BIOMEDICAL ANTHROPOLOGY'S TRANSFORMATION: FROM TARGETING ON MAIN PATHOLOGIES – TO THEIR PREVENTION

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ABSTRACT. *Due to the aggravation of the global anthropological crisis, which increased interest in the health of the human population, we substantiate the necessity of constitualization of biomedical anthropology and its degree of constructiveness, which will make possible to solve more effectively the health problems. The article also substantiates the necessity to change the direction of biomedical anthropology from the struggle against pathologies to their pre-warning.*
KEYWORDS: *anthropology, human, health, medicine, pathology, sociobiology, holism, Freudianism, neohippokratism, gene pool, bioethics, Olympism*

Contents

Disease is a healthy reaction to an unhealthy lifestyle.
Vik. Sukhorukov

Introduction

The current global anthropological crisis (in which man has become his own worst enemy) has actualized the problem of human's health. According to some scientists' opinion (including the view of P.L. Kapitsa) the problem of human's health has become one of the most important problems in the world. The emergence of global technogenic processes and the intensification of their damaging effects on

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the biosphere reminded man that he is not simply a "set of social relations" but a being that is "social-natural" one, which cannot exist outside the biosphere. Man, occupying a certain place in the chain of life forms on the planet, actually depends on them. Understanding of the nature of the biotic substrate and the conditions of its existence is a necessary factor of the existence and development of humanity. Man is a biological species with all the consequences that follow from it. Being a social entity whose immanent property is the transformation of nature, man has turned the biosphere into an all-common object of labor and brought it out of the natural equilibrium within which he was formed; it caused a global ecological crisis that threatens his normal existence as a biological entity.

The problem of the human health on a global scale, of the health of the entire human population, has become especially acute in such conditions. This required a deepening of the notions related to human health, a rethinking of historical experience related to the organization of health-care activities and the development of new life-saving and life-respecting values. Biomedical anthropology will have to accomplish this task; this branch of medical science is designed to comprehend the patterns of the historical development of views about health, pathologies, medical concepts and on this basis to formulate a conception of health care. These views will have to take fully into account the necessity to organize a lifestyle that is consistent with the preservation and strengthening of human health. It is easier and cheaper to prevent the occurrence of pathologies than to deal with their consequences.

If we take into account the degree of danger of modern health challenges, it becomes clear that the main direction of the development of health care in modern conditions should be turned towards prevention, based on the formation of a new type of culture, on a new way of life which is adequate to the values of health preservation. It is gratifying to note that interest in this issue is currently growing. This is confirmed, in particular, by the publication of the article by V.K. Kozlov [Kozlov, 2013], by V.K. Kozlov's and S.V. Yarilov's monograph [Kozlov, Yarilov, 2010], as well as by a review for this monograph made by a known Russian geneticist, N.V. Timofeev-Resovskiy's pupil and employee B.F. Chadov [Chadov, 2016]. The peculiarity of these publications is the discussion of biomedical problems from the standpoint of the biocosmological approach [Khroutski, 2010]. The main purpose of this article is an invitation to discuss an important problem.

1. The status and tasks of biomedical anthropology

Anthropology has now split into such disciplines as philosophical anthropology (dealing with the identification of the philosophical foundations of the human problem), social anthropology (studying the relationship between man and society), economic anthropology (considering the interaction of the human being and economic sphere of society), cultural anthropology (studying interaction of man and culture), pedagogical anthropology (assessing the interaction of man with the sphere of education and upbringing), etc. All of these disciplines are important, of course. But they all make sense only for a healthy person. Therefore, the set of such a scientific branch as biomedical anthropology has been really matured, especially

since in this area considerable material has been accumulated, which requires careful consideration. The task of this section is to identify and comprehend the historically formed biomedical concepts of health and pathologies, their positive and negative sides, as well as to justify life and health as the highest value and the necessity for a transition to such a lifestyle and medicine that are oriented not only to eliminating of pathologies, but first of all to prevention of them. This will contribute to the constitutionality of biomedical anthropology.

