Socio-political Explorations

Environmental Ethics and Environmental Security: Specifics of the East-European Region

From the beginning of the 1970s, environmental ethics has claimed its status as a self-sufficient discipline developing a unique system of moral principles and imperatives for human behavior in the natural world.

The social significance of its scope is confirmed, in particular, by it becoming a part of study curricula. Environmental ethics has been taught in American universities since 1971—followed by educational institutions in Norway, England, Canada, and Australia. In the last quarter of the twentieth century, Club of Rome President Aurelio Peccei first introduced the concept of ecological culture. Since 1979, the journal *Environmental Ethics* has been published in the United States; since 1992, *Environmental Values* in Great Britain, and *Ökologie und Ethik* in Germany—currently followed by the journals *Ecophilosophy, Deep Ecologist, Between the Species,* and *Ethics and Animals*.

At that time, in the Soviet Union, environmental ethics as a discipline did not exist—and consequently, was not presented in the literature on ethics or in the tertiary curricula. Even now, introducing such new courses as Social Ecology, Environmental Ethics, or Bioethics is still considered as a future option in many universities for a number of reasons. For example:

As traditional ethics was defined as the normative regulation of human relationships with each other and social systems, it was considered that only people and society can be an object of moral attitude, with deforestation or cruel slaughter of animals excluded from the sphere of moral or immoral relations.

Countries with socialist principles of economic management were assumed to be reliably protected from global environmental crises.

Ecology was viewed through the lens of the class approach—and therefore, the recommendations of western environmental futurolo-

gists on anti-crisis preventive measures were perceived as ›enemy propaganda‹.

Marxist ethics did not accept that, to save the planet, we need fundamental changes in nature management, especially in socialist countries.

A dominant pragmatic approach to nature prompted society to engage in intensive economic research and transformation aimed at deriving economic benefits regardless of their consequences for nature. So the only ›environmental‹ slogan that was forming the environmental awareness of Soviet children, including future leaders of the Soviet society (from collective farm chairmen to General Secretaries of the Communist Party, who would make national decisions), was the quote of the last-century natural selectionist I. V. Michurin, »We must not wait for favours from Nature; our task is to wrestle them from her«. And today, this economic (not environmental) policy is implemented in the post-Soviet space as well—for example, extraction and sale of oil and gas in Russia, or the deforestation of unique forests in Belarus.

Today, at least in Belarus, environmental ethics faces some pressing challenges in implementing its regulatory function.

Environmental safety issues associated with the construction of a nuclear power plant in Belarus are problems not only for Belarus, but also for the European environment. Although the new plant has not yet been completed and commissioned, Nuclear and Radiation Safety has already been added to the International Sakharov Environmental University curriculum for training specialists for a nuclear power plant, including special courses on Risk Ethics and Management.

Moral-and-psychological problems related to the unresolved issues of rehabilitating people affected by the Chernobyl disaster. After more than thirty years since the catastrophe, many problems have been solved, and state and trans-national projects aimed at overcoming its consequences have been developed. There has been a large number of health studies of those affected by the accident, the extent of the economic damage has been calculated, and the ecological state of the region is being constantly monitored. However, the moral and psychological rehabilitation of the people and violation of associated eco-and bioethical principles are being lent much less importance or ignored. The problems of providing timely and reliable information, and the violation of the bioethical principle of ›informed consent‹ are

primarily related to the moral-and-environmental responsibility of key decision makers.

Alternative renewable energy sources, a practical problem closely related to the previous two, is a focus of special attention of the whole world. It is in this direction that since 2004, the International Sakharov Environmental University has taught students majoring in Management of Renewable Energy Resources (in Belarus, this is first of all solar energy, wind energy, and energy derived from the biomass), and since 2008, in Energy-Efficient Technologies and Energy Management—as a result of the requirement to ensure the national energy security based on its own resources, and create the conditions for the maximum efficiency of using renewable energy resources while preserving nature, its balance, and biodiversity. These practical tasks have a significant ethical content *per se:* resolving them presupposes a certain level of environmental awareness of a specialist focused on the ability and willingness to observe such principles of ethics of the earth as ›chronological objectivity‹ and ›responsibility for the future‹ (Potter 1971: 205; Leopold 2013; Leopold 1992: 54–72), to use A. Leopold's terms.

Theoretical tenets of environmental ethics are applied by *providing biosecurity* related to developing science and modern biotechnologies. These have a significant potential of influencing people, society, and nature. However, these prospects are ambivalent. Given scientific and economic prospects of genetic engineering, we should also keep in mind potential risks of its further development. Today, the need for ethical regulation of scientific research becomes a practical task of environmental ethics, requiring an answer to the question whether we should always do what can be done in the field of biotechnologies.

