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Russian School of Bioethics: History and the Present[†]

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Abstract

This chapter presents the results of a comparative analysis of the Genesis of the word “bioethics” in Russian and foreign scientific literature. It is inferred that from the beginning, “bioethics” carried in itself a philosophical content that becomes deeper in the conditions of globalization and development of modern technologies. The philosophical content gives the opportunity to create interdisciplinary dialog in heated discussions on bioethical issues. An important feature of the Russian school of bioethics is its interdisciplinarity. This reliance is mainly on medicine, philosophy, law, sociology, and education. Serious attention is paid to the Russian bioethics, the ethics of clinical research, and ethical committees of different levels. At the moment, we can talk about new topics of Russian bioethical discourse such as agrobioethics, nanobioethics, genetic editing, and ethical issues of medical and psychological enhancement of human.

Keywords: bioethics, philosophy, globalization, Russian school of bioethics, modern technology, interdisciplinary dialog

1. Introduction

Today in the twenty-first century, it can be stated that our civilization has encountered a number of global problems such as the problem of preservation of peace on the Earth, ecology, food and demographical problems, the problem of overcoming the poverty of the majority of the humankind, and the problems of health and quality of life. As a consequence, they give rise to large-scale tasks that are waiting for their solution, and bioethics plays not the least important role in this context. It is important to mention that the uprising of bioethics

[†]Dedicated in the memory of Professor Boris Yudin.

is of a multiple-factor character rather than just a combination of causes. It is a system of interrelated factors which caused a synergetic effect in the form of bioethics which is a science about search, assessment, and choice of a criterion of moral attitude to all living things.

This chapter considers the arguments supporting the following statements:

1. Bioethics appeared as a result of global changes both at the level of the depth conversion and achievements of modern science and the consequence of the globalization process manifested in the speed of its development and in the increasing influence of the importance of the global community joint activities in the solution of global problems.
2. On the one side, bioethics is an interdisciplinary field of knowledge, while on the other side, the level of understanding of the problems bioethics is solving, such as the ultimate grounds of human existence, its identity, dignity and justice, boundaries of the good and the evil, eco-axiological orientations of scientific research, and political solutions decision making, without any doubt giving priority to the philosophical matrix of its content existence.
3. A high level of potential and real hazards of achievements in modern biotechnologies, and the prevention and non-admittance of their use without preliminary humanitarian expert evaluation assign special social-regulatory status to bioethics. In this respect, "the search," "choice," and "assessment" of moral attitude to the living are the key notions. They become tools of "advanced experience" (Yudin) when situations of possible harm for the living are "played over" in the expert environment, remaining within the scenario "What if....?" that possibly will never be used to make a film [1, 20].
4. Bioethics is already an established independent branch of science of the epoch of the post-non-classical science, the subject of which is the assessment and the choice of a criterion of moral attitude to all flesh, the last being the congregation of living systems and its separate elements including the nature, a human being, and so on.
5. D. Callahan thinks that bioethics could not have appeared as a separate branch if at the same time there were no cultural and public achievements. Those decades were the soil for a great number of social changes and cultural reforms and the increasing role of human rights. This also shaped up as a revival of the subject of moral philosophy, growth of interest in regulatory and applied ethics, as well as dissatisfaction with the then predominant academic stress put on theoretical problems and striving to cultural radical changes [2].
6. Today, as Potter predicted, bioethics has expanded beyond an interdisciplinary dialog and the geographic range [1, 45]. It has become global in all respects. We can find the bioethical discourse in different scientific disciplines and technological practices. Representatives of different countries and confessions take part in bioethical discussions; bioethical schools and international communities of bioethicists are being formed and work successfully.
7. This chapter explains about the Russian school of bioethics which is a multidimensional phenomenon. However, before passing on to the history and modern time of its development, it is necessary to remind about the origins of bioethics and its founders. It is important as Russian bioethics blends seamlessly with the world context. Not only does it develops main areas of bioethics but also creates new platforms for bioethical discourse.

The range of questions bioethics covers astounds by its diversity. Nevertheless, they are all united by the priority of such human values as life, health, well-being, and justice. Another characteristic trait of bioethics is its interdisciplinary nature, when representatives of medicine, law philosophy, biology, and of different religious confessions take part in bioethical discussions.

In fact, how can one define boundaries between life and death, who has the right to choose the limits of his existence—a professional or a common human being—what is the legal status of an embryo conceived *in vitro*, is the surrogate maternity justified, what will a person think about his or her possible genetic engineering and possible cloning, is it moral to use a human being or an animal as a clinical test object, is it possible to “dissemble” a human being for “spare parts” and organize their public bidding because of the total “deficit,” are genetically modified products of agriculture and of medical nanotechnology safe for man, are medical-social resources distributed fairly, and so on?

These questions have been heatedly discussed in both foreign and domestic literature for more than 90 years already.

2. Brief history of notion of “bioethics”

Two events, important for all those dealing with bioethics, occurred not long ago. First, 47 years ago in 1971, Potter published his book “Bioethics: the bridge to the future” in which he introduced the notion of “bioethics.” He defined it as “a new field of knowledge integrating biological knowledge and the system of human and moral values I used *bio* to represent biological knowledge, the science of live systems, and I used *ethic* to represent knowledge of systems of human moral values” [1].

