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**BIOETHICS: BORDER AREA IN FOUNDATIONS OF
MODERN BIOMEDICAL TECHNOLOGY**

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Abstract

In the work, the author, starting from Potter's metaphor of «bridge» (Potter, 1971) as applied to bioethics, identifies a whole series of new manifestations of bridge properties in bioethics. Bioethics as a «bridge» is placed at the border area (Tischchenko, 2011), which typical feature is it is always at the intersection of the scientific and the non-scientific. For the analysis, aspects of science and ethics' interaction, as well as science and religion, are highlighted. The problem of relationship between science and ethics cannot be deducted only to the problem of applying scientific achievements. Therefore, the features of modern development of science and influence of bioethics on it are considered. As an example of religious assessment of scientific research in biomedicine, the position of Russian Orthodox Church regarding the problems of bioethics is presented. It is noted that specifics of this position is quite slow development of theological bioethics.

Bioethics, being on the edge of the scientific and the non-scientific, manifests itself as a special science that transcends the borders of traditional understanding of science as such. Defending the interests of human, bioethics as a science closely interacts with society not only with regard to biomedical research regulation (producing regulations and prohibitions), but also stimulates scientific discoveries. In conclusion, the asymmetry of bioethical dialogue and necessity in further study of primary bioethics' paradigm are noted.

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1. Introduction

Initially, since the very appearance of the term, bioethics was characterized by the metaphor of bridge, especially after V.R. Potter stated that bioethics should become a bridge between two cultures, between the present and the future (Potter, 1971). From the very start, bioethics relied (and continues to rely) on world outlook and environmental experience (Ardashkin, 2016), which allowed it to become a bridge between ecology and medicine. Later it turned out that there are many more bridges. The modern bioethics is a bridge between: philosophy and non-philosophy (Fox, 2008); ethics and law (Shapiro, 2017); in ethics - between universal ethical principles and respect for cultural diversity (Engelhardt, 2006; Ebbesen, 2016; Wahlberg et al., 2013); West and East, North and South (Campbell, 1999), in other words, between different cultures (Li, 2017); scientific progress and ethics; science and faith (Sgreccia & Tambone, 1986); Christians of different faiths, as well as believers of other religions; equipment, technology and a human being; medicine and society; an expert and a profane (Melik-Gaykazyan, 2012); the past and the present (Melik-Gaykazyan, 2012); a scientist and a participant of experiment; a doctor and a patient. The metaphor of “bridge” corresponds to another metaphorical definition of bioethics - as a border area; bridge passes over this border area, and representatives of «any metaphysics, any theology, any forms of expert and profane knowledge» meet there (Tischchenko, 2011, p. 10), and eventually - scientific and non-scientific knowledge. In this meeting, the metaphor of “bridge” embodies a dialogue in an interdisciplinary methodological space, moreover, a dialogue not only between those committed to different scientific disciplines, but it is a dialogue, conditionally speaking, among a scientist, a professional and a profane.

2. Problem Statement

Metaphors in science do not just lie on surface, there are the essential characteristics of studied phenomenon behind them (Ankersmit, 1993). In bioethics, they play different roles (Melik-Gaykazyan, 2014). The point is that, while appearing in a scientific context, they reveal the problem. And the metaphor of “bridge” in bioethics turns attention of modern methodology of science to the necessity of establishing the borders of bioethics that are constantly being stolen, because bioethics itself is located and exists on the borders, at intersection of the most diverse phenomena of modern life. Why has bioethics become a bridge in such diversity and, above all, in relationship between science and other unscientific forms of rationality?

3. Research Questions

To answer this question, it is necessary to clarify the following points: How is a bridge between science and non-science (with ethical values, religion, society) formed? What exactly in science itself contributed to emergence of this bridge? What is special about bioethics as a science that allows it to become this bridge?

4. Purpose of the Study

The purpose of this work was to clarify the specifics of bioethics as a scientific discipline, which is located at the intersection of many spheres of human activity, thus justifying its definition as a bridge and a border area.