Most ethical problems and disputes are associated with genetic engineering, human genetics, and GMOs. The latter are now actively used in pharmacology, agriculture, medicine (a number of vital medicines and vaccines), and food industry. Currently, transgenic (containing genetic material into which a DNA from an unrelated organism has been artificially introduced) plants can withstand the effects of many viral infections. At the same time, new biotechnologies, especially genetic-engineering technologies and nanotechnologies, may have potentially adverse effects on human health and environment.

As long as there is an element of scientific uncertainty about their possible adverse effects on human health and the environment,

according to the ecological precautionary principle, these new forms of technological activity should be regulated at the state level by special legislation. In Belarus, this is the 2005 Law on Biosafety, which enables a thorough analysis of GMOs. At the same time, we need to conduct serious ethical-and-educational work aimed at breaking stereotypes and prejudices towards GMOs and GMPs.

For *safe medicine*, we need ethical regulation and governance of fundamentally new areas of transplantology, reproductive technologies (artificial insemination, IVF, embryo transplantation), birth control (abortion and contraception), genomics (genodiagnostics, genetic engineering, gene therapy, genetic personal identification), psychopharmacology, and reanimatology. On one hand, the expansion of experimental research in the areas with direct access to medical practice has created new opportunities of genetic manipulation, fetal surgery, new technologies of childbirth, and organ transplantation, maintaining the patient in an unconscious vegetative state for a long time. On the other hand, this research and practical success have created non-standard situations aggravating ethical and legal problems of determining the legal status of the embryo and the legal bases for distributing donor resources during transplantation, developing new approaches to defining the criteria for death, controlling the development of genetic engineering and biotechnologies to prevent their catastrophic consequences for human species. Such forms of genetic intervention in the human body as genetic therapy of embryo and somatic cells, and obtaining identical genetic copies of an organism require ethical evaluation and discussion of their consequences, as the associated decisions will affect the research direction and rate. We also require ethical assessment for forming an adequate societal response to the use of the research results.

Thus, the practical outcomes of environmental ethics, especially in the field of safe medicine, are directly related to the new theoretical direction of *human ecology* on the cusp of ecology and environmental hygiene (ecological medicine), which coordinates and balances public health with ecosystem functioning. Human ecology studies objective laws of functioning, development, and interrelation of the integrated dynamic system ›environment—human‹, where the priority of protecting human health should take into account its bio-psycho-social essence, moral values, and guidelines—in coordination with the principles of organisation and functioning of biological systems of the natural environment.

Human ecology aims at ensuring the environmental safety of the population, but the most important factor here is the ethical aspects of our behavior in nature—our moral attitudes, values, priorities, and the level of moral culture. Currently, as our economic activity poses ecological danger, it would seem logical to assume that to ensure environmental safety, we would need to ban, minimise, or limit our economic activity. But since this is impossible, a prerequisite for regulating the environmental impact of natural objects on humans is our compliance with the *moral imperative* of the conscious limitation of our negative impact on the environment. According to the founder of bioethics R. V. Potter, the introduction of moral regulations by environmental ethics and bioethics can help resolve this ›conflict of interest‹, becoming a ›bridge to the future‹ for the humanity to survive.

Unlike the rest of the biological world, we have found ourselves outside the factors of natural selection, having entered the social evolution without being sufficiently adapted genetically to the adverse effects of the environment. Moreover, progressive technological advances of the environment negate the natural selection of new genetic adaptations, and weaken genetic reserves inherited from previous generations, while fixing negative and pathological mutations in the human genome—with the constantly increasing anthropogenic flow of chemical compounds (artificially synthesised substances alien to the biosphere). In small doses, the mutagenic effect of these factors seems not to change human health, and goes unnoticed, but the cumulative negative effect of these factors for subsequent generations will be reproduced, like any other inherited characteristics, indefinitely. There is no straightforward solution of these issues in eco- and bioethics. Based on the ethical principles of pragmatism and utilitarianism, adherents of the ›liberal‹ approach (molecular biologists, geneticists) see significant perspectives in genetic therapy and biotechnology, viewing any limitations as an obstacle to scientific progress. Humanitarians mostly hold the ›conservative‹ point of view, being concerned about possible genetic changes which, once started, can unrecognizably change the genetic portrait of humanity. The ethical arguments of this position are related to the expectations of catastrophic consequences as a result of scientific researchers refusing to observe traditional moral norms. From the point of view of researchers in biology, the liberal approach is a better fit for the modern state of science and society, and their progress.