2. Transformation of the concept of health: from a static state to a dynamic process

Medicine is usually understood as a field of science and practical activity aimed at preserving the strengthening of human health, the treatment and prevention of its diseases, or a combination of disease sciences, treatment and prevention of them. Historically, medicine was formed and developed in the course of combating with all sorts of human suffering, so the focus of its attention was illness, pathology, and not actually health. Suffering was generated by constant struggle with nature, by wars, epidemics, natural and social cataclysms. The main task of medicine was to fight with various pathologies. The reformer of ancient medicine Hippocrates [Hippocrates, 1936–1944], who substantiated the need for a holistic approach to the patient's body, introduced the concept of anamnesis, developed the theory of etiology, prognosis and temperaments, also insisted on an individual approach to the patient and focused on the treatment not of the disease but of the patient, that is, on the elimination of suffering. Galen [Galen, 2014], Ibn Sina [Ibn Sina, 1954–1960], A. Vesalius [Vesalius, 1950–1954], W. Harvey [Harvey, 1948], Paracelsus [Paracelsus, 2016] pursued the same goal – treatment of the disease as the elimination of suffering. A. Paré developed methods for the treatment of gunshot wounds, introduced an ointment dressing instead of cauterizing wounds with red-hot iron and created a number of orthopedic adaptations. T. Sidenham gave a description of the specific human ailments – scarlet fever, scurvy, gout, etc. Up to now, this approach – to treat a patient – is predominant. As a result, medicine has developed a style of thinking that consists in discovering of the causes of the disease and finding ways to eliminate them. Thus, medicine actually developed primarily as a doctrine of pathologies, and the question of what health really is, remained, as a secondary one. But since the fight against the disease can be successfully managed only from the position of health, the problem of health, its components and conditions has increasingly become the focus of researchers.

Explanatory dictionaries define health as the correct, normal activity of the organism. Medical publications usually define health as the ability of the human body to adapt to changes in the environment. Sometimes health is determined through the sum of its indicators in self-control, including absence of a feeling of constant fatigue, a good appetite, good work of excretory organs, normal sleep, good memory, clarity of thoughts and orderliness of actions, good mood, goodwill, ability to work, and the ability to maintain good relationships with colleagues. The WHO Constitution defines health as a state of complete physical, spiritual and social well-

being, and not just the absence of disease and physical defects. Anyway, modern medicine associates health with the norm, and the disease with pathology: health is the absence of significant deviations from the norm, and the disease, on the contrary, is a significant deviation from the norm.

The concept of norm in medicine has no single interpretation. Along with the denial of the right to exist the very concept of norms, various concepts offer such an understanding of the norm as an "ideal norm" or "bio-teleological norm" (that is, as a certain set of properties reflecting the ideal mode of functioning of the organism), as an "average statistical norm" (that is, as a certain complex of statistically obtained structurally-functional parameters), as "the equilibrium of the existing" (that is, as a certain manifestation of the harmony of cause-effect relations), as "a harmonic aggregate and correlation of the structural and functional data of the organism that are adequate to the environment and provide the organism with optimal life activity" (that is, as a special form of adaptation of the organism to the conditions of the life environment), as a statistical law realized in life through individual deviations and expressing a balance in the relations of the organism with the environment , as the biological optimum of a living system (that is, the range of the psychosomatic functioning of a living system that is optimal for a person), and so on [Petlenko, Tsaregorodtsev, 1979]. There is also a concept of health in which the determinations of individual health and of population health are differed: the health of the individual is the dynamic state (process) of the preservation and development of its biological, physiological and mental functions, optimal work capacity and social activity with a maximum life expectancy, and the health of the population as socially-biologically organized collective, inhabiting a certain space, is the process of social and historical development of socio-biological and the psychosocial activity of the population in a number of generations, increasing of the reserves of working capacity and productivity of collective labor, the growth of environmental dominance, the improvement of the species of homo sapiens; the criteria for the health of the human population, along with the individual properties of its constituent people, includes the birth rate, progeny health, genetic diversity, the adaptability of the population to climatic geographic conditions, the willingness to perform diverse social roles, the age structure, and so on.

This concept considers the concept of health of an individual or a population at different levels in the context of weak environmental interactions that are important for the functioning of the biosphere. The living matter of the planet, that is, the aggregate of all living organisms that currently constitute the biosphere (according to V.I. Vernadsky), possesses (as shown by A.L. Chizhevsky [Chizhevsky, 1921]) adaptive-compensatory functions with respect to various kinds of cosmic radiation. Adaptive-compensatory processes affect human health. The reaction of living matter softens the effect of threatening factors. Proceeding from this, health is considered to be an ecological concept reflecting the measure of the established equilibrium between an organism and the environment. These two aspects of health as an ecological concept in a functional sense can be unidirectional in one period of time and differently directed in another period. The first side of health was explored in an

ecological aspect by examples of the evolution of biological species; in order to characterize the second side of health, it is necessary to study in detail the hierarchy of biospheric connections that affect the vital activity of the population both positively and negatively [Kaznacheev, 1989].

Thus, at the present time the dynamic understanding of health is increasingly replacing the static understanding of health; within the framework of this view, health is treated not as a state, but as a dynamic process, which is a derivative of the whole complex of life activity factors. Health as a state of complete physical, mental and social well-being is not something fixed, given once and for all. Such understanding of health allowed us to overcome, firstly, the anthropocentric approach to health (that is, the study of health at the individual level), and, secondly, insufficient attention to the deep changes that occur in the body as a result of adaptation processes. The anthropocentric approach served as the basis for the concept of nosologism, in accordance with which the description and classification of the most common pathological processes in human organism were carried out. As modern classifiers are impermanent and are not based on fundamental criteria for the classification of nosological norms, the concept of nosologism has been criticized [Kaznacheev, Subbotin, 1971].

