea has been developed by physicists, biologists, and philosophers who have formulated the concept of global evolution and the hypothesis of the anthropic principle.

The convergence of ecological and philosophical knowledge in cognitive and humanistic determinations has led to the development of a new direction in philosophy called eco-philosophy or the philosophy of ecology since the 1970s. As stated in the encyclopedia, the philosophy of ecology is a branch of philosophical research that focuses on how environmental problems affect the methodology of modern scientific knowledge and the formation of contemporary worldviews (Kyselov, 2009).

In the philosophy of ecology, man, despite all his socio-cultural and scientific achievements, is seen as an earthly being with the functions of a biological system. Man's vital activity is directly related to the functioning of a set of biosphere mechanisms. At the same time, the philosophy of ecology explores the conflictual impact of man on nature, which in the twentieth century led to the emergence of the global environmental crisis, tries to understand the causes and find ways to reduce and overcome it.

An important question that needs to be addressed is whether scientific and technological advancements and their implementation are directly responsible for environmental issues, leading to the destruction of nature, depletion of natural resources, and worsening of living conditions. Alternatively, are these negative consequences a result of specific methods and forms of utilizing the benefits of science and technology?

Science and technology have an ambivalent nature when viewed from a materialistic understanding of society and a historical approach to understanding human nature. They can either worsen environmental problems or contribute to their solution. The kind of impact they will have on global problems, including environmental ones, directly depends on social relations. Different social systems have different socio-economic relations that determine the forms of deployment and goals of mastering scientific and technological progress, as well as the various practical orientations of this process.

The source of pathology is certain values that form and serve this way of life.

The members of the Club of Rome express their support for these conclusions. Since the publication of the first report "The Limits to Growth" in 1972, there has been an inseparable connection between scientific research methods and general philosophical assumptions and conclusions. This connection was primarily demonstrated in the selection and justification of the doctrine and strategy of studying world dynamics. "The Limits to Growth" Report advocated for a holistic view of the world, wherein knowledge of the whole is crucial to understanding components. In this regard, global environmental problems caused by industrial development and the material wealth of society indicate not only negative anthropogenic interference in natural systems that neglect the intrinsically sustainable flow of nature and its ability to sustain life but also the specifics of human social practice, whose philosophy is increasing profit-seeking.

The excessive deregulation and liberalization of the economy dictate short-term profit strategies, ignoring social and environmental values. The liberal philosophy has become the ideology of a new class of the emerging industrial society – the bourgeoisie. Consequently, many modern scientists and social reformers in the past half-century have viewed these liberal-bourgeois values and the capitalist mode of production as malignant.

Is it possible to envision a way out of the systemic crisis and overcome the world trends threatening to collapse? The researchers of the Club of Rome believed it was possible. In their reports, they have developed new methods to study the world and identified scenarios for global dynamics using existing algorithms. In their reports, they also provided suggestions for the future state of the world and opened up new perspectives for ongoing intellectual and practical endeavours to shape that future (Meadows et al., 1972, p. 186).

Although the authors of "The Limits to Growth" explicitly stated that their work was not intended as a piece of futurology (Meadows et al., 1972, p. 186), we believe that the development of the concept of a society in a steady state of economic and ecological equilibrium, as well as the holistic methodological approach, can be considered a type of social futurology. This concept does not rely exclusively on theoretical constructs or empirical generalizations. Instead, it aims to set

goals and an image of a new society that is transcendental to the current experience of practice and thinking. Therefore, the assumptions made in this concept are not just a product of scientific knowledge, but also of a philosophically hypothetical and ethically normative view. According to the Encyclopedia Britannica, an article on futurology, a section in the social sciences, studies of "The Limits to Growth" and similar studies projecting a generalized socioeconomic vision based on computer simulations are classified as a type of "technological forecasting" (O'Toole, 2017).