Second, it has been 92 years since the German theologian and Pastor Fritz Jahr (1895–1953), whom Hans-Martin Sass justifiably called the father of bioethical research, proposed the term “bioethics” (Bio-Ethik) already in the distant 1926 [3].

According to Potter, the development of the new discipline of bioethics was supposed to build a bridge between two notions—science and the human nature. In his work “Bioethics: the bridge to the future,” Potter defined the priority of the problem, namely the problem of survival in the conditions of the modern world. His aim was to define and in the best way to develop changing environmental conditions and the optimum adjustment of a human being to this environment with the aim of improving the civilized world and of defending the scientific, cultural, and intellectual progress necessary for the survival of the humankind [4]. Potter thought that the final aim of bioethics was “not only in enriching the life of every person but also in extending the survival of humankind and in the suitable structure of the society” [5]. Later, Potter also included medical aims and aims related to health into his prospects. Reich, the chief editor of the Encyclopedia of Bioethics in five volumes [6], which stood several publications and became the classical theoretical basis for all those, who deal with problems of bioethics, underlines that Potter’s subjective understanding of bioethics was anthropocentric (survival of a human being) rather than biocentric (survival and state

of the biosphere) [7]. At the same time, in his other work "The Global bioethics," Potter says that his understanding of bioethics was influenced by the work "The land ethic" by Leopold (1949), and he formulated his concept proceeding from the close relation between the bioethical theory and the ecological ethics [7]. In this book, Potter continues to develop the idea of close interaction of ethics with ecology, medicine, and science and puts the main accent on the ethics of survival and the global ethics. Stating that bioethics should be built on interdisciplinary relations and on the basis of many disciplines, he proposed two important spheres, which seem independent but at the same time need each other. Medical bioethics and environmental bioethics do not intertwine as the former deals with short-term topics such as options proposed to individuals by their doctors in the efforts to prolong their life by using organ transplants, man-made organs, experimental chemotherapy, and all the latest findings in the field of medicine. "Environmental bioethics has a long-term view concerning what we should do to maintain the ecosystem in a form compatible with reproduction of future generations. Nevertheless, these two branches of bioethics should intertwine reliably in the cause of protection of the individual health, control over reproduction and in respect of the meaning of human population growth" and he introduces the terms "global bioethics" and environmental bioethics [7].

Still earlier, Fritz Jahr, who was inspired by the comparative studies of Wilhelm Wundt concerning physiology and psychology of humans, animals, and plants as well as by philosophic contemplations of Fechner about the potential life of plant soul, transformed and broadened the categorical imperative of Kant into a bioethical imperative. He understands it as follows: "Respect every live creature in principle as a goal in and of itself and – if possible – consider it as such" [3]. Sanctity of law of God (moral law) was the foundation of the categorical imperative of Kant while the sanctity of life was the foundation of Jahr's bioethical imperative. While Kant's model was formal and rigorous, Jahr, who admitted interrelation between taking care of oneself and care for others, replaced the dignity of respecting the law by the dignity of compassion to all "live factors of growth" that is both to life and all its forms. It goes without saying that it was not Jahr who invented live ethics. Referring to European and Oriental traditions, in 1926, he published an article entitled "Natural sciences and teaching ethics" where he gave the subtitle "Old Knowledge in new clothes" describing the function of natural sciences for education and teaching biological research ethics [3].

Ideas and work of a scientist Andre Hellegers from the University of Georgetown became an important contribution into the uprising and development of bioethics as a term and a discipline [8]. According to Reich, he confirmed the term "bioethics" and with this the field of knowledge, social movement in the academic world, in biomedical sciences, governments, and mass media. He was the first in the world to establish an institute of bioethics on the basis of interdisciplinary research and approaches, namely the Joseph and Rose Kennedy Institute for the Study of Human Reproduction and Bioethics. Together with his colleagues, he believed that bioethics would be a unique field integrating science and ethics, and so much attention should be paid to studies of underlying moral values appearing in bioethical concepts. At the same time, he thought that his role was to be "a link" between medicine, philosophy, and ethics. Andre Hellegers is justifiably thought to be "the chief architect of ideas of this science" [9]. He developed the work plan for the Kennedy Institute, having organized

the first permanent interdisciplinary research group. Its work reflected the main directions of bioethics and brought the international recognition.

The first encyclopedia of bioethics was published in 1978. In his article “The word ‘Bioethics’ its birth and heritage of those who created it” published in 1994, its chief editor Reich confessed that he was in a serious doubt as whether to use the word “bioethics” in the title of the encyclopedia, which supposedly should have been entitled “Encyclopedia of medical ethics” [10]. He wrote: “On the one side it seemed acceptable to use the established name of the discipline to name it, but on the other I was inclined to use the new word of ‘bioethics’ because I felt the term of medical ethics was too narrow as it ran counter to ethics of life sciences. Nevertheless it was too bold to give the title of ‘bioethics’ to encyclopedia as the word ‘bioethics’ appeared in the works of only one man and was included into the name of only one institute” [11]. At that moment, Reich thought that he was facing such difficult questions as “whether the discipline or the field of knowledge name ‘bioethics’ will really develop; whether it will last and whether the word ‘bioethics’ will be used to name the whole field of science” (*i.e., biomedical studies and their consequences for human beings*—F.N.). In addition, it is significant that he addressed not specialists in biology and medicine but to the editor-in-chief of the 16-volume encyclopedia of the social sciences, David Sills, who confirmed that “word will be established and the interest to this sphere will grow” [11].