As human being is a coherent socio-natural system, his health and illness are the result of complex interactions of the biological and social factors of his life activity. In previous eras, the interaction of biological and social factors has been slow enough, so man was able to adapt to environmental changes. In the modern era, changes in the environment are so radical that man does not have time to adapt to them. In this connection, a hypothesis was expressed that the biological properties of man are insufficient for the current level of development and changes in the external environment [Kaznacheev, Matros, 1981]. Studies of the mechanisms of human adaptation to the effects of the environment indicate that the body's reactions to changes in the external environment involve deep biological processes, the manifestation of which does not fit completely into the division of diseases into acute and chronic diseases (acute are considered to be more easily eliminable and depend primarily on sanitary and economic causes, whereas chronic diseases are considered a greater threat). Therefore, in addition to this classification, a group of "minor diseases" and a group of "major diseases" were also proposed. "Minor diseases" were designated those that can be both acute and chronic, and which contribute to an increase in body resistance with a minimum "fee" for it. Diseases which cause the forced reaction of the organism, when the degree of tension of the adaptive mechanisms are so high that they can cause "breakdowns", were called "big diseases". Such diseases can be both acute and chronic (suffice it to say that individual forms of influenza can be more dangerous than those chronic diseases with which a person often lives all his life).

The interaction of an organism with the bacterial and viral flora in the process of evolution appears in some cases to be a factor of natural selection (when selection goes to resistance to infection), and in other cases the suffered disease forms immunity and thus serves as a tool of correcting the of ontogeny (the individual

development program of the organism). This indicates that human health is a complex and dynamic process. Man, finding himself in extreme conditions, in some cases minimizes his life activity, limiting some of his functions, and this is often estimated as a disease. However, such changes (in spite of the fact that they can have an acute and protracted nature) are, in their biological essence, such processes, without which the preservation of life under these conditions is impossible. These diseases are called “adaptation diseases”, which are essentially a process of health development – the transition of previous health, adapted to the previous conditions, to new health, adapted to the changed conditions of the environment. In the case when the process of vital activity of an organism undergoes disturbances under changed conditions, “disadaptation diseases” of the organism arise, under which special homeostatic mechanisms are formed. These mechanisms can both coincide and do not coincide with the interests of an individual and the whole population [Kaznacheev, Matros, 1981].

If adaptation processes are oriented only to the current time (that is, the forecast for the development of external conditions and human interaction with them is absent), then any deviations from the existing norm act as a disease. At the same time, many deviations (changes in blood pressure, body temperature, etc.) are not always signs of the disease, since these deviations can be a reflection of organism's objectively necessary reaction. In this connection, a hypothesis was put forward that the formation of adaptive mechanisms in modern conditions can be reflected in the following generations due to not genetic, but phenotypic programs. With the preservation of the living conditions, this fixation will be expedient and will help to increase the viability of future generations. If the conditions of life change (extreme facts disappear), the fixation will be unsuitable. Therefore, the authors of the hypothesis conclude that the “momentary” elimination of “adaptation diseases” can play a disadaptive role for future and current generations, which manifests itself in the preservation of entire adaptation mechanisms that have become unnecessary [Kaznacheev, Matros, 1981].

If we proceed from the systemic view of health, we can distinguish its various levels – biological, organismic and population ones. The population level deals with the population of people from a particular region in specific environmental conditions. Those services that are responsible for organizing of the basic spheres of people’s activity in their area should be the subject of managing of population's health; the activities of these services should be evaluated by such a criteria as health indicators of the population. Methods of managing the health of the population should be a complex system of scientific and practical programs of all kinds – economic, demographic, medical and biological, sanitary and hygienic ones. The object of health management at the organism level is an individual, and the subject of health management is a system of practical public health, a system of prevention and an individual. The objective factors of methods of management of health development include all methods of population management applied to an individual; subjective factors here are the system of individual's value orientations, its vital activity (the cultivation of the need for health, the eradication of bad habits, the

upbringing of activity, of organization, etc.). The objects of biological research in our case are processes at the cellular-molecular level, and the objects of management are scientific-practical and medical-biological institutions that are responsible for introduction of the achievements of biology and medicine to the development of human health [Kaznacheev, Matros, 1981].

The norm and pathology in the living organism exist in unity. The idea of the unity of health and disease, put forward by C. Bernard [Bernard, 2010], has become the defining one in modern medicine. Changes or disturbances in vital activity are studied in such a field of biology as pathology. The problem of interpretation of pathology is also controversial. It is advisable to distinguish two main versions of pathology, considering it from opposite positions.