This position seems to be fully justified. Adverse environmental conditions and a number of other causes lead to the increased number of children born with serious hereditary defects. For most of them, there is no effective treatment yet—but there is a real diagnostic potential of detecting many genetic diseases at the embryo or fetal stage. It will soon become possible to correct the genetic code, and optimise the genotype of the unborn child—enabling us not only to avoid many genetic conditions, but also improve physical, psychological, and mental attributes of newborns. So far, the most common reaction to diagnosed genetic diseases at the embryo or embryonic stage is abortion, the destruction of a potential life.

Thus, the ethical problems of human ecology are most directly related to human rights—first of all, *the right to life* and as a result, the still disputed *right to death*. It is the ethical position of specialists and general public that currently determines the societal attitude towards euthanasia and organ and tissue transplantation.

Another crucial ethical problem related to conserving natural biodiversity for its sustainable development is the *ecology of animals and the rights of nature*. Modern culture has shown the danger of treating humans as a self-purpose. It is not humans within the framework of traditional humanism and anthropocentrism, but their choice of genuine values that opens a new post-humanity value—a higher level of humanity, revealing the ability not only to be self-centred, but also to care about the life and rights of anything living, taking humanity beyond the human as a biological species (Tulchinsky 2002: 211).

1 Environmental Ethics in the East-European Region

As part of creating conditions for sustainable development in the East-European region, environmental ethics now includes objects of nature as its subjects. This has led to environmental ethics which develops new moral standards of individual behaviour in ›human‹ and ›inhuman‹ situations, and through its universal character, permeates every aspect of our lives.

Therefore, the question whether environmental ethics is a set of theoretical principles or an empirical result and guideline for life practice is, in my opinion, just a play on words and semantics. It is both. Environmental ethics builds its own problem scope and system of

moral categories and basic principles on theoretical and applied levels. At the theoretical level, we develop conceptual foundations of environmental morality as a mandatory sphere; also, we search and justify fundamental values, their criteria, and posit the theoretical principles of eco-ethical regulation. At the applied level, we formulate specific rules of moral judgement to answer the practical question ›What should I do?‹, and regulate human behaviour in its natural habitat. Both levels are intertwined and inter-related in solving the following main tasks of environmental ethics:

- identification and theoretical substantiation of the basic principles and norms of moral regulation of the relationship between man and nature;
- search for practical regulations, technologies, and institutions of their interaction;
- development of tools and methods for forming environmental consciousness, which synthesizes a global vision of the world with truly humanistic values, and is the basis for the ethical human behaviour in practical activities.

So, specific conditions for sustainable development in each country determine priorities in addressing these challenges.

The studies of the scientific foundations of environmental ethics in the East-European region of the post-Soviet space started at the beginning of the twenty-first century with academic discussions on differences and specifics of applied, professional, and practical ethics (Apresyan and Guseynov 2002: 389; Guseynov and Kon 1989: 278–279; Bakshtanovsky and Sogomonov 1999: 154; Guseynov 2004, 148–159; Apresyan 2004: 160–181). It is within the framework of *applied ethics* that Professor R. G. Apresyan (Institute of Philosophy, Russian Academy of Sciences (IP RAS) proposes to analyze environmental ethics as a set of systematic and justified moral ideas about the relationship between human and nature. In 2004–2007, within the framework of the projects HESP and *Improving Teaching of Ethics in the Higher Education System,* the Department of Ethics at the IP RAS organized seminars and summer international workshops for young Russian teachers of ethics in Kaunas, Kiev, Minsk, and Moscow region—taught by well-known specialists in ethics Holmes Rolston III, T. Gouvier, A. A. Huseynov, B. G. Yudin, P. D. Tishenko, and experts from other republics of the former Soviet Union. This work

resulted in publishing a collection of scientific reports *Ethics and Ecology*, with the support of the UNESCO office in Moscow (Apresyan 2010).

Currently, a number of centres for environmental ethics are being set up in Russia. Scientific-and-Research Institute for Applied Ethics at the Tyumen State Oil-and-Gas University has been for many years most influential in studying *the theoretical issues* of applied ethics, including environmental ethics. *Vedomosti*, its regular publication edited by V. I. Bakshtanovsky and Y. V. Sogomonov, reflects the development of ethical thought not only in Russia, but in the entire post-Soviet space (Bakshtanovsky and Karnaukhov 2009: 252).

Under the sponsorship of IP RAS and the UNC Center for Bioethics, Ogarev Mordovia State University (Saransk) is becoming a centre for developing a methodology for teaching environmental ethics (with the contribution of A. A. Sychev and M. D. Martynova).

Philosophical and methodological problems of forming an ecological world outlook are the focus of attention at the Mytischi Branch of Bauman Moscow State Technical University. Environmental ethics is discussed at the annual International Scientific Conferences Eco-World (under the guidance of V. I. Falco) and in the journal *Forest News*.