The movement towards a new paradigm of society was associated with fundamental changes in the nature of human practice, i.e. the reform of human qualities. The idea of reforming "human qualities" was also expounded by Aurelio Peccei, the first president of the Club of Rome. According to Peccei (Peccei, 1977, p. xi), salvation is only possible if people change their values, behaviour, and mores for the better. Previously, "The Limits to Growth" report identified crucial areas that require cultural shifts. Let us present their key paradigmatic philosophical principles. First and foremost (1) is the realization that the world is becoming one reality, but "If the world is becoming one, then the future must also be only one" (Meadows et al., 1972, p. 2); (2) is the understanding that the establishment of a new social paradigm "must be a joint venture based on joint conviction, with benefits for all" (Meadows et al., 1972, p. 194); (3) that collective and cooperative steps towards a new social paradigm must be planned (by planned measures, rather than by chance), or, as A. Peccei put it in this regard. Peccei "Long-term global goals, both feasible and acceptable, have to be set for mankind" ("Aurelio Peccei", 1974, p. 476). A. Peccei shared the view that man is indeed a rational and spiritual creature worth saving and therefore believed that the present crash-bound course can be countered and reversed only by the advent of a new humanism essentially based on and aiming at man's cultural development, that is, a substantial improvement in human quality throughout the world. The ideas of social solidarity, responsibility, justice, peace (as intolerance of violence) and protection of nature were further developed in his concept of a "new humanism". It is clear that the proposed concepts of "zero", and "organic" growth and the concept of new humanism are alternatives to the existing market fundamentalism.

The holistic approach is important in the analysis of world dynamics. It methodologically combines the logic of scientific rational

cognition, and scientific prognostics, as well as philosophical, moral and ethical normative views and principles. Thus, in the scientific aspect, this approach allows us to analyze the world as a global system in which all its elements are interconnected and interdependent. The world is understood as a complex system and a network of interconnections between society and nature. By applying scientific methods, we can describe and model various systems of the global world, taking into account their complex interactions. The philosophical dimension introduces a value-based and critical understanding of world dynamics. Holism in the philosophical dimension appears as a dominant value. The holistic approach emphasizes the importance of sustainable and balanced development, considering the priority of ensuring the life of the world system as a task of collective human intellectual and moral efforts.

Holism is metaphysically supported by the formation of the post-non-classical science paradigm within the philosophy of science and scientific methodology (Drotianko et al., 2020). Among its leading provisions are the recognition of the multiplicity of methods and approaches to scientific research, the emphasis on the contextuality of knowledge, the recognition of the role of socio-cultural factors in the formation of scientific theories and concepts, and the consideration of the interaction between researchers and research objects. Science, having introduced the position of the observer into its research, has come to the idea of interdependence of all material systems, and thus to the idea of the world and man being closed into a single whole (man is seen as an accomplice in the world processes). The world in science is increasingly imagined as a complex combination of the mental and the material (de Chardin), as a co-evolution of man and nature (Moiseev). One can find the same idea, in particular, in the works of V. Vernadskyi. The naturalist considered life as a natural, not accidental, planetary phenomenon in the global evolution that builds the biosphere and the noosphere (Vernadskyi, 2012, part IV). According to Vernadskyi, the noosphere is a new geological evolutionary change in the biosphere that is emerging spontaneously in our time. It is a sphere where rational human activity plays a crucial role in the development and interaction between society and nature. A. Linde's reflections on the anthropic principle are also relevant in this regard. In the light of quantum cosmology and inflationary theory, the scientist wondered: "Will it not turn out, with the further development of science, that the study of the universe and the study of consciousness are

inseparably linked, and that ultimate progress in the one will be impossible without progress in the other?" (Linde, 2002, p. 27).

The holistic approach provides us with a comprehensive perspective on how to determine whether someone is responsible or irresponsible for the crisis that the world system is currently facing. It also helps us understand the irrational and unsystematic actions that people take towards their own lives and the natural world. Separately, we note that the analysis of the "social responsibility" category against the background of the forecasts of researchers of the Club of Rome, in particular, was considered by O. Matyukhina (Matyukhina, 2021).

Since the formation of its non-classical paradigm in the nineteenth century, philosophy has been spreading a pessimistic and even tragic view of man. It stated that people are alienated from their own activities, their social essence, and nature. Hence the antinomy of human existence: "we have never been so free and also felt so powerless, refers to the experience of collective powerlessness in the face of humanly created ecological, technological, political, cultural and social change, a social experience that coincides and even seems to be produced by what is objectively an increase in humanity's social and material power" (Øversveen, 2021). This estrangement, or disconnection is attributed to historical and social practices or the structures of human nature. However, the latter case presents an insurmountable problem since man's conflict with himself and the world is eternal. This is because his egoism, irrational impulses, and lust are unbridled and remain unchanged. Only the former position leaves room for potential positive changes.