5. Research Methods

The conceptual basis for analysis of bioethics features is the two scientific metaphors in its definition – «bridge» (Potter, 1971) and «border area» (Tischchenko, 2011). Bioethics as element of post-non-classical science was analyzed using a systemic approach developed by Eric G. Yudin (Melik-Gaykazyan, 2010).

6. Findings

With emergence and development of new biomedical technologies, such trend of the modern philosophy of science as a question of relationship between science and morals is manifested in bioethics. In 1995, Nobel Peace Prize winner, Joseph Rotblat, who is opposing the idea of science's ethical neutrality and irresponsibility of scientists for application of their scientific achievements, offered Hippocratic Oath for scientists. A scientist who takes this oath assume individual responsibility for the ethical significance of one's scientific activity (Wolpert, 2007). As Lewis Wolpert notes, this oath has a noble purpose, but scientists rarely use their power to apply their scientific achievements in practice. Also there is «a grave danger in asking scientists to be more socially responsible if it means that they have the right and power to take such decisions on their own» (Wolpert, 2007, p. 346). The history of eugenic movement is a classic example of science's immorality, when the German genetics grounded the policy of «racial hygiene», and also took part in its implementation. As a result, «a merging of science and ideology took place in Germany. And if science unites with ideology, this predetermines its fall» (Müller-Hill, 1997, p. 116).

For individuals and society as a whole, not only the power of scientists and state can be dangerous. Giving the power to doctors can also be fraught with danger. Doctors are still just humans (with all the failings of a human being). They are also concerned with the problems of professional status; they have their own personal views based on religion, education, personal beliefs, etc. For example, «In a study of actual behavior in the clinical setting, it has recently been documented that physicians' religious beliefs have a major impact on their ICU decisions. Withholding, withdrawing and median time from ICU admission to first limitation of therapy varied by religious affiliation». (Bülow et al., 2008).

In the light of this, Lauren K. Hall emphasizes that arguments of some experts «about how to “manage death” (whatever that means) should not be subservient to religious or spiritual beliefs, which looks suspicious. One of the major protections one has against the abuse of power in general is that that power is made subservient to other human values, whether religious or otherwise» (Hall, 2010). Today, there are huge opportunities for science, but these opportunities are not unlimited. «Medicine should be made subservient to other kinds of human goods, and it should remain humble about what it can and cannot do» (Hall, 2010).

So, today there is no doubt about existence, as Boris G. Yudin put it, the *external* ethics of science (Yudin, 2009, p. 233-248), which covers the issues emerging as a result of application of scientific research. But it must be emphasized that the problem of relationship between science and ethics cannot be reduced to the problem of applying scientific achievements. Today, the period between scientific discovery and its application has decreased so much (in the classical period of scientific development it was 15-20 years (Mamchur, 2009, p. 227) that discussion of ethical problems begins already at the stage of experiment (for example, as it used to be with all types of cloning). The influence of science and technologies it creates on human life is becoming ever deeper, all pervasive. There is not only an "ever more dense "envelopment" of human by science, one's immersion in a world designed and equipped for him by science and technology" (Yudin, 2009, p. 234) but a threat to existence of human emerge. Modern biotechnology made it possible not only to improve, to correct human nature, but also to create what is not inherent primordially. Because of this, the ethical dimension of scientific research became especially relevant.

But the assessment of relationship between science and ethics in contemporary literature is quite ambiguous. On the one hand, it is noted that «ethical tension in science is growing indeed» (Mamchur, 2009, p. 229), on the other hand, the point of view of ethical neutrality of science is advocated (Wolpert, 2007). These assessments reflected two imperatives, between which there is a conflict. On the one hand, the freedom of scientific search suffered in the history of science; on the other - the need to limit this freedom in the interests of man was obtained in struggle during the whole history of science (Yudin, 2009, p. 238). When a human being becomes an object of cognition, the *inner* ethics of science comes to the forefront (Yudin, 2009, p. 235). In research, in which people are participants, this conflict turns into the conflict between freedom of scientific research and the need to protect the dignity of participants, protecting their rights, since participation in experiment always may result in a greater or lesser risk for participants (Yudin, 2009, p. 239). Participants often agree to participate in experiment expecting the possible benefits from experiment results (for example, healing). There is a conflict of interests: while researcher is interested in gaining new knowledge, participant is trying to gain a therapeutic effect.