In Russia, the issues of environmental ethics are analyzed not only by the state, but also by NGOs—for example, the international social group ECOERA (Skolkovo) holds regular forums under the title *Ecology for Life: Integration and Development for Future Generations*, with the presentation of the ERAECO National Environmental Award.

Various aspects of environmental ethics are being studied also in other countries of the former Soviet Union. In the Ukraine, the Kiev Ecological and Cultural Centre was one of the first in the post-Soviet space to address the issues of environmental ethics and animal rights. Since 2000, under the leadership of its director V. E. Boreiko, the honoured nature conservationist of Ukraine, the Kiev Centre has held a series of international seminars on environmental ethics. For more than 15 years, it has been publishing the international *Humanitarian Environmental Journal*, a mouthpiece of environmental ethics for the post-Soviet space. The journal published Boreiko's popular brochures in the Wildlife Conservation series (Boreiko 2004a, 2004b) and five editions of his book *Breakthrough in Environmental Ethics* (Boreiko

2013). At Professor Boreiko's initiative, Ukraine adopted the *Law on the Protection of Animals from Cruelty* in 2006 (the only one in the post-Soviet space) which has put environmental activities in Ukraine on a legitimate basis, in particular, making it possible to bring (and win) lawsuits for crimes against the rights of nature.

In the Republic of Moldova, environmental ethics issues are researched at the Nicolae-Testemițanu State University of Medicine and Pharmacy within the framework of the project *Survival Strategy in the Context of Bioethics, Anthropology, Philosophy, and Medicine* led by T. N. Tsyrdya, the developer of the concept of social bioethics. T. N. Tsyrdya has initiated and organised annual international scientific conferences in Chișinău, and published its proceedings in Romanian, English, and Russian (the twenty-fourth compendium was published in 2018; see Tsyrdya 2018).

We should also note the significant contribution of Lithuanian ethics experts to developing environmental ethics in the post-Soviet space—with the associated terminology of organisational ethics, professional ethics, company ethics, and institutional ethics. In particular, N. Vasilievene introduced the concept of institutional ethics, which develops the principles of ethical activities not for people, but for organisations. The institutionalisation of eco-ethics, its transformation into an effective tool of economic management, and the development of environmental management mechanisms are some of the most vital and poorly-studied areas. Lithuania (in particular, N. Vasilievene and V. Motikeitite from the Mykolas Romeris University, Faculty of Strategic Management and Policy; see Vasilievene 2010) is the undisputable leader in this space. Institutional ethics is now promoted by Ethical Committees and Ethics Commissions—primarily at medical institutions, but also in parliaments, journalists' groups, religious organisations, and company Boards—and their principles are reflected in the Codes of Ethics of these entities. These activities of developing environmental ethics in, and for, the post-Soviet space have resulted in the publication in Lithuania of the collective monograph *Environmental Ethics: the Power of Ethics for Sustainable Development* (Vasilievene and Jurciukonyte 2010).

The spontaneous ›division of labor‹ in environmental ethics has become, in our opinion, highly productive, with the issues of forming environmental consciousness (which, we think, can be effected only by continuous all-out ecological and ethical education) being studied at the Mordovian State University in Russia (M. D. Martynova) and

the International Sakharov Environmental University in Belarus (T. V. Mishatkina). We consider environmental education to be the most important practical component and function of environmental ethics.

2 Principles, Norms, and Regulatives of Environmental Ethics

In the post-Soviet space, the norms and values of environmental ethics are primarily revealed through specific differences between anthropocentrism and non-anthropocentrism: it was through the lens of the human-nature relationship that these differences were identified and analyzed. *Anthropocentrism* is defined through the predetermined attitude of human beings towards nature, the concern for our own needs and interests, with nature perceived only as a necessary condition for our existence. In contrast, *non-anthropocentrism* recognizes the intrinsic value of nature as such, regardless of its benefit or ›harm‹ to humans. In different theories, this intrinsic value is attributed to biological species, or individual entities, or only to sentient (and suffering) animals, or ecosystems. Non-anthropocentrism as a moral value and ethical principle is a normative and ethical innovation which extends the subject of moral responsibility to non-human lives and communities and ecosystems—without diminishing the role and significance of humans, but rather postulating a harmonious and equal community of people and all other components of nature as the highest level on the value scale.