In the twentieth century, there were discussions regarding the conflicting development of humans by K. Tsiolkovsky, a theoretical scientist who was the pioneer of modern theoretical cosmonautics and rocketry, and a supporter of anthropocosm, and O. Chizhevsky, a biophysicist who was one of the founders of space natural science and space ecology. Thus, O. Chizhevsky recalled one of his conversations with K. Tsiolkovsky, in which he expressed his concern: "Imagine (Tsiolkovsky - author) that we would suddenly learn to transform matter into energy completely, that is, we would translate formal knowledge /.../ into reality. Well, then - with all of today's human morality - regard it as all lost /.../. The earth would turn into hell: people would show their pigeon-silly mentality - no stone would be left unturned. Humanity would be

destroyed!" as cited in (Shorina, 2021b). The statement of the discrepancy between the scientific and technological, in fact, intellectual capabilities of humanity as a whole and specific forms of its morality is a cross-cutting theme of humanist philosophical thought and science fiction to this day.

We can recall from Hegel's "Philosophy of Right" (Hegel, 2001) that a person's free will, as it transitions to rational self-understanding, must be objectified in ethical life, which is constituted by Family, Civil Society, and the State. If a person can only be realized in the forms of social collectivises, then his anxiety about the future should be not a purely moral problem, but a political one. In this sense, it is no coincidence that Vernadskyi believed that the emergence of noosphere life was linked to the type of democracy that valued the interests of the masses and the free thought of the individual. This system would prioritize the unity and equality of all people and promote scientific thinking and organized science as the driving force of evolution. This type of society in the geological history of the biosphere opens up a great future for man, "if he understands this and does not use his mind and his labour for self-destruction" (Vernadskyi, 2005). Despite his worries, the scientist remained optimistic. His optimism was rooted in his naturalism as a scientific and philosophical position. He believed that life is a natural phenomenon resulting from the evolution of the world and that the noosphere, which is a natural stage of the biosphere, is consistent with natural law. The scientist also noted that the biosphere would inevitably transition into the noosphere sooner or later. He believed that the civilization of "cultural humanity" is a new geological force that cannot be interrupted or destroyed (Vernadskyi, 2012, part I).

We can observe an extraordinary coherence of ideas among the above-mentioned scientists and the considerations of D. Meadows. In 2004,

based on monitoring the global system's behaviour, D. Meadows warned that since the 1990s, humanity has already crossed the line of self-sustaining the Earth's ecosystems. That is why the favourable scenarios of the 1972 model (with high or medium consumption) are no longer achievable. In 2000, the world's population of 6 billion, natural resource consumption, and environmental destruction corresponded to the most unfavourable (standard run) scenario. The time to implement favourable scenarios was lost. D. Meadows and his group predicted that if a "serious correction" of humanity's consumption of natural resources is not made soon, the collapse of humanity in one form or another (socio-economic, environmental, in the form of many local conflicts) will be inevitable, and "it will come during the lifetime of the current generation".

Finally, 2022 marked the 50th anniversary of the publication of the first report to the Club of Rome, "The Limits to Growth". To commemorate this milestone, a compilation book titled "Limits and Beyond: 50 years on from The Limits to Growth, What Did We Learn and What's Next?". The book includes contributions from the first scientists, Dennis L. Meadows and Jorgen Randers, in which they reflect on the "lessons of the past" and outline prospects for the future (Ugo, & Pereira, 2022).

In 2022, D. Meadows stated in an interview that their group had accurately aggregated the image of the global system. They confirmed that, as a result of their efforts, scientists generally concluded that "the world is moving along what we termed in our 1972 report to be the standard scenario" (Heinberg, & Meadows, 2022). Therefore, according to D. Meadows, the presented World Model Standard Run (Figure 2) is still useful for comprehending events taking place in the world, as well as for preparing for future prospects.

