

Methodology for the Economic Assessment of Biodiversity: Collisions of Ecological Views

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Abstract—Biodiversity conservation requires the development and application of methods for its economic assessment. The methodology of such an assessment, based on a system-philosophical analysis of the ecological views typology, allows estimating the relationship of man to nature and developing methods for the economic assessment of biodiversity. The article proposes an interaction model "Man — Biodiversity — Economic Activity". Further development of this methodology seems to be in the analysis of the ethnocultural and ecolinguistic aspects of traditional and modern environmental and economic myths, the manifestations of the relationship of man to nature in linguistic culture.

Keywords—biodiversity; types of ecological views; economic myth; interaction model; economic assessment; ethnolinguistics

I. INTRODUCTION

The economic assessment of biodiversity is a "scientific problem, of a political, socio-economic, cultural ... economic significance" [1]. The political component is interrelated with the geopolitical interests of states, the development of the military-industrial complex; socio-economic importance is reinforced by recreational, educational value, as well as the importance of biological resources; the cultural aspect is projected onto the aesthetic education of youth, the creation of art; economic importance is in the role of the genetic depository for the development of agriculture and forestry [2].

However, before proceeding to the consideration of existing methods of biodiversity economic assessment, it is necessary to realize the complexity of the task in terms of philosophical and ethical knowledge. This is explained by the fact that society carries out a directional movement to achieve the goals, determined by the myths dominating in a current period of time, forming the consciousness of people. (This subject is examined in the works of the outstanding

figure of the Russian school of philosophy and philologist A.F. Losev). The economic evaluation of something (in our case, biodiversity) depends on the economic myth that is widespread in the collective consciousness of individuals and, more generally, on modern mythology, which has deep historical and cultural origins. Myths, in its turn, evolve in the collective consciousness under the influence of ideas and beliefs substantiated by scientists, politicians, and sometimes separate marginal communities [3] [4].

Therefore, it would be logical to analyze the existing typology of ecological views. These issues are covered in depth in the works of V.I. Falco, whose scientific views served as a basis for our further discussion.

The next step will be an appeal to the analysis of the deep ethnocultural aspects of the mythological origins of ecological views typology, which is reflected in the works of other authors of this article devoted to the philological issues of ecological consciousness.

II. TYPOLOGY OF ECOLOGICAL VIEWS

The basis of each ecological ideological system is a model of interaction between man and the environment (nature). "Depending on the fact, which components of our world are put in the basis of one or another type or form of the world-view, the form and method of a person's attitude to the world are determined ..." [5]. Ecological views are determined by two variants of interaction, that is, elements of the studied system (man, nature) can play the role of either a subject (S) — an active being or a phenomenon that has a certain effect and influence on an object; or in the role of an object (O) — an inert phenomenon or object which can be influenced by the subject.

Thus, on this basis, the six types of ecological views that have the following historical orderliness of occurrence can be distinguished.

- Nature-centrism (naturocentrism). Interaction model: man (O) — nature (S), setting the priority of nature in relation to man. Similar views appeared at the early stages of human development. Nature had a whole range of life-determining functions in relation to man: here nature was for people a source not only of material, but also spiritual values: natural morality and natural law in the form of custom, being an example of moral and legal laws that express nature power over man and society.
- Ecocentrism. The model of interaction: man (S) — nature (S), establishing parity, harmonious relations between elements of the system. It refers to the period of the formation of the mythological consciousness of mankind, when nature has been animated and spiritualized, and then idolized in natural religions. People refer to nature, the Cosmos not as to an object, but as a world creature, mythopoetically interact with its image.
- Technocentrism (early forms). Interaction model: man (O) — nature (O), setting the priority of technology. It is determined by the desire of man to establish control over the spiritual and material forces of nature, to rule and dominate over them.
- Anthropocentrism. Interaction model: man (S) — nature (O), proclaiming the priority of man over nature. It is characterized by the development of spirituality and cogito against the background of the man's "interdict" from nature, both external and internal, generating local ecological crises and disasters and social cataclysms.
- Theocentrism. Model of interaction: God (S) — man (S) — nature (O), declaring the divine principle, collaboration (cooperation, joint spiritual efforts) of God and man, their priority position in relation to nature. Here the third element of the considered system – God – is introduced, thanks to whom man acquires not only internal freedom, but also its source. It should be borne in mind that God, according to monotheistic views, is the creator of evolution and its laws: having created primary reality, He commanded nature to give birth to new types of reality.
- Ethical-ecological nihilism, which overthrows a person from a pedestal and identifies him with a source of universal evil and vice, and occasionally throws into question absolute religious and moral values... object-to-object relations in society and between society and nature are asserted. Interaction model: society (O) — man (O) — nature (O).

In the given typology, we are abstracted from such types of views as accentrism and polycentrism, which require additional analysis.