Potter’s “Global bioethics” was published in 1988 [12]. Together with dividing bioethics into two branches, Potter stressed that it was necessary to go further than Leopold and further than medical bioethics and that super-specialization in any sphere can stand against aims of admissible survival in the global scale. Two branches should be integrated, brought to one point of view and called global bioethics, stressing two meanings of the word “global.” On the one hand, the system of ethics is global if it is united and comprehensive, and in the more common sense, if it is of the world scale [13].

In the introduction of the second issue of the “Encyclopedia of bioethics,” Reich defines bioethics as “a systematical study of the field of moral – including moral views, decisions, behavior and policy – in life sciences and medical care, that uses diversity of ethical methodologies in interdisciplinary space.” Proceeding, he specifies that “publishers consider bioethics to *be a discipline going beyond medical ethics* (italics supplied by F.N.). It integrates the moral interpretation of medical and scientific points of view on health of the population, environment, public ethics and protection of animals” [14]. It is important to pay special attention to the article “Bioethics” written by Daniel Callahan, one of the scientists who was one of the originators of bioethics both as a term and as a branch of science. He defined bioethics as a science “which is the product of biomedical achievements related to the environment and social sciences” [15]. In his article, he also stresses that bioethics is the further transformation of medical ethics, and while the primary center of bioethics is medicine and health care, the possibilities of bioethics cover multiple spheres and disciplines widely classified as “**life sciences**”: “Bioethics appeared to steer people to a wide field of moral life problems, which usually cover medicine, biology, environment, population and social sciences” [15]. It is important to mention such fundamental works as “Foundations of bioethics” by Engelhart Jr, and “The principles of biomedical ethics” by Beauchamp and Childress which played the key role in the development of bioethics [16, 17].

The Beauchamp and Childress concept of bioethics includes four principles and a set of rules, validate it using the principles. Rules in turn are used to justify moral decisions and actions in specific situations. The basic principles of bioethics, according to Beauchamp and Childress, is the principle of respect for patient autonomy, which has grounded, in particular, the concept of informed consent; dates back to the Hippocratic principle of “do no harm,” which requires minimization of damage to the patient during the medical intervention; the principle of “do good” (beneficence), emphasizing the physician’s responsibility to take positive steps to improve the condition of the patient; finally, the principle of justice, emphasizing the need for fairness and equal treatment of patients, and equitable distribution of resources (which are always limited) in the provision of medical care [17].

This brief history of notion of “bioethics” and ideas that influenced the formation of the Russian school of bioethics can be illustrated in a table form (**Table 1**).

Name	Where/Time	The main idea
Van Rensselaer Potter	Bioethics: the bridge to the future, 1971 Global bioethics, 1988	“...a new field of knowledge integrating biological knowledge and the system of human and moral values I used <i>bio</i> to represent biological knowledge, the science of live systems, and I used <i>ethic</i> to represent knowledge of systems of human moral values” [1].
Fritz Jahr	Natural sciences and teaching ethics, 1926	The term “bioethics” (Bio-Ethik) understands it as follows: “Respect every live creature in principle as a goal in and of itself and – if possible – consider it as such” [3].
Andre Hellegers	Bioethics center formed // Chemical and engineering news, 1971	He used the term “bioethics” to refer to interdisciplinary research moral problems of biomedicine, primarily associated with the need to protect the dignity and rights of patients [8, 9]. He was the first in the world to establish an institute of bioethics on the basis of interdisciplinary research and approaches, namely the Joseph and Rose Kennedy Institute for the Study of Human Reproduction and Bioethics. Together with his colleagues, he believed that bioethics would be a unique field integrating science and ethics, and so much attention should be paid to studies of underlying moral values appearing in bioethical concepts. At the same time, he thought that his role was to be “a link” between medicine, philosophy, and ethics.
W.T. Reich, chief editor	Encyclopedia of bioethics/ W.T. Reich Editor-in-chief. N.Y. 1978, 1995	Defines bioethics as “a systematical study of the field of moral – including moral views, decisions, behavior and policy – in life sciences and medical care that uses diversity of ethical methodologies in interdisciplinary space.” Proceeding, he specifies that “publishers consider bioethics to be a discipline going beyond <i>medical ethics</i> (italics supplied by F.N.). It integrates the moral interpretation of medical and scientific points of view on health of the population, environment, public ethics and protection of animals” [14].
Daniel Callahan	Bioethics. Encyclopedia of bioethics. N.Y., 1995	He defined bioethics as a science “which is the product of biomedical achievements related to the environment and social sciences” [15]. In his article, he also stresses that bioethics is the further transformation of medical ethics, and while the primary center of bioethics is medicine and health care, the possibilities of bioethics cover multiple spheres and disciplines widely classified as “ life sciences ”: “Bioethics appeared to steer people to a wide field of moral life problems, which usually cover medicine, biology, environment, population and social sciences” [15].