Values of nature is another debatable issue. They are determined by an anthropocentric or non-anthropocentric position, and are significant for identifying eco-ethical principles: should we recognize the independence and inherent value of natural objects or determine them depending on human needs and interests? This is not a theoretical or scholastic question, but rather a practical eco-ethical one. It is the foundation stone of the whole issue of equal rights of living entities to life and compassion. Some environmentalists believe that ›no single living being, except man, possesses the »inherent value« of itself‹, using the absence of interests, desires, and will of natural objects (which, by the way, is arguable) as an argument (Marfenin 2007). This argument would have been valid for *the awareness of* this inherent value (it is impossible for non-humans)—but we are talking about something else, about its objective presence or absence, regard-

less of us being aware of it. We believe that ecosystems should be recognized *as* independent moral subjects with their inherent inalienable value, regardless of their ability to be aware of their self-worth (the baby does not have this awareness either, but its life is still self-valuable)—we as humans must exercise this awareness for them. We do not have the right to make decisions on the species value or their right to life. For the sake of biodiversity, we must strive to preserve all species and natural objects. Thus, eco-ethics imposes a regulatory and moral moratorium on treating nature as a thing and a resource, and it is only the self-value of natural systems that can form the basis of modern eco-ethics.

A *moral-and-understanding attitude to nature*, to use V. A. Petritsky's term (see Petritsky 1990: 103–106; Potter 1971), is another attribute of the non-anthropocentric approach, manifesting itself in the aspiration to ›spiritualize‹ and understand the Living Being, even to the point of penetrating its feelings and experiences. To feel such empathy, it is necessary for non-human living subjects to be recognized as equal to human subjects, and this is possible only through forming subject-subject *relationships* between man and nature, with the world of natural phenomena perceived as its ›Other‹, Other entity, Other sentient being or social organism. This concept has been developed by Vladimir Falco (see Falco 1991: 23–29).

Professor Vladimir Falco, an Associate Member of the Russian Ecological Academy and International Informatisation Academy, has published more than 40 works on the philosophical aspects of ecology, globalisation, environmental ethics, and bioethics. He is an organiser of EcoWorld international conferences (2009–2019), and is a recipient of the Lomonosov Gold Medal *For the Outstanding Contribution to Science and Ecology*.

Subject-subject relationships of human beings and nature determine and enable the formation of moral values of eco-ethics based on the feelings of love and compassion for nature and the feeling of urgency, when we are concerned about the natural conditions for future generations (Leopold 1983, 1992). Our thoughts about the future, which we owe to our descendants, should be based on specific moral principles:

- *principle of chronological objectivity*, which prohibits ignoring the interests of people based on their temporal, spatial, or ideological distance;
- *moral imperatives of our dialogue* with the future, which imply

> the rejection of any actions undermining the possibility of the existence or interests of future generations.

Following these norms is possible only under the conditions of moral and environmental freedom and responsibility. Their ratio is determined by the degree of knowledge of social and natural laws, and the possibility of mastering and ›manipulating‹ them. Obviously, this freedom depends on following the fundamental tenets of moral and environmental *responsibility*, including a transition from the ›model of predominance‹ over nature to the ›model of coexistence‹ with nature; an adoption of a new concept of environmental protection not so much *for* humans but rather *from* humans; and finally, a ›reconciliation‹ of economics and economy with ecology, based on moral criteria.

In this respect, the *Environmental Ethics* document developed by the UNESCO expert group is of particular interest. In 2004–2006, a group of experts developed a policy document on environmental ethics (discussed at the Fourth and Fifth Ordinary Sessions and intermediary extraordinary session—but never published) which made a substantial contribution to understanding environmental ethics as a set of principles. Specifically, some of the principles were: respect for all life, respect for biodiversity, safeguarding the sustainability of the biosphere, environmental justice, precautionary principle, Earth as global commons, rights of future generations, shared responsibility, contraction and convergence, principles about war and the environment.

UNESCO independent expert groups (including Russian representatives as well) research and develop regulatory documents on bioethics, ethics of science, and ethical issues related to the global climate change. Within the framework of the UNESCO programme, R. G. Apresyan has developed general and practical principles of environmental ethics (see Apresyan 2011). Prof Apresyan, Doctor of Philosophy, Head of the Ethics sector of the Institute of Philosophy of the Russian Academy of Sciences, International UNESCO Expert, proposes to view environmental ethics as a set of systematised and reasonable moral ideas about the relationship between humankind and nature.

His *general principles of environmental ethics* include respect for all forms of life, biodiversity, maintaining the sustainability of the biosphere, environmental justice, the precautionary principle, and common heritage of natural resources. The principle of *respect*

