Eco-analytical Methodology in Environmental Problems Monitoring

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Abstract. Among the problems common to all mankind, which solutions influence the prospects of civilization, the problem of ecological situation monitoring takes very important place. Solution of this problem requires specific methodology based on eco-analytical comprehension of global issues. Eco-analytical methodology should help searching for the optimum balance between environmental problems and accelerating scientific and technical progress. The fact that Governments, corporations, scientists and nations focus on the production and consumption of material goods cause great damage to environment. As a result, the activity of environmentalists is developing quite spontaneously, as a complement to productive activities. Therefore, the challenge posed by the environmental problems for the science is the formation of geo-analytical reasoning and the monitoring of global problems common for the whole humanity. So it is expected to find the optimal trajectory of industrial development to prevent irreversible problems in the biosphere that could stop progress of civilization.

1. Introduction

Currently, the idea of rethinking of the relations between Man and Nature, their harmonious interaction and a caring natural resource usage have become the most topical subject for the discussion by philosophers. The necessity of changing the role of a human being in the physical world, forming environmental friendly consciousness is caused, on the one hand, by significant deterioration of the ecological situation in the world and the increasing number of apocalyptic forecasts of the mankind development [1-2]. Floods, fires, sudden temperature fluctuations, drought, tsunamis – these are the phenomena and processes that have had an especially negative impact on human society and natural systems recently. On the other hand, humanity has faced the new environmental challenges that were not comprehended before. The threats to the environment, such as the risk of global warfare, mass migration, climate change, are beyond the means accumulated in the progressive states [3].

Consequently, the main issue that the environment puts before philosophers is to find an answer to new challenges that ultimately will determine the future of civilization [4]. For that to happen,
Philosophy and ecology must interact [5]. Philosophy can help to solve environmental problems in various areas, as it stimulates the formation of new social consciousness, focused on the necessity to overcome environmental contradictions related to cultural attitudes of the past, it contributes overcoming narrow-mindedness of some academic positions, one-sidedness of spiritual and practical orientation of Man in his relationship with nature, fragmentation of opinions [6-10].

That is philosophical consideration of current environmental situation that allows scheduling such solutions to environmental problems that are positive for society and the environment. Having become a driving force of society values reorientation, philosophical principles of interaction between nature and society, thereby, perform the role of one of the main factors of self-organization of the system “Man – Environment”. In the future, while selecting a strategy for improving an environmental situation, one will need to take many factors into account. And the longer activities to protect the environment from human being will be devoid of a philosophical conception, the more factors will arrive.

2. Material and method
Some achievements of scientific and philosophical thought deserve especially high praise, as they have a direct and significant impact both on people’s minds, and their environmental activities [11-15]. V.I. Vernadsky and his followers’ doctrine about the noosphere proposed a way of achieving the harmony between Man, Society and Nature and thus solving environmental problems [16]. In this doctrine the major factor in harmonizing relations between society and nature is called a rational activity of a social human being. This activity can give stability and rational forms of existence and development to his living environment.

Also an important achievement of philosophy is the conception of an ethical relationship to nature. The fundamental positions of this conception were formulated by Albert Schweitzer. He formulated a well-known bioethics principle of “Reverence for Life” [17]. In modern philosophical and ethical thought this principle was further developed and modified within the principles of environmental ethics, bioethics, including bioethics in medicine. This is currently one of the promising areas of ethics and general philosophical thought.

The ideas of N.N. Moiseev on the environmental imperative and the coevolution of nature and society, that reflected the current state of the environmental situation in the world and approaches to its stabilization and improvement, are also significant [18].

The conception of “sustainable environmental development”, collectively elaborated and proposed to the world community by a number of UN institutions on environmental issues and included in many regulatory documents adopted at international, regional and national levels, plays an important role. For the first time this conception was adopted as a guideline to follow at the UN Conference on the Environment in Rio de Janeiro in 1992.

At the same time, important issues determining ecological consciousness of modern society stay without proper attention of philosophers. How should philosophical thought react to environmental problems and challenges? What is the essence of the philosophy of ecology? What is the content of the philosophical aspect in the approaches aiming to solve environmental problems?

It is important that it is philosophy that traditionally considers problems of interaction of Man, Society and Nature. Philosophy has always reflected the problems of human and nature coexistence, seeking to impart a certain harmony of their interaction through a spiritual understanding of oneself and the World of Nature, and thus spiritual activity aimed at the transformation of Nature.

Philosophy has made significant progress in understanding and clarifying the environmental problems that exist in modern world:
• Philosophers give generalized ideological interpretation of environmental problems;
• Philosophy has developed and categorized the conceptual definitions on the problems of interaction between Man, Society and Nature, and, consequently, ecological form of social consciousness;
Philosophy along with science and other types of intellectual activities is actively engaged in the process of searching the most effective ways of solving environmental problems.