There are two basic mechanisms for handling research, involving humans. The first is an informed consent procedure, which requires the participant of the experiment to be informed about the goals, tasks, expected benefits and perceived risks before experiment begins and to agree with it. The second is the control of ethical committee: «*each* research project can be carried out only after the application is approved by an *independent* ethical committee» (Yudin, 2009, p. 241).

It should also be noted that embryos turned into the objects of research today, which are not a simple biological object, but in fact are human beings at the earliest stage of their development. The procedure of voluntary informed consent cannot be applied to them because of they are not autonomous, but the issue of protecting their fundamental rights remains open. Thus, ethical problems and considerations are built into activities of scientist.

Bioethics as an interdisciplinary science, while studying these problems, goes beyond the boundaries of traditional understanding of science as such. It is integrated into activity of society (Meshcheryakova, Melik-Gaykazyan, & Melik-Gaykazyan, 2016), interacting closely with it, especially in the sphere of biomedical research regulation. This regulation is institutionalized not only as standards

(ethical and legal) for conducting experiments, but also as prohibitions of certain studies. For example, genetics, like no other science, make influence on people's ideas about creating hybrids, «human-animals» that is possible not only in the distant future due to its modern achievements in this field.

Prohibitions in science (as well as just scientific interest) are directly resulted in creation of hybrids (if one can not put an experiment on a human or its embryo, one can create a living model), and creation of new methods of experimental research. The development of hybrids theme in culture witnesses about a certain image of science in modern society, as M. Kozhevnikova notes, modern images of hybrids «illustrate both admiration and fear of development of science and invasion of divine actions. Through the image of “human animal” science provokes, like the hybrids themselves, ambivalent feelings» (Kozhevnikova, 2012, p.82).

On the one hand, there are optimistic estimates, on the other hand, there are warnings, for example, in an epigraphs to feature film «Gattaka» (it raises issues related to use of genetic technologies in the future) quoted lines from the book of Ecclesiastes – «Consider God's handiwork; who can straighten what He hath made crooked? » (Bible. Book of Ecclesiastes, 1:14-15). Today not only the assessments of separate biotechnologies come into conflict, but also the ethical components within science itself - external and internal ethics of science. And, as a consequence, the modern science is featured with a problem, which Vyacheslav S. Stepin defined as the problem of «coordinating the new forms of ethical regulation with the traditionally basic principles of scientific ethos» (Stepin, 2015, p. 651).

The scientific ethos includes two fundamental principles: the first one requires scientist to conduct substantive and objective research of the world, the highest value in his activity is the search for truth. The second principle is aimed at accumulation of scientific knowledge, so researcher should not limit himself with repeating what is known about an object researched. Vyacheslav Stepin calls these basic principles ethical presumptions, which «express and provide the status of self-worth and sovereignty of scientific knowledge». However, emergence of additional, external ethical regulators («the external ethics of science») causes concerns about the possibility of deformation of basic ethical principles of science, transformation of these additional principles into a means of ideological control over science and loss of scientific creativity. But V. Stepin notes a paradoxical situation: the limitations imposed on scientific research by some external ethos of science are «not a rejection of objective research, but a condition for its implementation». It is related to entities that increasingly become objects of scientific research and require new ethical regulation, these are «man-sized» (in other words: dimension corresponding to the essence of the human being) objects. They include historically developing systems with a human being and human activity integrated in them. For them, experiment becomes limited or even impossible due to risks to which a human being (and maybe even humanity) is exposed.

In post-non-classical science, relation between the scientific ethos of science and extra-scientific social values becomes an object of scientific reflection precisely.

One of the main tasks of bioethics is to implement such a reflection exactly. But bioethics itself transcends the limits of strictly scientific rationality, attracting and mastering non-scientific types of rational experience (for example, religious, everyday one).