for all forms of life affirms the value of Life in the spirit of Albert Schweitzer's *reverence for life*, the moral significance of every living being irrespective of human interests (see Schweitzer 1992: 7).The principle of *biodiversity* affirms its value and the need to preserve it as a manifestation of the richness of nature. It is not the same as the principle of respect for all forms of life. Any force should be used only as a last resort, in response to a clear, immediate, and imminent threat, and the use of force should be commensurate with the degree of threat. The principle of *maintaining the sustainability of the biosphere* could be even more important than the preservation of individual life, species, or ecosystem (except humans). With the global climate change calling into question the existence of humankind, this fundamental principle is underlying the concept of sustainable development, and its priority is being increasingly recognized by the UN and international communities. The principle of *environmental justice* affirms equal distribution of the right to environmental safety among people, with each of us being responsible for its preservation. We know that environmental degradation and natural disasters usually have more acute negative consequences for the most socially and economically vulnerable groups of the population. According to the *precautionary principle*, in developing policies with humanitarian and environmental consequences, we should first of all take into account the most dangerous worst-case scenario. When human activity can lead to morally unacceptable damage, when there is a risk to life or health, when there are potential irreversible consequences negatively affecting future generations or the environment, we need to target our efforts at its reduction or prevention. The principle of *common heritage of natural resources* is based on the idea of our planet as a whole entity. We are equally responsible for natural resources and the environment, as depleting natural resources will affect all people, now and in the future. The commonality of resources is an ethical, not a legal category. Although it is not possible to enact this idea in a law, the *Rio Declaration on Environment and Development* (1992) postulates the development of associated international legal mechanisms.

Apresyan's *practical principles of environmental ethics* include rights of future generations, shared responsibility, ›presumption of danger‹, reduction, and convergence. According to the principle of the *rights of future generations*, current population should take care of future generations of people and other living beings. Although we

do not know potential needs of future generations, in any case, they will want to live in a favorable environment, with a stabilized world population, and sufficient reserves of food and fresh water. The principle of *shared responsibility* states that since natural resources are common property, the responsibility for environmental protection should be shared by all, and not be delegated to any particular organisation, group, or country. The principle of *›presumption of danger‹* (based on the respect for life and the precautionary principle) is expressed in the practical requirement for those who undertake actions with environmental consequences to bear the burden of proving their safety. The principle of *reduction and convergence* (based on the environmental justice and common heritage of natural resources principles) is related to the emission of gases into the atmosphere, the accumulation of which aggravates the greenhouse effect. According to this principle, we need to comply with quotas restricting the volumes of emitted gases—as per the Kyoto Protocol and the Intergovernmental Agreement on Climate Change.

The above principles, norms, and imperatives may well become *conceptual foundations of environmental ethics*, and contribute to the process of ecologising morality. They may include:

- determining our attitude to natural objects not only by material, economic, legal, or administrative prescriptions, but also by moral norms and principles;
- ecologising ›traditional‹ ethical norms and principles, forming new ›ethical-and-bio-ecologised‹ moral values (›environmental conscience‹), and minimising ›old‹ moral values of usefulness and expediency;
- forming a unified moral and environmental responsibility in economic, professional, and domestic nature uses;
- observing the ›ecological imperative‹ of N. Moiseyev, which demands/orders people to accept equal vulnerability of humans and natural environment, without exceeding their ›limits of strength‹ or conflicting with the laws of nature (Moiseyev 1991). Professor Moiseyev, Academic of the Russian Academy of Sciences, one of the thought leaders in ecophilosophy, has introduced the concept of ecological imperative—a set of rules and restrictions for humankind to be able to secure a future for itself.

3 Ecological and Ethical Education in Belarus

Ecological education, forming a new type of ecological consciousness and values system, plays a leading role in creating awareness of environmental problems, contributing to establishing a rational and careful attitude to the environment, and forming a socio-intellectual base for implementing co-evolution and sustainable development. The requirement for the societal ecological culture is reflected in the Constitution and the law *On Education* of the Republic of Belarus. They define the principle of environmental orientation as a key one. The law *On Environmental Protection* provides for obligatory environmental studies in all educational institutions and forms of education (Article 75), and stipulates that the officials involved in environmental management should have had the associated environmental training and regularly update their knowledge. These requirements are reflected in the *National Strategy for Sustainable Development Until 2020*.

The main factors determining a *conceptual model of environmental education in Belarus* are:

- relevance and necessity of solving environmental problems on global and regional scales as a universal factor. In Belarus, this factor is complemented by the regional factors of the post-Chernobyl situation;
- low level of ethical-and-ecological awareness and culture of the general public, professional ›nature users‹, and decision-makers —as a universal factor;
- in an environmental crisis, the awareness of the dependence of environmental solutions on the mentality and the level of the societal ecological culture;
- theoretical issues related to developing the concept of ecoethics discussed above.

Relatedly, some fundamental features of ecological education are:

a. indissoluble unity of rational and logical, analytical, and emotional and sensual origins—and hence empathy, appeal to the feelings of love, pity for natural objects needing our care and protection, ›don't be afraid to be ridiculed for sentimentality‹—in A. Schweitzer's words;

b. continuity of the environmental education, using temporal and spatial aspects of the ›always and everywhere‹ principle;
c. non-trivial forms and methods of training (case study).