At present the need for harmonization of relations between society and nature is quite realized. Besides, there is the understanding of the fact that the mankind should follow in one direction as a single whole while seeking for solutions of environmental problems. In general, however, environmental problems are not solved effectively in practice [19-23], and do not figure prominently in the minds of the nationals’ elites, especially in raw materials producing countries like Russian Federation etc. [24-28]. The problem of re-thinking of the role of scientific-and-technological advance concerns speeding up the machinery development [29-37]. Joining the efforts of different countries in this area is very slow, and concerted actions of different states are still insufficient.

Studying the causes of environment degradation and measures for its protection and improvement, social philosophy contributes to the expansion of human freedom through the formation of a more humane attitude toward nature and toward other people. Philosophical thought is involved in the development of eco-humanism in consciousness and behavior of a human being and various social strata. The advancement of eco-humanism in society greatly influences the development of new approaches to understanding the importance of environmental problems solution.

The relation of human being to nature is always mediated by relationships between members of society and its structures, especially the political system and economic relations. Therefore, clarifying the nature of interaction between society and nature, philosophical thought should provide its guidance and ideological influence both on individuals, and society that is to adopt environmental views, values, norms, attitudes to spiritual culture in general. Any social system needs to be in harmony with the natural environment, and adapt its instrument of labor, production, consumption, and ways of using nature. It also should be environment friendly in its way of life as well as its population, including population size.

Philosophers determine ecological philosophy as a set of social and philosophical researches of nature and society coordination. In today’s knowledge it is philosophy that can combine different approaches to environmental problems, all the diversity of its faces and bases. Philosophy provides this generalization, solves the traditional problem of methodical search, philosophical understanding of ecological conditions in order to form general methodological principles of research and problem solving.

Nature acts as a postulate and a condition of society development. Society is an isolated part of nature; Man is the pinnacle of evolution. The problem “Society – Nature” is the problem of relationship of a biologically social creature, human being, with the world around him.

Ecosystem is a unity that includes all the organisms of the area and interacts with the physical environment in such a way that the flow of energy creates a clearly defined trophic structure, species diversity and circulation of substances. In the functional characteristics of living organisms, man is a consumer of the first and second order, as he uses vegetable and animal products for food. However, the main feature of the person and its relations to the prosperity of the Earth’s ecosystem at this stage is an anthropogenic industrial activity that keeps on changing natural ecosystems while developing. Modern ecology is inconceivable without a biosphere perspective in philosophical studies.

3. Results and discussion
Currently the threat to the environment has become global in nature, it has created a pre-crisis situation, that may escalate into a crisis under certain conditions and become dangerous to people and the world community as a whole. Therefore, the situation should be changed radically. Philosophy can play an important role in the solution of this task.

Many thinkers see the reason of ecological disasters in Man himself, in his ability to create and use technologies destroying life in nature; in his unlimited desire for consumerism and enrichment at the expense of nature.

Though Man is not the king of nature; he depends on natural resources, the state of the biosphere. Nature resources are not unlimited, and many of them are close to exhaustion. To change the attitude
to nature, save natural resources, recycle waste are the tasks that have come out to the forefront today. Preservation of the biosphere is a necessary condition for the survival of the mankind. Ecologically sustainable development of the mankind is such development that meets people’s needs currently, but it doesn’t threaten a possibility of future generations to satisfy their requirements.

Modern ecological situation arose quite spontaneously and regardless of human consciousness. It can be improved by organizing an environmental management system well thought out, developing the structure of social relations. Besides people are to understand and take into account the objective laws of the biosphere existence. Unfortunately, consciousness of many people is often clouded with the outdated ideas about the possibility of nature passively endure any human actions.

The global nature of today’s environmental challenges requires global and systematic approach to overcome them when a set of particular solutions has one common ground. It should be a universal philosophical principle rather than some particular statement claiming for global status.

Philosophy focuses on changing the human environment, exploring the means of its protection and improvement, helping to expand the scope of human freedom. It creates more moral and humane attitude towards people and the world around them. Philosophical thought is involved in forming moral relationship to nature in human mind and behavior, as well as different strata of society. Society becoming kinder and more compassionate contributes to developing relationships between Nature and human Society, and, hence, solving environmental problems.

Many philosophers believe the source of the environmental disasters to be Man himself, his ability to create and use technologies that can be destructive for nature. Philosophers note his irrepressible urge to enrichment at the expense of nature and philistine attitude towards it from the standpoint of the owner, ‘the king of nature’. This standard of thinking and behavior needs changing.

Ensuring human security is becoming more important than ongoing technological progress. We should move from increasing to modifying production processes with special attention to environmental requirements. It is important to make the transition to a more “natural”, less parasitic lifestyle. Moreover, economy should take into account the need for revival and protection of nature.

Thus, ecology confronts philosophers with new global challenges: they are to find some spiritual meaning in the problems of interaction of Man, Society and Nature, and identify competitive ways of their solution.

The main environmental task of philosophy is to understand the model of future society as an environment information culture, able to be in a harmonious relationship with the natural environment. This is, undoubtedly, the main strategic task for the future, the challenge for philosophical thought. Another fundamental task of philosophy is to refocus social consciousness from a parasitical to a sensible relationship to nature thus balancing the system “Society – Nature”.