Name	Where/Time	The main idea
H. Tristram Engelhart, Jr.	The Foundation of Bioethics, 1996.	"Moral diversity is real. It is real in fact and in principle. Bioethics and healthcare policy have yet to take this diversity seriously. Those who teach bioethics, those who engage in bioethics committees, even those who produced textbooks tend to discount the diversity of understanding regarding the morality of particular health care choices (e.g., regarding abortion, commercial surrogacy, euthanasia/ germline genetic engineering, inequalities in access to health care, infanticide, organ sales) or the nature of morality (e.g., theological, deontological, virtue-based) [18].
Tom L. Beauchamp and James F. Childress	The principles of biomedical ethics, 1994	The basic principles of bioethics, according to Beauchamp and Childress, is the principle of respect for patient autonomy, which has grounded, in particular, the concept of informed consent; dates back to the Hippocratic principle of "do no harm," which requires minimization of damage to the patient during the medical intervention; the principle of "do good" (beneficence), emphasizing the physician's responsibility to take positive steps to improve the condition of the patient; finally, the principle of justice, emphasizing the need for fairness and equal treatment of patients, and equitable distribution of resources (which are always limited) in the provision of medical care [17].

Table 1. Main authors and ideas that influenced the formation of Russian school of bioethics.

3. Outlook of Russian school of bioethics

A special place, in our opinion, the development of bioethics, has been made by Russian scientists.

Russian school of bioethics originates from the late 1980s of the twentieth century [19]. Among Russian authors, one should first of all mention the well-known Russian philosopher, the academician of Russian Academy of Science (RAS), Professor Boris Grigoryevich Yudin, starting with such fundamental work "Ethics of science. Problems and discussions" [19] written together with the scientist Frolov, four of eight chapters of which are dedicated to problems of bioethics (however, this term was not used at that time yet and Yudin himself confessed that he first heard about bioethics in 1989, when American philosophers came to the Institute of Philosophy of Russian Academy of Sciences) [20]. In 1990, he, as a member of a Russian delegation, visited the leading bioethical centers in the USA. In 1991, he gave the first educational course of bioethics at the philosophy department of Moscow State University, in Russia. The sector of bioethics was organized in the Institute of Human of the Russian Academy of Sciences (RAS) in 1992, and Yudin became the head of it by the invitation of Frolov. The bioethics sector was one of the most active departments of the Institute of Human. It started carrying out research of such issues as the informed consent, ethical problems of experiments with animals, and ethical aspects of new reproductive technologies. Yudin can justifiably be called one of the founders of the domestic scientific school of bioethics, a leader of the Russian bioethics [21, 22]. Together with the Russian national committee on bioethics, the sector studied social-ethical problems, arising during implementation of the "Human genome" project [23, 24]. Yudin also took an active part in another direction of work of the Institute of Human,

namely humanitarian expertise. The staff of the institute prepared expert reports for governmental bodies and international organizations. Under the guidance of Yudin, the Institute of Human was the first to develop a project “The human potential of Russia” [25].

In 2005–2013, Yudin was the head of the department of comprehensive problems of the study of man at the Institute of Human of the RAS and made a crucial contribution into the development of bioethics as both a research area and an academic subject. He trained young specialists in philosophical bioethics and organized a number of conferences and trainings in bioethics with the participation of international specialists. Several projects in humanitarian issues of biology and medicine were implemented at the Institute of Fundamental and Applied Research by means of Russian and international grants.

Yudin carried out huge international work in the field of bioethics. Since 1998, he was an expert from the Russian Federation, and from 2000 till 2004, he was a member of the Committee on Bioethics of the Council of Europe. He participated in elaborating and passing protocols, regulating the use of achievements of genetics in medicine, scientific studies on a human being, and organ transplants. He made presentations at the world congresses in bioethics. In recent years, Yudin paid much attention to the ethical regulation of a matter of biotechnological engineering, “improvement” of a human being, to the imperative of fidelity in research and understanding of philosophy as an expertise [26]. The multi-author book “Philosophy of biomedical studies: the ethos of the beginning of the third millennium” (2004) under the editorship of Yudin is very interesting by its choice of material and the number of covered problems [27].

Together with the famous Russian scientist Frolov, Yudin was the founder of not only the Institute in the Study of Human but also the “Human” journal [28]. In Russian, it is called “Chelovek.” This journal has become a main public platform of the most interesting discussions and became a blood vessel supplying fresh “blood” in the form of new, original ideas and approaches, which were first of all related to bioethical problems.

Sadly, Professor Yudin passed away in 2017, but his scientific works and ideas are still popular and continued by his colleagues.

Doctor of philosophy, Professor Tischenko, who held the same views as those of Professor Yudin [24], became his associate, and his scientific interest covered such fields as bioethics (issues of justice, ethics of genome studies, euthanasia, and transplantology), bio-power and bio-politics, and the philosophy of post-classical science. Tischenko develops the idea of “local contingent rationality” of scientific and moral discourses, competing for recognition in the sphere of the secular language, and introduces the understanding of the genesis of a new configuration of “bio-power” related to decentered social biomedicine institutes which function controlling procedures of interpretation of being, the fact of existence, and the appropriate number of people. One should specially mention a number of his books and articles, such as “Phenomenon of bioethics” and “To the origins of bioethics” which have already become classical for bioethical discourse [29–31]. His fundamental work “Bio-power in the era of biotechnologies” was published in 2001. Tischenko emphasizes that “bioethics is the field of interdisciplinary research of ethical, philosophical and anthropological problems arising due to the progress of biomedical science and introduction of advanced technologies into the healthcare practice” [32].