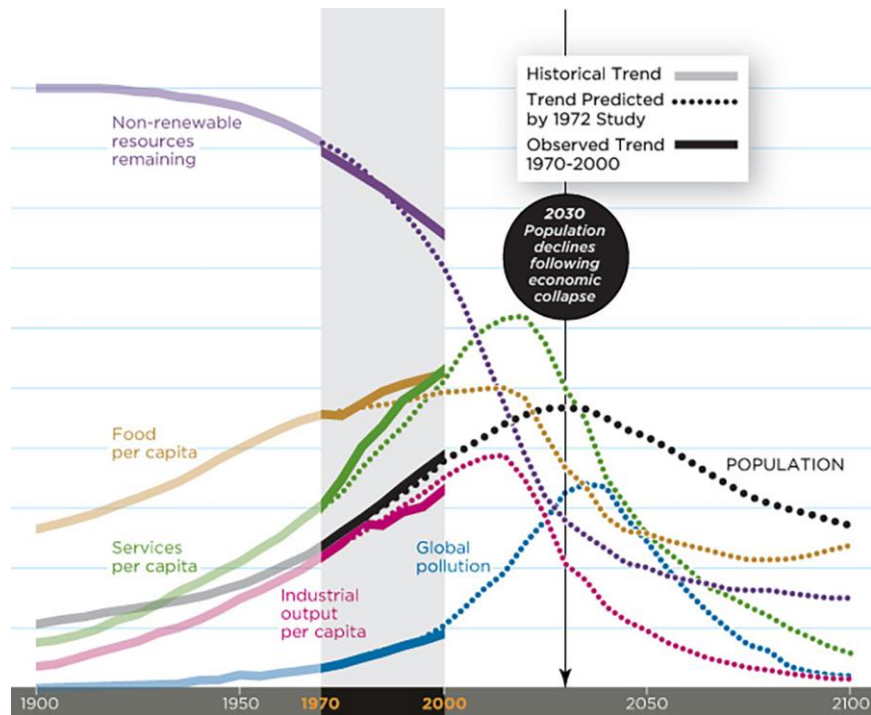


Figure 2. Reconstruction of Figure 35, page 124 of *The Limits to Growth* (1972).
Source: (Hamant, 2023)

In our opinion, D. Meadows is a rationalist due to his conviction for the existence of objective existence and truthful knowledge about the world. He can also be considered a social optimist and humanist. D. Meadows, along with his wife Donella Meadows (who passed away in 2001) and his entire research team, believed in the progress and rationality of humanity. Donella Meadows herself defined their shared epistemological positions. "We were at MIT", she said, "we had been trained in science. The way we thought about the future was utterly logical: if you tell people there's a disaster ahead, they will change course. If you give them a choice between a good future and a bad one, they will pick the good. They might even be grateful. Naive, weren't we?" (Weyler, 2022).

Through this epistemological optimism, they fuelled their arguments for changing the social paradigm of development toward a more balanced and just one. In Juan Bordera's interview with D. Meadows, the holistic scholar warned against mistaking the symptoms of problems for their true cause. Undoubtedly, the symptoms themselves should be eliminated, but without missing what lies behind them: "You can't sustain the growth by tackling problems one by one. Even if we were to solve climate change, we would encounter the next problem by continuing to grow, whether it is a shortage of water, food or other crucial resources. Growth is

going to stop, for one reason or another" (Meadows, 2022). Holism as a methodological approach is here contrasted with reductionism. Reductionism assumes that complex systems can be understood by analysing them into simpler components. Holism, in contrast, emphasizes that a true understanding of a system requires considering it as a whole. On the other hand, as we have seen, holism being a construct of rational thinking and systems analysis, despite the fact that it takes into account the complex and non-linear network of world interconnections, turns out to be an unproductive argument against the irrational and utilitarian-selfish nature of the behaviour of the world's actors. There is no linear determination between "change of consciousness" and "change of the world".

Conclusions

According to the Club of Rome's research, global problems are interdependent, and their solution requires a global approach. At present, it is not the natural environment, human nature, or science and technology that limit the rational and comprehensive use of natural resources to meet the needs of society. Instead, it is the nature of the development of material productive forces and the goals of social production that restrict the possibilities of crisis-free scientific and technical progress and social advancement of mankind. This point of view was initially expressed by the

scientists of the Club of Rome and has remained true over time. D. Meadows believes that the main cause of global problems is the ideology of infinite growth, which is expressed in GDP and the corresponding global policy. The excess of human activity over natural limits indicates the need to change the goal of humanity: not only to slow down but also to return to a level that can be consistent with the ecological limits of the planet. This state of affairs indicates that society is not sufficiently prepared for the future. Although technologies are available today that can reduce the severity of global problems, their use depends on political will. Today's global policy-makers remain focused on short-term goals. The difference from previous decades is that now there is less time to make important decisions. Unfortunately, the gap between "new thinking" like "new humanism" and the real state of affairs is only tragically widening.

The concept of holism, as a new social paradigm of development, is being advocated by the Club of Rome through the ideas of "new humanism" (Peccei) and "new enlightenment" (Weizsäcker, & Wijkman, 2018). Its ethical aim is to address the crisis in the world system and promote a more just and humane form of liberalism. However, the fundamental principles of the global capitalist system remain unchanged. In the authors' opinion, this vision of resolving contradictions is not dialectical, but "external", trying to "reconcile" contradictions. It seems highly important to address global problems and security issues by not just altering the philosophical and ethical constructs, but also the nature of its main organizational structures. However, this remains a theoretically idealized matter. In general, the debate around integrating socially-oriented values into the capitalist economic system and finding a balance between markets and the state requires a separate justification.

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