Currently, ecological education in Belarus is aimed at ensuring its continuity: it should start in primary school. Integrated environmental courses are now part of the curricula at all educational establishments, with specialized environmental groups set up at some of them, and some environmental aspects being taught even at some preschools. Extracurricular institutions have accumulated considerable experience in environmental education; their work in this area has been managed by the Republican Environmental Centre for Children and Youth focusing on active practical work on environmental protection.

Secondary colleges have added special courses on the fundamentals of ecology with elements of eco-ethics to their curricula, implementing an inter-disciplinary approach in the environmental training of specialists, with some environmental issues reflected in graduation theses.

In tertiary education, environmental courses (Ecology, Radiation Ecology, Environmental Protection and Rational Use of Natural Resources, Radiobiology and Radiation Medicine, Environmental Economics) are a mandatory part of the curricula, with special scientific-and-methodological committees responsible for developing educational standards. Environmental aspects are an important component of the course Protection of the Population and Economy in Emergency—Anti-Radiation Safety, which is taught at all tertiary schools.

Environmental specialists in Belarus are trained at all state universities: the Belarusian State Technological University, Belarusian National Technical University, Belarusian Agrarian-and-Technical University, Belarusian State Agricultural Academy, Polotsk State University, and Brest Technical University.

The *International Sakharov Environmental University* (ISEU) set up in Minsk in 1992 in response to the Chernobyl challenges, plays a special role in forming and developing environmental education in the East-European region. It was A. D. Sakharov who shortly after Chernobyl suggested opening universities in the three countries most affected by the terrible catastrophe (Russia, Ukraine, and Belarus), which would focus on training specialists in preventing such catastrophes, dealing with their consequences, and solving radio-eco-

logical, radiobiological, and technological problems. Such a university —named after A. D. Sakharov—was opened only in Belarus, after his death.

Andrei Dmitrievich Sakharov was a Russian nuclear physicist, dissident, Nobel laureate, and activist for disarmament, peace, and human rights. He became renowned as the designer of the Soviet Union's RDS-37, a codename for Soviet development of thermonuclear weapons. Sakharov later became an advocate of civil liberties and civil reforms in the Soviet Union, for which he faced state persecution; these efforts earned him the Nobel Peace Prize in 1975. The Sakharov Prize, which is awarded annually by the European Parliament for people and organisations dedicated to human rights and freedoms, is named in his honor.

Using the interdisciplinary focus as the most promising way of scientific research, ISEU was the first in Belarus to set forth and implement the idea of teaching environmental ethics in an environmental university.

ISEU is leading the Educational-and-Methodological Association of Tertiary Schools of Belarus in ecological education, and the Permanent Commission on Radio-Ecological Education of the CIS countries. It is constantly upgrading its environmental training, introducing new disciplines, such as Radio-Ecology (being now involved in IAEA activities), Nuclear and Radiation Safety (as part of the state training program for nuclear power plants specialists), Management of Renewable Energy Resources, Information Systems and Technologies in Ecology, Medical Ecology.

The multidimensional tasks of training environmental specialists have resulted in developing a special *ecological education programme* at ISEU—introducing a mandatory 20-hour course Fundamentals of Environmental Ethics (using traditional and non-standard interactive methods of training) aimed at forming conscious moral attitude towards nature, the Other Living, an active and reverential attitude towards Life in general, and readiness to be guided by the principles and norms of the environmental ethics.

To provide professional methodological support for the programme, we have created a network of experts to develop curricula for continuous ecological and bioethical education, publish textbooks, manuals, and guidelines in Environmental Ethics and Biomedical Ethics. All educational institutions have received a video-pack of training materials on ecological and bioethical education. One of the

most important achievements of ISEU is the publication and free distribution of study materials on environmental ethics to Belarusian educational establishments (Mishatkina and Kundas 2008; Mishatkina 2008; Mishatkina and Melnov 2008; Mishatkina 2011; Kundas and Mishatkina 2011; Mishatkina and Melnov 2011; Mishatkina and Melnov 2018).

We are also involved in the public approbation and discussion of the issues of environmental and ethical education in Belarus. ISEU holds national and international conferences, seminars, and summer schools for teachers and students. Annual international scientific and practical conferences *Sakharov Readings: Environmental Problems of the Twenty-First Century*, with the participation of experts from Russia, Ukraine, Moldova and other CIS countries, publish a special issue (based on the conference materials) of the *Ecological Bulletin*.

With mastering the basics of environmental ethics by humanising the content of special study subjects, some parts of eco-ethics and bioethics are integrated into Radiobiology and Environmental Medicine subjects. Experiments and tests on animals have been replaced with alternative methods, such as the optional Alternatives to Using Test Animals in Education course based on computer training programs.