It should be noted that the basics of the typology stated above are viewed in the linguistic cultures of various nations, in the Russian and Kazakh languages. It is shown in the works of K.N. Bulatbaeva and other researchers [6] on the

example of Kazakhstan bilingualism. There are similar studies of Russian and Kazakh linguistic cultures.

III. INTERACTION MODEL "MAN — BIODIVERSITY — ECONOMIC ACTIVITY"

It is obvious that the appearance and development of the considered ecological views is connected with the presence of the symbiotic relationship of man and nature, without the resources of which our civilization is unable to exist today and has been unable to survive in prehistoric times. This statement is based on the hypothesis of "integrity as indivisible continuity in nature and the human world" [7]. But the maintenance and development of human life is associated with another element that has parity with nature, in the sense of life support, importance. This is an economic activity (or economy), which is a combination of production-commodity relations corresponding to a certain stage of society development. A man interacts with nature, uses its biological and other resources indirectly, through the implementation of economic activity. The latter, in the systems considered, will always play the role of an object — (O), since it is entirely initiated, formed and carried out by people.

The introduction of this element into the system of ecological subject relations, on the one hand, will clarify the corresponding interaction models, and on the other hand, allow to consider nature and its resources through the prism of the economy, i.e., to produce an economic assessment, without which the existence of human society is impossible.

Economic activity is carried out in all areas of human life, the development of which is directly related to the cashflow movement. Money measure is a universal measure by which a person perceives not only the results of his activities, but also the whole world around him.

Thus, we come to the conclusion that in terms of assessment (in our case, biodiversity assessment), economic assessment is of decisive, supreme importance for practice. It is possible to predict, plan, implement concrete measures for the conservation of biological diversity at the federal and regional levels with its help.

The number of elements increases to three — man, nature, and economic activity — and in some cases to four, taking into account God and society. Moreover, the priority of one or another element of the system of ecological views will have a direct impact on the level of economic assessment. It means that the level can have the status of adequate (0), overestimated (+) or undervalued (-).

The logic of further research on the biodiversity assessment requires a certain abstraction degree, i.e., the identification of nature and biological diversity [8] [9]. With this assumption, we come to the following conclusions.

The naturecentrism will be characterized by an excessive economic reassessment of biological diversity. In the case of ecocentrism, one can talk about an adequate relationship to the subject. The same can be said about theocentrism, bearing in mind that the Creator allowed evolution to nature, i.e.,

recognition of the world creation and the rule of the Creator does not exclude, but implies a positive assessment of biodiversity. Technocentrism, as well as other types of ecological and ethical views, underestimates significantly the level of economic assessment of biodiversity.

The findings are grouped and summarized in "Table I".

TABLE I. DEPENDENCE OF THE LEVEL OF ECONOMIC ASSESSMENT OF BIODIVERSITY ON THE TYPE OF ECOLOGICAL AND ETHICAL VIEW

No.	Type of ecological and ethical view	Interaction model: person - biodiversity - economic activity	The level of economic assessment of biodiversity
1	2	3	4
1	Naturecentrism	O – S – O	+
2	Ecocentrism	S – S – O	0
3	Technocentrism	O – O – O	–
4	Anthropocentrism	S – O – O	–
5	Theocentrism	S(God) – S – O – O	0
6	Ethical-ecological nihilism	O(society) – O – O – O	–

Analysis of models of human interaction with the environment shows that the fairest version of the economic assessment of biodiversity corresponds to ecocentrism, that is, the subject-to-subject model of interaction between man and nature.

It is noteworthy that ecocentrism is preferable from a philosophical point of view. V.I. Falco came to a similar conclusion in 1991, during the study of the philosophical and ethical aspect of the issue. He argues that one of the main principles of environmental ethics is the subject-subjectness of the relationship between man and the environment, i.e., the cooperation of society and nature [10] [11].

Let's try to assess the current attitude of society to nature based on these positions.

IV. ESTIMATION OF THE MAN'S ATTITUDE TOWARDS THE NATURE

The everyday consciousness of our compatriots is fully and completely shaped by the consumer attitude to nature under the influence of the economic myth of uncontrollable consumption. Consumer attitude to nature is still widespread despite separate publications in mass media and articles in professional journals devoted to environmental issues and the awareness of society about the problems of biodiversity conservation. Moreover, it can be said about some kind of indifference, "addiction" of society to the existing situation [12].

If we consider this problem through the "human — biodiversity — economic activity" interaction model, the almost complete break-down of the relationship between man and nature becomes obvious, since the latter is excluded from the individual's life support process. We carry out our labor activity mainly in the urban environment (we don't go on a hunt for the sake of satisfying food needs), we receive the corresponding remuneration in the form of currency units, the universality of which will allow us to buy practically any

resources. The power of the economic myth of consumption has led to a massive delusion in the consciousness of society, which does not directly identify the problems of its survival with the problems of preserving biological diversity.