Yudin and Tischenko are the authors of the concept of social-humanitarian support of innovative activity, including ideas of ethical and social-humanitarian expertise (proactive diagnostics, assessment, and risk management) developed earlier [33]. They think that it is not only scientists who must understand something and engineers, who must develop something, but also representatives of different social groups who must realize the personal, professional, and (or) public meaning of discoveries and inventions (both already existing and the future ones). While solving these tasks, bioethics in the mode of joint work with biomedical sciences and technologies brings the sphere of social relations in order practically in the same way as science brings order into the world of relations in nature, and this is the meaning of the idea of social-humanitarian support of innovative activity [34].

Honored Scientist of the Russian Federation, Doctor of Philosophical Sciences, Doctor of Juridical Science, full professor, the head of the Russian Unit of International Network of the UNESCO chair in bioethics, the head of the Department of the ethical, legal, and sociological expertise in medicine of the Volgograd Medical Research Center, Sedova has made a significant contribution into the development of Russian and international bioethics. Since 1985, she has been the head of the department of philosophy, bioethics, and law. She is also the founder and co-chairwoman of the Regional Ethical Committee (REC) which began its work in 1985. In 2002, she organized and headed the department of ethical and legal expertise of scientific research in the Volgograd Scientific Centre of the Russian Academy of Medical Sciences (RAMC), which was also the first in Russia. She made a great theoretical contribution into the validation of the three-level structure of bioethics, the development of a hierarchic model of ethical committees for Russia. Sedova also developed a concept of feedback in the system “the moral- the law” and legal institutionalization of bioethics (“Legal foundations of bioethics,” M, 2004) [35], worked out principles of organization and structure of ethical committees in Russia (“Applied bioethics,” M, 2002—in collaboration with the Academician of RAMC, Petrov) [36], and wrote works on the issues of informed consent (“The Law and the Ethics in pediatrics: the issue of informed consent,” M, 2004) [37]. Sedova has established and successfully publishes the magazine “Bioethics” which is the first in Russia and prints articles of current concern in bioethics from the interdisciplinary point of view: philosophy, medicine, law, sociology, and other scientific fields. This magazine enjoys a well-deserved respect and is included into the base of the Russian Scientific Citation Index (RSCI) and into the list of peer-reviewed journals of the State Commission for Academic Degrees and Titles of the Russian Federation [38].

Doctor of Sciences in Philosophy, Professor Siluyanov, who is a pioneer in teaching biomedical ethics at the higher medical school of Russia, can be quite justifiably attributed to founders of modern Russian bioethics. She approached bioethical issues from the point of view of Russia Orthodoxy. In her works such as “Modern medicine and Orthodoxy” (1998) [39], “Ethics of the art of treatment” (2001) [40], “Anthropology of disease” (2007) [41], and others, she states that the main difference between “an Orthodox doctor” and “a non-Orthodox one” is in understanding the nature of a disease of a person. For an Orthodox doctor, a disease is always a result of malfunctioning of the unity of spiritual and physiological in a human being. The Orthodox doctor also understands that the cure depends on restoring this unity as well, as the basis of the personal integrity that is the attainment of cure depends not only from the organism but also from the personality. She also considers the problem of human rights through the

lens of Orthodoxy. The basic rights stated and listed in the Universal Declaration of Human Rights (1948, the UN) [42] are unconditional, and the difficulty arises when the list of these rights grows unlimitedly and such rights as “reproductive rights” and “sexual rights” become attached to it. Their real nature lies in willfulness and seeking to change the human nature itself with inevitably fatal consequences for it. Bioethics is the knowledge, the task of which is to protect human life from possible kinds of “artificial” and “invented” rights on changing one’s nature, on the denial of moral laws protecting the nature, society, and human life.

Starting from 2009, the Institute of Philosophy of Russian Academy of Sciences publishes “Work books in bioethics” dedicated to its different branches; in 2010, it started to publish international e-journal “Medical anthropology and bioethics” [43].

In Kazan (Republic of Tatarstan), professor of philosophy Nezhmetdinova obtained the grant to develop a course of bioethics for students in 1994. This course passed attestation by the University of New York, and in 1996, it was approved and supported by the University of Kent (Great Britain). This program became the basis for the course in biomedical ethics, when Nezhmetdinova started lecturing it to students of the medical university by the initiative of Professor Albitskiy. At that time, it was regarded as something exotic. In the following 3 years, it became possible to prove the livability of this field and to “capture” the wider public, and the independent chair of biomedical ethics and medical law with the course in the history of medicine was established in 1998, which was the first to be developed in Russia. As the desire to study the new scientific field was enormous and there was no methodological support, a textbook “The law and medicine: bioethical foundations” was written in 1998 [44], and bioethical issues became part of scientific research work of the staff, doctoral students, and degree-seeking applicants of the chair. In 2000, Nezhmetdinova and Guryleva developed legal and regulatory documents, and with the support of the rector of the Kazan Medical University, Professor Amirov organized an ethical committee with local functions. Three years later, due to the growth of multicenter clinical studies and the appearance of legal regulatory actions, namely the law of the Russian Health Ministry “On approval of Rules of clinical practice in Russian Federation,” there appeared the necessity to organize a Regional Ethical Committee (Regional Committee of ethical issues in clinical drug trials under the Ministry of Healthcare of the Republic of Tatarstan). This situation was an exception rather than a rule for Russia. There was a disastrous lack of knowledge, but the Kazan school of bioethics has the great stroke of luck. Since 2002, the topical nuts-and-bolts course was organized with the support of UNESCO for ethical committees of the post-soviet countries, and representatives of the Kazan school Nezhmetdinova and Guryleva took an active part in conferences and workshops, first as trainees and then as full participants of discussions. The Forum of committees in ethics of the CIS member-countries organized by Kubar enabled the whole commonwealth to take a common stand in issues of ethics of clinical studies and to think about legal aspects not only of clinical trials but also about medical practice as is evidenced by such model laws as “On protection of human rights and dignity in biomedical studies in the CIS member-countries” and “On ethical-legal protection and safety of genetic medical studies in the CIS member-countries” passed by the Inter-Parliamentary Assembly of the CIS countries.