Environmental education has expanded its scope to forming the personality of a specialist in extracurricular time—through participation in conferences, round tables, and press conferences, including the commemorative *Sakharov Readings: Environmental Problems of the Twenty-First Century*.

In 2005, the students initiated the *EcoUni Association*, which is aimed at involving students in educational and outreach activities related to ecology and environmental protection. Its educational project *Man–Ecology–Bioethics* has contributed to developing the environmental curricula for schools and pre-schools. It was awarded a diploma, and won the National Environmental Award. Its programs were included in the UNESCO-Project *Environmental Ethics in the System of Bioethical Education of the Republic of Belarus*. Based on their experience, EcoUni members prepared a *Bioethics and Eco-Ethics for Schools and Extracurricular Education* study guide (later expanded to include a special *Alternatives to Animal Experiments* content for the students of biomedical disciplines). They also held an international seminar on protecting animals in education and research with the title *Humanisation of Medical and Biological Education*. Participants in-

cluded the InterNICHE (United Kingdom), Centre for the Protection of Animal Rights Vita (Russia), and the National Committee on Bioethics of the Republic of Belarus. EcoUni is now InterNICHE's official partner in Belarus, having received its grant to implement a project on humanising education.

As part of extensive environmental education, ISEU students volunteer for ›ethical and environmental patronage‹ in schools, make films and videos, take part in environment-themed film festivals, and contribute to the national magazines *Ecologist and I* and *Animal World*. The meetings of their DISK discussion club focus, *inter alia*, on GMOs and ethical problems of modern biotechnologies. Participation in the annual almanac *Poetic Sakharisation* demonstrates the students' ability to see the world in a non-trivial light, which is the *sine qua non* for the modern environmental thinking.

ISEU environmental and educational activities have received international recognition—in particular, within the framework of its cooperation with UNESCO. Under its aegis, ISEU implemented the *Environmental Ethics in the Educational System of the Republic of Belarus* project, which has transformed its Volma training and conference complex into an *environmental information and education centre* for Belarusian and CIS student and post-graduate advanced training seminars and workshops. With UNESCO's assistance, the Centre has set an *ecological park*—with a demonstration platform holding installations showing the use of renewable energy sources, and an ›ecological path.‹ Also, the Centre has prepared a *Park Guide*, and trained students as guides. The students' immersion into the information and educational environment that combines clean natural environment, the latest educational and energy technologies, ethical and humanistic training, and national cultural and historical traditions contributes to forming an environmentally responsible self-developing person.

The Centre's inauguration included the Republican seminar and teacher-training workshop *Ecological Ethics and Human Ecology* (in subsequent years, followed *by training seminars on environmental ethics* for university staff and young people of Belarus). This opening presentation marked the beginning of the Centre becoming also a methodology hub for public discussions of topical social and environmental problems through Summer Schools of a Young Ecologist, and conferences and training seminars for target audiences.

The latest introduction in the curriculum, the development and

implementation of *the ISEU Transformation Programme into a Climate-Neutral University*, is our response to the UN call for climate neutrality. As an environmental university, ISEU views this challenge as a ›guide to action‹, focusing on education and research in the field of renewable energy sources; environmental education, and administrative and organisational measures. We have completed all stages of the programme, using its results not only at the university, but also externally, and distributing the published materials to the educational establishments of Belarus and CIS. We share our experience in the ecological education at international conferences and seminars.

So, for the first time in the post-Soviet space, we have developed a *conceptual model of environmental ethics* based on the non-anthropocentric paradigm of the human-nature relationship and including ethical principles, norms, and standards complying with relevant international documents and policies. Also, we investigated the structure, functions, and basic concepts of eco-ethics, and identified bioethical problems of human ecology. We direct our sustainable development strategy of its expansion to the educational system at introducing and strengthening international standards in solving ethical problems resulting from the progress in science, technology, and biotechnologies, as well as the national and international environmental situation.

4 Summary

Considering the determining factors, conditions, and specific features of the formation of environmental ethics and environmental-and-ethical education in the East European region, I have analyzed key theoretical principles that need a fundamental justification in order to develop a conceptual model of environmental ethics and environmental-and-ethical education. The paper presents and defines basic principles, rules, and regulations of environmental ethics, as well as the most controversial »open« problems of environmental ethics, *i. e.* anthropocentric and non-anthropocentric, subject-objective and subject-subjective attitude towards nature, recognising the rights of nature etc. I suggest the conceptual model of environmental ethics, which makes it possible to address the issues of environmental-and-ethical education in the post-Soviet space, under the conditions of the authoritarian approach to solving environmental problems and low

levels of environmental culture, in particular, in the Republic of Belarus.

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