One of these concepts was put forward by P.K. Anokhin. Proceeding from the principle of the unity of health and disease, he singled out the factors that are mandatory for maintaining of the organism in extreme conditions. The disease means a breakdown in the mechanism of homeostasis, that is, of structures and functions of normal (healthy) life activity [Anokhin, 1978].

Another concept of pathology belongs to I.V. Davydovsky [Davydovsky, 1969]. Its essence lies in the interpretation of the disease as "constraint of life in its freedom," that is, as "a form of adaptation of the organism to conditions of existence". From the standpoint of this concept, the opposition of health and disease, of physiological and pathological manifestations, is wrong, that is, it is not correct to evaluate pathological processes as abnormal in contrast to normal, physiological ones. Therefore, etiology (the doctrine of the causes of the disease) proceeds from the regular nature of disease's formation and development. Pathological processes are not accidental for a patient, but are natural ones and rooted in the physiological systems of an organism and in the influences of the external environment, that is, the pathology is historically conditioned. The same applies to pathogenesis, the mechanism of development of the pathological process, which is also physiological one. Disease, according to I.V. Davydovsky, has an adaptive essence – the disease is phylogenetically the result of the adaptation of man as a biological species to the conditions of his existence; ontogenetically the disease is due to the violation of individual adaptations.

3. Health and disease in the context of modern concepts of pathology

The concept of "*diseases of civilization*" *and social disadaptation.* The fact that humanity changes the surrounding reality in the process of its transformation much more quickly than has time to adapt to it, becomes more and more obvious. This circumstance has prompted part of the researchers to see the causes of pathological processes in social factors. In this case, many diseases are considered as "payment for civilization" (rather, for those manifestations of it, that cause a number of pathological processes). The causes of these processes are such negative consequences of scientific and technological progress as technization, chemicalization, urbanization, the ecological crisis, the escape from natural rhythms, stress, physical inactivity, nutritional imbalances, radiation exposure, drug over-

saturation, noise, vibration, dust, food additives, etc. There are such "diseases of civilization" as hypertension, gastric ulcer, myocardial infarction, atherosclerosis, neuroses, occupational diseases, transport accidents, obesity, diabetes, hearing defects, chronic respiratory diseases, disruption of maturation in the periods of youth and of puberty, and inborn defects. Studies show that such pathological processes, as a rule, are absent in populations at the pre-civilization level of development. Experiments on animals also support the fact that under the influence of changes in nutrition, noise, chemical pollution, stress, etc. such pathological processes take place as hypertension, liver's fatty degeneration, pancreatic degradation, circulatory disorders, changes in the central nervous system, etc.

The question of the extent to which this concept can claim the status of a universal concept of disease remains relevant. A. Toffler proceeds from the premise that man, by his natural qualities, is not adapted to the constantly increasing rates of development of civilization due to the limitedness of his adaptive capabilities. The traditional foundations of life do not withstand the increasing pressure of change, so man has to find new means of self-preservation, including the development of new life principles and conscious direction of the evolutionary process; otherwise humanity will die out (Toffler, 1997). Toffler's work, in fact, marked the beginning of the concept of "civilization's diseases" and social disadaptation, putting forward the thesis that the adaptive capabilities of human organism do not correspond to the rapid rates of social change. The concept treats diseases as an inability of the body to adapt to new social and natural factors. Since the publication of A. Toffler's book [Toffler, 1997] in 1970 the number of supporters of this concept has significantly increased.

Ecological concept. This concept is often called the universal concept of medicine. Proceeding from the Darwinian understanding of the struggle for existence as not only struggle among organisms for food, moisture, light and other vital resources, but also as adaptive reactions of organisms to natural physical, chemical, and other factors. Supporters of this concept P. Farb [Farb, 1971], R. Park [Park, 2011] and others see the cause of pathological processes in the contamination of human habitat. The task is to determine the optimal conditions for the existence and life activity of mankind on the basis of identifying of regularities, on the basis of which society and nature interact. The solution of this problem involves the development of an interdisciplinary research program. The main directions of the solution of this task are such as the definition of optimal climatic, weather and geocosmic conditions of human life as a biological species and the definition of optimal social, psychological, social, hygienic and other conditions of human life as a social being. These directions should be integrated, since adaptation includes both biological and social aspects [Lisitsin, 1982].

Ethological concept. The essence of this concept lies in the assertion that scientific and technological progress contributes to the disruption between the evolutionary-biological and socio-cultural development of humanity – the increasing disparity of the biological nature of humanity with the social conditions of his life leads to the emergence of various kinds of diseases and the degradation of mankind.

According to N. Tinbergen [Tinbergen, 1969], K. Lorenz [Lorentz, 1970] and other ethologists, ethology makes it possible to identify the mechanisms of behavior and learn how to manage them; in this way it is possible to prevent the degradation of mankind. Supporters of this concept understand the cultural evolution in the spirit of behaviorism as social maladjustment and propose to prevent it with the help of behavioral planning.