One can say about the birth of a new research area of agrobioethics developed by the initiative of Nezhmetdinova [45]. This is due to global challenges and bio-technologization of economy [46].

Agrobioethics is understood as a mechanism of social control and regulation of new “material viability” in bioeconomics [47, 48]. Agrobioethics represents a new approach to the solution of ethical dilemmas, which can arise in everyday practice of using new technologies in agriculture. It is an experience of solving disputes, inter-personal and social communication for solving controversies both between producers and customers and between the state and the civil society [45, 46].

4. Conclusion: Global trends to global bioethics

Global challenges and strategic and social-economic priorities of the future of the humankind have made it necessary to fasten the study, forecast and development of means which should promote sustainable development, provide population safety and quality of life, protect ecology, and improve the rational use of nature. Currently developed countries are starting the formation of a new technological base of economic systems based on the use of the latest achievements in biotechnologies, information science, and nanotechnologies including agriculture, medicine, veterinary, ecology, and other spheres. This will make it possible for the humankind to solve four main problems it is facing today—food supply, quality of health care, degradation of environment, and problems connected with the exhaustion of power, raw materials, and other recourses.

On the one hand, we are contemporaries of the global problems that need urgent solution as we are talking about the future of the humankind. On the other hand, we witness or directly participate in scientific fundamental cutting-edge achievements which make it possible to change fundamentals of being on the level of life and artificial matter or their synthesis. In 2002, the National Scientific Fund of the USA and the American Ministry of Economy using forecasts of scientists prepared and published a well-known Report on Convergent technologies NBIC (NBIC: N—nano, B—bio, I—infor и C—cogno). It stressed out that the convergence of NBIC technologies would become the basis of a new technological structure [49].

In 1998, a famous Russian scientist who is currently the directors of the Institute named after Kurchatov, Mikhail Kovalchuk, proposed his own version of uniting together these four fields of knowledge. In 2011, in his article named “Convergence of sciences and technologies is a breakthrough into the future,” he gave both conceptual basics and serious arguments supporting the convergence of NANO-BIO-INFO-COGNO (NBIC). It is important that when compared with pure technological solutions of the NBIC technologies future development forecast, he includes humanitarian sciences in this process. According to Kovalcuk, the main objective of today’s post-industrial stage of development of the society is reproduction of systems of live nature. The first stage is combining technological possibilities of modern micro-electronics with achievements in studies of live nature (nano-biotechnologies). This means creating hybrid anthropomorphic technical systems of bionic type. The second stage is the integration of nano-biosensor platforms created at the first stage, that is, the development of technologies of atomic-molecular design and self-organization on the basis of atoms and bioorganic molecules, the result of which are biorobotic technical systems [50].

Another factor that makes the notion of bioethics preferable is the NBIC technologies convergence, which represents a mutual interaction of information technologies, biotechnologies,

nanotechnologies, and cognitive science. The term was introduced in 2002 by Mikhail Roko and William Bainbridge, the authors of the most important for today's work in this direction, the report "Converging Technologies for Improving Human Performance 1" prepared in 2002 in the WTEC [51]. NBIC convergence has not only huge scientific and technological importance. Technological possibilities appearing during the NBIC convergence inevitably will cause serious cultural, philosophical, and social disturbances. In particular, this concerns the revision of traditional understanding of such fundamental notions as life, mind, a human being, nature, existence. It is quite possible that from the certainty based on everyday experience, the humankind has to move to understanding that in the real world there are no clear boundaries between many phenomena, which were previously considered to be of dual nature. First of all, due to recent research, the traditional difference between live and inanimate loses its meaning. In the same way, the difference between a rational system possessing mind and free will and rigidly programmed system is gradually fading. Already today, live beings are created "artificially" with the help of gene engineering. One of these days, it will become possible to create complex live beings (also with the help of nanotechnologies from separate molecular-size elements.) In addition to broadening the boundaries of human creativity, this will also mean the transformation of our understanding of life and death. All this is in the center of bioethical discourse.

Also, today we witness futuristic or manifesting scenarios of the development of the human society. In his presentation made already in the autumn of 2010 at the scientific conference "Future talk" in Vienna, which discussed technologies of the future, a futurologist and trans humanist Raymond Kurzweil [52] spoke about fantastic possibilities that could become quite real: in the nearest 20 years, the humankind would be able to make the so-called "reserve copy of a brain," which would contain records of all reminiscences; a person will be able to look though his or her past which will be projected into his eyes: special nano-robots regulating the health of human being will be implanted into his blood system; in the 30s of the current century, the computer will prove existence of the artificial intellect, and it will be able to understand human words as a man does and will be able to pass the Turing test; the implantation of a special chip into the brain which will create virtual reality of "complete submersion" will become feasible; by 2040, a human body will be able to transform into any form which will also be made of a huge number of nano-robots, and all internal organs will be replaced by cybernetic devices. In conclusion, Kurzweil forecasts the coming of the complete "technological singularity" by 2045, the result of which will be turning the Earth into a single gigantic computer, and gradually this process will involve the whole of Universe [53].