The progress of biomedicine can affect, to any extent, any person. Therefore, different religious confessions have to elaborate and refine their positions on a number of bioethical issues. Because of this,

religion, like any other social force, can not stand aside. In particular, the opinion of Orthodox Church on the moral side of one or other interference in human nature is topical both in terms of helping scientists, researchers to develop the ethical position in relation to their activities, and in terms of determining the position of society in establishing the limits of scientific research in moral terms. It is also important for patients who can participate in scientific experiments. They are not indifferent what kind of medical intervention they agree on, which is the raw material for producing a medicine or vaccine that is being tested.

But for the Orthodox Church itself (by the way, like other confessions) there are no ready answers to the ethical problems that emerged. The Russian Orthodox Church had to develop a doctrine on biomedicine and bioethics on purpose (Fundamentals of ROC's Social Concept, adopted at the Jubilee Bishops' Council in 2000, Section XII) (Fundamentals of ROC's Social Concept). Because the questions posed today (except of abortions) were completely unknown at the time when texts of Holy Scripture were written, the texts and the fathers of Church are unable to answer to them. The problem of abortions today also manifested itself in a new light, completely unknown in the past, such as the relationship between abortion and prenatal diagnosis.

According to ROC's doctrine stated in Section XII, bioethics obviously goes beyond the framework of biomedical ethics, for its task is not only to protect life, but also to protect the ultimate values of human. This allows putting bioethics in a special place in the sociocultural context, turning it into a space for dialogue, in which not only the voice of clinicians, scientists, public figures should be found, but also the pastoral voice of the Church (Fundamentals of ROC's Social Concept).

In January 1998, the Moscow Patriarchate established its own ethical committee, known as Church and Public Council for Biomedical Ethics. It is primarily aimed at study of state of biomedical research in Russia; moral and legal expertise of experimental and scientific-practical activities in the sphere of biomedicine; representation in international public movements and organizations on ethical issues of modern biomedicine; informing and advising a broad stratum of Orthodox and Russian public on the ethical issues of modern medicine.

The Council on Bioethics includes representatives of Orthodox medical organizations, priest doctors, experts in selected fields of medicine. In 2007, the council's website was opened. Due to its social status, the Council does not have regulatory functions in the field of practical public health. However, this does not prevent the Council from taking an active stand: its members participated in development of «Russian Federation Law on Protection of Citizens' Health» (2011). The Council also developed a number of statements, appeals to the Government of the Russian Federation and the President of the Russian Federation: «On moral unacceptability of human cloning», «On moral problems associated with development of new reproductive technologies», «On sin of infanticide», «Christian attitude toward in vitro fertilization», «Statement on problem of prenatal diagnosis of fetal pathology» and many others.

So, bioethics began with awakening and development of public opinion in regard of the problems generated by development of biomedicine and emergence of new technologies. The society assesses the scientific achievements and its application in practice using ethical codes and other documents, through the work of ethical committees, through development of theological opinion, etc., which indicates that

dialogue with the public becomes an important component of scientific activity, moreover, today it has a direct impact on development of science, leading to scientific discoveries. Today there are already facts that confirm participation of society in scientific research, for example, the activities of PXE International, the patient advocacy group in the United States, which unites pseudoxanthoma elasticum patients and their relatives (Kelty et al., 2014). Due to its active work, they planned and conducted studies leading to discovery of genetic mutation responsible for the disease.

7. Conclusion

The society has passed the way from complete dependency of a patient on a doctor and a healthcare system to protection of patient's rights and interests through a dialogue which is organized and essentially is necessary for execution, appearance and development of which were implemented in scientific activity for the first time. Bioethics is *within* this dialogue, being a bridge connecting very different opinions, often competing strategies. As a rule, participants of dialogue are in a different position: a scientist and a participant of an experiment, a doctor and a patient are in «strong-weak» relationship always, and the task of bioethics is not only to take into account the interests of all parties, but primarily to protect a weak one against various kinds of risks. Therefore, it is not entirely accurate to define bioethics as a trans-disciplinary trend in science (Grebenshchikova, 2010), which is essentially a supra-disciplinary approach, and this contradicts the tasks of bioethics that are always within a dialogue. If not a trans-disciplinary one, then which paradigm is inherent in bioethics? Further research will be devoted to searching for an answer to this question.

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