A variety of this concept is social ethology. This discipline studies behavioral relationships between individuals of a natural group, which the social environment for a separate individual.

Another kind of ethology is "sociobiology", which deals with a systematic study of the biological basis of all forms of animals' and human being's social behavior. The author of "Sociobiology", published in 1975, E. Wilson called sociobiology a universal theory of behavioral biology. Sociobiology was based on the concept of instinct – various forms of social behavior which are evolutionarily and genetically determined and are the same for all species. Another type of ethology is the "ethology of man", developed in the zoo-psychological and physiological directions. The zoo-psychological direction was developed by VA. Wagner [Wagner, 1988], K.A. Fabry [Fabry, 1982], N.N. Ladygina-Kots [Ladygina-Kots, 1966] and others, the physiological one – by I.P. Pavlov [Pavlov, 2016], L.V. Orbeli [Orbeli, 1933], P.K. Anokhin [Anokhin, 1989], P.V. Simonov [Simonov, 1975], and others.

Many scientists negatively relate to ethological concepts due to biologic intentions of a number of ethologists. Since human behavior is conditioned not only by biological, but mainly by social factors, the extrapolation of animal relations to human relations is completely inadmissible. Вместе с тем, может быть использован при изучении поведенческих расстройств человека [Lisitsin, 1982].

Psychosomatic concept. Psychosomatics is in the broadest sense the concept of explaining of somatic (bodily) diseases based on mental factors; according the narrow sense psychosomatics is the use of psychoanalysis for the interpretation and treatment of neuroses and organic diseases. Thus, psychosomatics is characterized by a tendency to identify the nature and interrelations of the psyche and physical functions in order to determine the pathogenesis of the disease.

The role of the emotional factor in the emergence of various diseases was established even in ancient times. I.M. Sechenov initiated the scientific study of the reflex mechanisms of mental processes. However, the theoretical study of the unity of soma and psyche, of the interaction of the somatic and mental organism's components began only with the development of Pavlov's theory of higher nervous activity.

Supporters of the psychosomatic concept consider the psychoanalysis of Freud (especially the idea of the primacy of the unconscious, instinctive in human behavior) to be the basis of psychosomatics. In accordance with the conception of Freud (Freud, 1989), the structure of the psyche consists of "IT" (unconscious), occupying the main place, "EGO" (consciousness) and "SUPEREGO" (an intermediate element consisting of moral prohibitions, traditions, norms, acting in the form of a kind of "censorship" in the constant struggle between "IT" and "EGO"). "IT" is of a

biological nature and includes instinctual motives (sexual attraction, aggression, etc.). These cravings are manifested in the form of complexes, the main of which is recognized as the "Oedipus complex" (sexual attraction to the parent of the opposite sex and a simultaneous sense of competition to the parent of the same sex). Cravings and their complexes act as symbols of memories of various experiences that remain both from the childhood period and from the time of savagery of mankind. The cause of disease, from the standpoint of this concept, lies in the collision of "IT" and "EGO," and the method of treatment is the displacement of instinctive (unconscious) cravings in the sphere of consciousness through a series of psychic mechanisms (repression, transformation, sublimation of the unconscious) [Freud, 1989].

The followers of the Freudian concept, which substantiates the supremacy of the subconscious and its sexual nature, criticized this concept primarily for its biologic bias, the separation of the unconscious from consciousness. A. Adler, a disciple of Freud and the creator of the concept of individual psychology, proceeded, in contrast to psychoanalysis, from the fact that the main source of motivation for behavior was the desire for power, superiority, influence. Freud's principle of "infantile sexuality," he replaced with the "inferiority complex." In the case when a child cannot assert his individuality in communicating with people, he acquires an inferiority complex. Further, the reason for this complex may be dissatisfaction with the social status. The disease occurs as a result of a disturbance in the balance with the environment, when the individual style of behavior (that emerged in childhood when the child tries to assert himself) runs into various obstacles that exist in society.

The founder of analytical (deep) psychology K.G. Jung asserted the idea that the human psyche, in addition to the individual 'unconscious', contains a deeper layer of the collective 'unconscious', which is a reflection of the experience of previous generations embodied in brain's structures. The essence of this experience is the archetypes – the universal primitive images in the form of the image of mother-earth, the hero, etc. In other words, the collective 'unconscious' is the psychological legacy of mankind, animals and prehistoric ancestors. The dominant place among archetypes is the archetype of "self", which is the potential center of personality. Jung, in contrast to Freud, considered the 'subconscious' to be a personality's active part. The goal of the formation and self-realization of an individual is the integration of the contents of the collective 'unconscious'. Disease occurs as a result of disruption of connections among different levels of the psyche.