As the main reason for current environmental problems results from man, it is he who needs changing, and mostly his spirituality. To solve challenging environmental problems facing the world community it is necessary to study, define and use spiritual reserve of Man and Society.

Ultimately, man himself needs to be protected. Nowadays one of the most dangerous threats is intensifying negative changes in the genetic basis of human being that happen under the influence of adverse environmental conditions as well as the use of various harmful substances. When developing solutions to these challenges philosophers can and must take an active part for the good of the individual and of all humanity.

Being both a biological and social creature, human being is simultaneously connected with two mutually intersecting ecological systems – natural and social ecology. Therefore, philosophy should form ecological consciousness in society as a peculiar form of social consciousness, reflecting the mutual influence of natural and social systems in terms of their current imbalance. According to its objectives and areas ecological consciousness should be focused on working out a large-scale comprehensive plan aimed to prevent a bio-social ecological disaster.

Due to developed ecological consciousness the future society will be able to admit the inevitability of the influence of scientific and technological progress and innovative technologies on the
environment as well as to use them for developing resource-saving and waste-free technologies which do not harm nature.

Equally important global environmental issue that requires rational philosophical understanding is the uncontrolled population growth. The birth rate and population growth are not purely biological processes; they are not subjects to exclusively biological laws. Determinants of the demographic transformation are social and cultural mechanisms and regulations. Population growth in countries with low level of life and culture is much higher than in economically and culturally developed countries. This is because in richer countries the costs of education and training of children are extremely high. The costs of child care and training in developing countries with low social and cultural standard of living is much lower. Equally significant is the fact that consciousness and traditions denying birth quotas do not allow society to take actions on keeping in check rapid population growth in these countries. Therefore, control of population and growth rate is becoming a worldwide problem without any philosophical understanding of birth quotas.

It is the rationality of Man modern societies rely upon while solving the demographic problem. Though we have to admit that abstract rationality is a rather weak mechanism that can be successful only on the basis of a thorough and exhaustive analysis of social and cultural order of a country, region, historical and national traditions, it can help to exercise rational management of population growth rates and population structure. At these points, there is the intersection of the interests of philosophy and psychology, ethnology, sociology, demography and cultural studies that is likely to lead to formation of independent demographic consciousness.

While studying global environmental problems philosophers should also focus on wars as a special kind of armed conflict resolution. At the moment, the major nations have nuclear bombs, missiles that can reach any point on the Earth. The existence of various types of bacteriological and chemical weapons, as well as constantly increasing power of conventional weapons make it possible to assert that the third world war – nuclear missile war – may become the last one. The strong increase of radioactivity will quickly lead to the death of all living things, the survivors of the nuclear strike. Most major cities, scientific and industrial centers will be eliminated. The entire biosphere will be contaminated by radiation. Thus, the life on our planet will be forever impossible. To prevent a nuclear war it is necessary to reduce or even better to stop local and regional armed conflicts. This is the idea that gives the ground for new political thinking. That is why the task of philosophy is to comprehend the essence of these changes and their direction, as well as to indicate the way leading to the social and historical progress without wars.

The philosophical view of current ecological situation may be very beneficial for the correct formulation of environmental problems and the development of the best ecological strategy. The current environmental problems have resulted in deeper and multidimensional understanding of the world, humanity, and universal values. It requires reconstructing society and production, as well as developing environmental education as a new morality and forming ecological consciousness as a set of opinions, knowledge and beliefs, reflecting the system “Society – Nature” and aiming at treating it reasonably [38-39].

At present, philosophy can help to solve environmental problems in different aspects, because it forces to form new social consciousness, focused on overcoming the ecological contradictions caused by the former cultural traditions. It contributes to negotiating limitations of private scientific statements, dissociation of opinions, and unilateralism of spiritual and practical interests of Man in his relations with Nature.

The time of carelessness passed, the era of environmental ethics has come [40-41]. Human beings should feel the necessity to change the role of conqueror of nature to the role of its ordinary member. It especially concerns development geotechnical activities and mineral resource extraction [42-44]. Designing and producing powerful mining machines, constructors and engineers must analyze ecological consequences of their implementation [45-47]. Fighting harmful trends will strengthen environmental ethics, we must stop thinking only about how much we can extract from the ground.
Every action will be considered correct if it does not violate the order and beauty of the biotic community, and naught if the opposite happens.

5. Conclusion
The period of development has come when the human safety becomes even more important than further technological progress. The further expansion of production is not a priority any more. It’s obligatory to change it in the way to meet current environmental requirements. The mankind should transfer to a more natural and less consumptive lifestyle and practice the eco-technical type of economy that takes into account the need for restoration and conservation of the natural environment.

The development of ecologically oriented thinking is the most important condition for the society to become able to harmonize the system “Society – Nature” and stabilize the ecological situation in the world, in regions and individual countries. Since the main cause of environmental problems comes from human being himself therefore it is he and his spirituality that needs changing. Thus, it is necessary to study, define and use spiritual reserve of Man and Society to solve challenging environmental problems facing the world community.

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