The biodiversity cannot play the role of an active subject in relationships with a person today and we exist in the context of the interaction model "man (S) — biodiversity (O) — economic activity (O)", which corresponds to anthropocentrism in a series of ecological and ethical views (which understates the economic valuation of biodiversity).

The weak relationship of a man and nature (biodiversity) explains and once again justifies the unprecedented significance and acute relevance of economic assessment, through which a modern person perceives the surrounding reality.

The obtained theoretical conclusions about the necessity to build relationships with nature from the point of ecocentrism, which adequately represents the economic assessment of biodiversity, are in conflict with modern anthropocentrism, which understates the corresponding assessment.

The issues of introducing the subject-subjective paradigm of ecocentrism into the collective consciousness are overdue and need to be resolved, but are not the subject of this research and therefore will not be developed here deeply. However, it will be necessary to take into account one of the peculiarities of the genesis of society everyday thinking during the solving this questions, — it is formed through the content of regulatory and legal acts, "The results of this knowledge are expressed and fixed in instructions and provisions, containing prescription rules ..." [13]. Therefore, it is naive to expect a "spontaneous" public awareness of the depth of environmental protection and biodiversity conservation problems. A global solution to this issue will be associated only with the generation of relevant legislative acts by state authorities.

The abovementioned actualizes the solution of narrowly directed questions of the biodiversity economic assessment, the problems of which, despite their pragmatic nature, are connected with moral and ethical aspects.

The anthropocentrism prevailing today has been developed under the influence of the myth of human superiority over nature on the society consciousness. This myth was generated by the ideas of philosophers and was based on the notions of a person's exclusivity, that only his interests and needs matter, "ethical principles are peculiar only to a man" [14].

From a historical point of view, the appearance of anthropocentrism is related to ancient Greek philosophy. Just then Aristotle established a hierarchy of the necessity and existence of plants for the animals, and animals for the man. Similar views were held by Thomas Aquinas in the Middle Ages, who believed that animals did not possess reason, and, consequently, there was no need to feel compassion and remorse about their fate.

Francis Bacon proceeded from the need for man to conquer nature, since "the increase of man's technical power over nature, its conquest, has always been viewed as a way of self-disclosure and self-expression" [15].

Rene Descartes introduced his contribution to the spread of anthropocentrism in his research, he came to the conclusion that animals are biological mechanisms that are not capable to think and feel.

Immanuel Kant argued that animals do not have consciousness, and therefore should be considered by man only as a means to achieve certain goals. And the main goal, in his opinion, is always the man himself.

Natural sciences also made a definite contribution to the development of anthropocentrism and its total influence on the collective consciousness. For example, I.P. Pavlov, dividing the reflexes into conditioned and unconditioned, essentially equated animals to biological machines, controlled by a system of higher nervous activity.

Such mythological attitudes, heard from the indisputable authors, could not help but have an impact on the economic assessment of nature (in our case, biological diversity), and not establish an appropriate tight relationship. The ever-increasing technological power of man over nature led to the deepest cultural crisis of man, when "all forms of consciousness are in the power of the desire to control, capture, conquer" [16].

Manipulations with flora and fauna, the ability to make decisions and take actions to destroy them for economic gain, led to the consideration of the controlled world of wildlife as the lowest in dignity. "With the power to create and destroy life according to a whim, there is a psychological and moral separation of a person from this life" [17], which is consistent and reinforces our conclusion about breaking the relationship between man and nature (due to the exclusion of the latter from life activity of the individual).

The problems of economic valuation of biodiversity are multidimensional, "... the exact sciences are developing in order to develop technologies that simplify activities and everyday life, and not to become familiar with the infinitely complex nature of the surrounding and inner human worlds" [18]. Here the main thing is that the insignificant value of living nature, compared to human life, leads to an understatement of the relevant indicators. This is the main reason for all modern environmental problems. "An important reason of the biodiversity degradation is the understatement of its real value ..." [19]. Moreover, the problem of this understatement is characteristic for all methods of economic estimation of biodiversity that are well-known today and is recognized by all economists, ecologists and philosophers.

V. CONCLUSION

Philosophical and cultural-historical analysis of the ecological views typology allows developing a methodology for assessing biodiversity.

The priority issue requiring urgent solution from the practical point of view is the improvement of modern economic approaches to the biological diversity assessment. And the solution of this issue will require critical analysis of relevant methods.

A profound inquiry of the ethnocultural and ecolinguistic aspects of man's relation to nature and economic activity is necessary for this improvement. A comparative analysis of the speech consolidation of mythological views, including the manifestations of new environmental and economic myths in various modern language cultures is quite important [20].

The results of the study are important for pedagogical activities, in particular, the formation of environmental and economic consciousness, training of specialists, capable to combine knowledge and skills in natural science, technical, economic, environmental and humanitarian fields, as well as fostering a valuable attitude to nature through the introduction to the national and world culture.

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