The founder of neo-Freudianism, E. Fromm, who called his concept "humanistic psychoanalysis", moved away from Freud's biologism. Retaining the Freudian view of the recognition of 'unconscious' the leading role, E. Fromm proposed the task of identifying the psychological mechanisms of communication between the individual and society. He explains the emergence of neuroses as a manifestation of defensive reaction from a hostile society, which acts as a source of total alienation, which does not allow an individual to realize himself within the framework of his (her) values and ideals.

The psychosomatic concept took as its basis the Freudian psychoanalysis (with its setting on the primacy of the 'unconscious') and the neo-Freudian aspiration to

sociologize Freudian attitudes. Hence the causes of diseases are explained by conflicts between an individual and society, and the culprit of the conflict is not society, but unconscious motives of the confrontation between an individual and the environment. Eventually, the disease turns out to be a derivative of the mental factors. So, in the opinion of one of the great psychosomatics F. Alexander, the higher the level of civilization, the more neuroses as unconscious personality protests against its suppression by the surrounding social environment; these protests are expressed in alcoholism, drug addiction, religion, etc. The formulation (within the framework of the psychosomatic conception) of the problems of treating of the organism as a psychosomatic entity is undoubtedly of great importance, but the appeal to Freudianism as a universal theory for all fields of knowledge, including medicine, evokes the objections of scientists of other (non-Freudian) orientations [Lisitsin, 1982].

The concept of stress. This concept (the concept of a nonspecific response) was developed by G. Selye. Stress is a nonspecific reaction of the body to the actions of external and internal mechanisms, accompanied by a general mobilization of the body's defense systems. The concept of an adaptation syndrome introduced by him means a set of general protective reactions that arise in the organism of animals and humans under the action of strong and prolonged internal and external stimuli that promote the restoration of disturbed equilibrium and aimed at maintaining homeostasis (constancy of the body's internal environment). The development of the adaptation syndrome is caused by various factors (stressors): infection, sudden temperature changes, high muscular load, blood loss, ionizing radiation, pharmacological effects, etc. Development of the adaptation syndrome goes through three stages. The first stage is the stage of anxiety (lasts 6–48 hours and is divided into phases of shock and anti-shock). This stage is characterized by increased production of adrenal hormones (glucocorticoids and adrenaline) and their intake into the blood; because of this the body is rebuilt and adapts to the changed conditions. The second stage – the stage of resistance – occurs when the resistance of the body to the effects is increased. At the end of this stage, the state of the body is normalized. If the action of stimuli proves to be very strong, then the third stage comes – the stage of exhaustion, which can lead the organism to destruction. Selye introduced ideas about the adaptive energy (the degree of endurance of organisms), adaptation illnesses (quantitative or qualitative deviations during the adaptation syndrome) and local stress (selective organ damage).

Concepts of neo-Hippocratism and holism. The development of medicine was accompanied by such an in-depth specialization in medical activity that a person began to be regarded as a kind of conglomerate of quantities that can be calculated, and not as a holistic person. The reaction to this situation was the emergence of a concept calling for a return to Hippocrates and the classical principles of medicine that he laid down. Hippocrates considered the patient as an integral, undivided essence, as a combination of physical and mental qualities. This is the basis of his principle of the necessity of an individual approach to a patient: to treat not the disease but the patient, while taking into account his lifestyle, constitution,

temperament, and surrounding external circumstances, including such as people's habits, their way of life, the laws of the country, forms State structure, climate, terrain, weather, etc. Hippocrates proposed the main types of physique and temperament (due to the fact that each type is prone to certain diseases), and also highlighted in this connection the external causes of diseases (the effect of the season, climate, air, food, water, etc.) and internal ones (age, sex, temperament, habits, lifestyle, hereditary factors, lack or excess of physical exercises, etc.). In contrast to the idea of the supernatural origin of disease, he was guided by an idea of consistent, systematic examination of the patient using examination, feeling, listening to the chest and abdomen, while paying attention to the nature of the discharge. A special merit of Hippocrates is the creation of the doctrine of diseases' stages, their diagnosis and symptomatology, the introduction of disease history in which its course was recorded.

According to his ideas about diseases, Hippocrates also created a system for their treatment, including the following principles: to do good, not harm; to heal the opposite by the same; to help nature, adapting its actions with its efforts to get rid of the disease; to take care and to spare the patient's strength; not to change medication suddenly, to use more active medications only after the unsuccessful use of the weaker ones. If we add to this the high demands on the moral character and ethics of the doctor's behavior, diligence, the desire to improve professional skills; seriousness, sensitivity, affability, the ability to win the patient's trust, the ability to keep medical secrets, a decent and tidy appearance, etc., it becomes clear that the use of the Hippocratic doctrine of disease and health in the development of medicine has played and continues to play an important role in many of its components. Therefore, the aspiration of the supporters of the neo-Hippocratic conception to treat the organism as a whole in its physical and spiritual manifestations, combined with the consideration of man in unity with the natural environment, is considered a progressive trend directing the efforts of physicians to mobilize the body's natural defenses to fight the disease. This concept is criticized for the fact that its positions (in the opinion of critics) are close or identical to idealistic, dualistic, natural-philosophical and eclectic; so, this criticism is based more on considerations of a philosophical order [Lisitsin, 1982].