In 2011, the "Project 2045" was developed in Russia, and a Manifesto of a strategic public movement "Russia 2045" was published. The Manifesto proclaims the demand for creating a new ideological paradigm for the necessity of "using breakthrough technologies for improvement the man himself and not only his habitat. We think that it is possible and necessary to eliminate aging and even death, to overcome fundamental limits of physical and psychological abilities, defined by restrictions of a biological body" [54].

The appearance of new options of the humankind future can form new moral Decalogues. They differ substantially from Biblical, Muslim, and other confessional variants of ethical codes. Currently, most official documents in bioethics, to which professional medical, biological,

and nanotechnological communities refer, are mainly based on principles and approaches developed within the secular liberal bioethics. At the same time, positions of religious concepts, in particular of modern Christian social doctrines, are barely reflected in official international, state, and professional documents even though the substantial part of the society keeps Christian or Muslim ethical norms. The religious understanding of the world first of all is based on the creative mission of God. It is in the creation of all the living: life, a man, the nature. Modern NBIC technologies undermine the belief in creationism. Hence, a necessity arises in both the new interpretation of sacred books and the development of religious ethics.

Speaking about technological challenges, modern researchers and scientists cannot help but use the chance to express their anxiety and call to vigilance. Analyzing characterizing traits of the modern society (using the American one as an example), an American scientist Nesbitt calls it the Zone Poisoned by Technology, where

1. We feel fear about technology and worship it.
2. We are unable to tell reality from fantasy any more.
3. We take violence as a norm of life.
4. We love technology as children love toys.
5. Our life has become estranged and erratic [55].

The last 25 years of the twentieth century and the beginning of the twenty-first century gave rise to such a specific phenomenon which the German sociologist Ulrich Beck named "other modern" or "the society of risk" [56]. And we think that he quite correctly stressed the change of the meaning and use of the notion "risk" which from the category of the personal area only moves to the global level.

Second, if the previous century risk was considered to be a result of insufficient development of technologies and scientific knowledge, today risk appears where there is redundancy of technological and scientific progress [57]. This emerges the following questions: "Should we worry about this or leave it to the discretion of scientists-technologists? If we should then are there any humanitarian practices providing our bodily safety and fundamental basics of nature?"

In the Kazan school of bioethics, great attention is paid to the applied nature of bioethics. Updating of applied ethics seems quite natural in this respect. Here, we should remember the meaning given to ethics by classics of antique philosophy Plato and Aristotle. For Plato, ethics being the structural part of philosophic knowledge should teach the art of life. He thought that this was the real and highest possible good for a man [58]. While distinguishing theoretical and applied levels of the philosophical knowledge system, Aristotle also defined their aims as the truth and the good. He included ethics, politics, and economy into applied philosophy, thus emphasizing that ethics was the applied philosophy and so philosophical foundation of ethics is definitive in its character [59]. Judging from all said above, it is possible to make the following assumption: when this or that scientific discipline claims to be bioethics in interdisciplinary discussions, its philosophical origin is logical and crucial.

“In the framework of applied ethics, the theoretical analysis, public discourse and direct morally responsible decision-making merge together and become a content of a real practice organized correctly. It is a special form of theorization. Theorization directly integrated into the life process, a kind of theorization in the terms of life.” (italics by F.N.) [60]. As a consequence, the interpretation of the meaning of the adjective “applied” related to the noun “ethics” gains a special meaning. In this respect, the view point of Bakshtanovskiy and Samogonov, which states that what it involves is first of all the integration of both sides of ethics—both moral practice and ethical knowledge into the field of reflection about the nature of the applied ethics, seems most trustworthy and well reasoned. This finds its reflection in ethical know-how for the interaction of two sides of applied ethics (rational analysis of moral choice situations, ethical design and modeling, ethical expertise and consulting, etc.). And further, the meaning of the word “applied” used with the noun “ethics” is considered as a supplement understood as a process of moral creative art, concretization procedure, an *act of a moral choice* (italics by F.N.) The concept of these authors considers the *modus Vivendi* of the applied ethics to be the moral choice, and the applied ethics is defined as “regulatory and value subsystems concretizing moral (business ethics, ethics of journalism, bioethics and etc.) and the theory of concretizing of moral, project-oriented knowledge” [61].

A number of researchers divide bioethics into three levels—theoretical, practical, and applied. In particular, philosopher Sedova gives the following explanation:

“Theoretical bioethics is a combination of knowledge about attitude of man to all the living represented in the form of an axiological discourse.

Practical bioethics is the institutionally shaped standardizing regulation and value expertise of the attitude of man to all life forms. Corresponding standards are documented in the form of oaths, charters and declarations, which are not legally binding in their essence.

Applied bioethics is the description of concrete situation of human behavior related to the living” [62].

At the same time, based on the definition of bioethics as a search, assessment, and choice of a criterion of moral attitude to all the living [63], the following definition to these three levels can be proposed:

1. The theoretical level is an interdisciplinary and complex analysis of ethical and axiological aspects in theory and practice of various kinds of human activity with respect to the living

In this case, we can speak about concepts and theories (e.g., humanism, utilitarianism, deontology, etc.), which shape and define the moral attitude of a man to the living in historical-cultural and social context. Here, we can lay emphasis on the peculiarities of recurrence and non-recurrence of moral decision making as an axial principle depending on existing technological possibilities of live systems transformation.