The concept of holism also appeared in the course of the reaction to the dehumanization of medicine, the separation of the physician from the patient as an individual due to the high level of specialization and technization of medical activity. This concept is based on the idea of the need to fully consider of the physical and mental factors, the way of life of a person, his behavior, the use of the safest methods of treatment (general therapy, physiotherapy, eastern medicine, homeopathy, etc.). It, like the concept of neo-Hippocratism, is based on the fact that the changes that have occurred in the types of modern diseases have not been adequately reflected in the change in the means of treatment, and therefore modern medicine is not able to save humanity of the diseases of civilization. Critics of the holism concept note the correct preconditions of the holistic approach, such as: the interaction between a patient and a doctor is a socially determined process; a patient is always specific and has a

specific historical experience; the medical factors are socio-historical in nature, and so on. Criticism is directed at such positions of the holistic concept as absolutizing of the correct principles of unity and integrity, appealing to unscientific statements (for example, adapting the methods of treatment to patients' desires), mysticism, eclecticism, idealism in treating integrity, etc., that is, criticism of many of its components is also based on considerations of a philosophical character [Lisitsin, 1982].

The concept of biotypology, being the theoretical basis of neo-hypocrisy, makes it possible to bring the diversity of diseases under certain types. The doctrine of Hippocrates on the types of physique and temperament formed the basis of so-called constitutional medicine, and the desire to turn the latter into the main principle of medicine was expressed in the creation of biotypology. The patient is considered (within the framework of the concept of biotypology) as an individuality, a somatopsychic whole formation, a vital unity of tissues, of the humoral system and consciousness, that is, the concept seeks to avoid the unilateralism of constitutionalist classifications based on separate organs or systems. The task of the concept is to represent the organism in the whole set of its morphological, physiological and psychical individual properties, which are determined by the genetic factors and conditions of an individual's life.

The most widespread concept of biotypology is the concept of N. Pende (Penda, 1930), within which four aspects of the human type are distinguished: 1) the morphological aspect, connected with the mass and proportions of the body and its parts; 2) the energy one; 3) the instinctive-sensual one (close to temperament); 4) the intelligent one. He identified on this basis four main biotypes: a hypostenic with truncated proportions, a hypersthenic with truncated proportions, a hypostenic with elongated proportions, a hypersthenic with elongated proportions. There are also attempts to identify biotypes, taking into account psychoemotional features and social traits.

The positive side of the biotypological concept is the desire to identify factors predisposing to certain diseases. So, for example, an asthenic with shortened proportions is predisposed to joint diseases, a long incubation period and a rapid course of illnesses. The flaw of this concept is seen by its critics in schematizing of the main features of human individuals that cannot be included in it without distortion [Lisitsin Yu.P., 1982].

Thus, traditional medical concepts were mainly focused on the search for the causes of diseases and the means of their elimination, as a result of which the main principle of health care was to "treat patients" rather than "to maintain health". It becomes obvious that the main direction of health care should be the preservation of health, due to which medicine will be perceived not in the usual sense of the word, but as a kind of "internal ecology" of a person, which is focuses not on wasting of health but on creating of it. This will require the introduction of a completely new way of life, excluding physically harmful activities and harmful habits, which worsen health and shorten life. Life and health are values of a higher order. Therefore, it is necessary to form a person not as a consumer of health given to him by nature, but as

its creator. The prevention of the occurrence of diseases is more beneficial than their treatment (in just the economic sense). Health cannot be a market value, but in accordance with the market economy's laws it is preferable to recruit healthy, not sick people. Not only medical institutions, but also the state, the media are called to proclaim health as the highest value. But an even greater role in maintaining of health belongs to every person himself. Changing of the lifestyle in favor of maintaining of health will require a change in the nature of production and consumption, the introduction of such an index as a measure of the human-capacity of production per percentage of the commodity effect per a unit of time (proposed by V.P. Kaznacheev). The role of the state (from the position of eliminating of the pathologies that have arisen) is to prevent the transformation of the right to medical care into the privilege of the well-off strata of the population. Progressiveness and democratic society should be measured precisely by the measure of realization of the right to medical care to all the social strata.