2. The applied level is bioethical aspects of regulatory and value subsystems of concrete types of activities (medicine, science, politics, sport, agriculture, etc.), which are controlled and regulated by professional codes and moral commandments, laws and regulatory acts, which include those lens of the public discourse.

Here, we can speak about concrete types of bioethics, institutionalization of which we witness today, such as biomedical ethics, agrobioethics, sports bioethics, ecological bioethics and global bioethics, scientific bioethics, and so on. The peculiarity of biological aspects of regulatory and value subsystems on this level is the frequent use of the complementarity principle, which presupposes combination of elements of professional codes and regulatory acts with principles of bioethics on a case-by-case basis rather than consistently [64].

3. Practical or clinical bioethics is a concrete bioethical expertise or visualization of a problem, which demands to make moral choice right here and now in the situation that (as a rule) is not supported by previous experience in medicine or any other sphere of human activity

This is translated into bioethical know-how. Examples of these solutions form a bank of bioethical casuistry which becomes a practical and methodological basis of project-oriented “advanced knowledge” that provides research of and transforming influence on “small regulatory-value systems” [65].

The level of clinical bioethics represents the brightest form of “bioethical feasibility.” It is here that the identification of bioethical problem and its detection take place. Tischenko emphasizes that “visualization, detection (from the bottom to the top) of the real moral order is a prerequisite of correction, moral healing both of a separate human being and the society in the whole. Bioethics in particular is trying to solve this problem in modern biomedicine by clarifying the essence of relations between moral entities, existing in it, and proposing ways of their arrangement” [66].

Speaking about the clinical level of bioethics, it is necessary to emphasize that it is influenced by the American tradition, including the US legislative system as it is based on precedence which does not allow mandatory and generally binding nature and compulsoriness of legal norm and the law. In this case, the question arises as to whether bioethical casuistry is compulsory and valuable. Suffice it to recall the legislative mess with the right to organize ethical committees in the Russian Federation, beginning with the possibility to organize them which first appeared due to the Article 16 of the federal law “On foundations of public health protection in Russian Federation,” which was later withdrawn and did not appear in the last federal law “On foundation of public health protection in Russian Federation” passed in 2011 [67].

These three levels of bioethics are closely interconnected. Within the bioethical discourse, the theoretical analysis, public discourse, and direct making of a morally responsible decision fuse together and become the subject matter of a real practice that is properly organized. We would like to point that it is a special form of theorizing which is included into the process of life and a special form of responsible decision making.

Based on the above, it is possible to make the following conclusions:

1. Being the interdisciplinary field of knowledge by its birth, bioethics leans toward philosophy by its content’s “specific gravity” and reflects results of global social changes affecting the ultimate foundations of man, nature, and the society.
2. The subject of bioethics as a new scientific discipline is search, definition of principles, and criteria of moral attitude to all the living, and as a social technology—evaluation and choice of the moral criteria for the living.

3. Bioethics is a new type of scientific knowledge which is based on procedures and methods of “advanced experience” when the theoretical analysis and gaining new knowledge, public discussion, and practical moral decision making take place simultaneously.
4. Considering the place and role of bioethics in the conditions of global changes, one can see that its social-regulatory status, the aim of which is to prevent negative consequences of breakthrough technologies, becomes evident.

The present rector of the Kazan State Medical University Professor Sozinov has been the head of the chair of biomedical ethics and medical law since 2003. Due to his efforts, it has become the first in the country among chairs of educational institutions providing teaching bioethics together with legal foundations of health, study of patients’ rights, and their implementation in modern conditions as well as rights, responsibilities, and protection of medical workers themselves. The following events were organized in Kazan: the workshop in ethics of clinical trials for members of ethical committees and researchers, the conference in ethics and law, the first Russian congress “Bioethics and human rights,” the workshop of the Forum of committees in ethics of the CIS member-countries, the international research and practice conference under the auspices of UNESCO “Gender equality and bioethics,” and numerous round tables in ethical and legal issues of health care and medical science within large medical forums. Since 2003, Professor Sozinov has been the head of the Regional Committee in Ethics, and starting from 2006, he is the member of the Russian Committee in Bioethics under the Commission of the Russian Federation for UNESCO and since 2007—the head of the Forum of committees in ethics of the CIS member-countries. Professor Sozinov also is a member of the Managing Council of “The Strategic Initiative for Developing Capacity in Ethical Review (CIDCER)” of the World Health Organization (WHO). The study of ethical-legal problems arising in different fields of medicine (pulmonology, infectious diseases, dentistry, orthopedics and traumatology, obstetrics and gynecology, pediatrics, etc.) is the main scientific direction of the chair.

Today, a great number of books and articles are published, and conferences and symposia are held every year. Significant in this respect is the Encyclopedia of global bioethics which was recently published under the editorship of philosopher Henk Ten Hava and which contains 358 articles by more than 400 authors [66, 68].

In the present time, Kazan studies in the field of bioethics have a comprehensive and interdisciplinary character and cover different fields of medicine and biology, sport, food, and ecological safety. In the recent years, we witness broadening of the discourse in the field of bioethics, and there are studies related to the philosophical analysis of consequences of breakthrough technologies implementation for the solution of global problems.

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