4. The problem of population health's control

This problem is considered by a number of scientists to be one of the most important among the global problems of our time, since its solution will largely determine the fate of mankind. S. Lem [Lem, 1966], reasoning about the autoevolution of mankind, proceeds from the possibility of improving of it with the help of not only social but also biological influences. This is an expression of the desire to optimize the human heredity, to improve the gene pool of mankind. If man is a biosocial being, then the effect on him by biological methods should in principle be considered permissible. This can be demonstrated by the example of the dependence of behavioral responses on the characteristics of heredity.

The problem of the dependence of social behavior on inherited characteristics is not new – it was also of interest to thinkers of antiquity (Hippocrates, Aristotle, etc.). Attempts at scientific understanding of this problem date back to the end of the nineteenth century, when the publication of Frances Galton's book "Studies on Human Abilities" marked the birth of eugenics, the task of which was to study the influences that improve hereditary qualities (mental capacity, giftedness, health). However, the fate of the discipline, aimed at improving the inherited qualities, was dramatic. Negative attitude towards eugenics was largely influenced by ideas (expressed by its creator and his followers) of the biological inferiority of races, of the direct dependence of races' socio-cultural development on its gene pool, of the inadmissibility of mixing races, of the dependence of the individual's social status on belonging to a particular race, etc. The domestic geneticists (N.K. Koltsov [Koltsov, 1932]), A.S. Serebrovsky [Serebrovsky, 1970], Y.A. Filipchenko [Filipchenko, 1929], etc.), rejecting racist ideas, asserted the possibility of using of eugenic measures in the creation of a new (communist) type of people. The absence of genetic engineering methods at that time directed these measures towards the use of breeding, the legislative prohibition of the freedom of marriage, the restriction of immigration of representatives of "inferior" races, sterilization, etc. The use of eugenics to justify racist concepts by the Nazis further contributed to the formation of a negative aura

around eugenics. Thus, the idea of improving of human "quality" was discredited by the proposed methods of its implementation and by using them to justify racism. The emergence of genetic engineering, capable to correct genetic defects and to create organisms with predetermined properties, began to change the situation: it is principally not impossible nowadays to design individual genetic programs and also to control human's genotype with the help of eugenic measures.

Also the concept of trans humanism stands for the improvement of the human condition (physical, mental, moral and spiritual), for prolonging of the life with a minimum of illnesses, for overcoming of aging and accompanying negative phenomena using all the achievements of scientific and technological progress. However, in addition to manipulating of the human genetic apparatus, trans humanists also advocate the possibility (and even necessity) of using of such non-biological devices as electronic chips, neuroprostheses, direct conjugation "brain-computer", etc. It seems to us that the use of such devices must be strictly regulated – it should be allowed only in exceptional cases (when their non-use threatens the health and life of a person); in addition, it is unacceptable for human being to begin to undergo "biorobotization", "cyborgization" and thus actually to lose human nature. In addition, it is often very problematic to determine what the norm is, and what the deviation from the norm is.

Also, one should not underestimate the danger that the development of genetic engineering (eugenics) and non-biological technologies, and at the same time the commercialization of relevant services, will create social problems related to the availability of these services for "elite", and inaccessibility to those who are "below rank".

5. Interference into the biological nature of man and humanistic ideals

The introduction into a recipient's cells of a specific genetic material and obtaining on this basis of necessary features made selection unnecessary as a tool for creating of new life forms. In this way, it may be possible to save mankind from many dangerous diseases. Thus, negative eugenics has got the opportunity to turn into a positive eugenics: with the help of its tools, it may be possible not only to eliminate hereditary defects, but also to design new life forms, that is, eugenics can be moved beyond the boundaries of medical genetics. In this connection, the acute problem has been raised whether it is admissible to use the genetic engineering methods outside of medical genetics.

First of all, the question was raised about the correspondence of the intervention into heredity to humanistic ideals. To what extent is it possible to interfere into human biological nature (especially when some religious denominations have a negative attitude toward this interference)? Is mankind morally ready for intervention into its nature? What are the consequences of this intervention, especially when using genetic engineering methods for criminal purposes? Is mankind able to control such interference? Will the benefit of knowledge turn into harm to humanity?

The argument of opponents of interference in human heredity is most often based on the fact that the gene pool of mankind has not changed since its emergence

to our days, and therefore the emergence and development of subsequent socio-cultural forms of human existence is quite possible on its basis (since the history of mankind is the development of socio-cultural programs). The opposite point of view is based on the fact that the history of mankind is negligible in comparison with its future, which makes it possible to really assess the measure of the prospects of the human genotype. In fact, the natural selection ceased to function with just the emergence of mankind, and both positive and negative features of the human genotype were fixed in the population. The transition from the biological life form to the biosocial one was accomplished gradually. Forms of social behavior, socio-cultural relations could arise only on the basis of certain biological properties in the process of their qualitative transformation. In other words, the evolution of human society cannot be understood without taking into account the biological characteristics of man.

Many utopian social concepts of transformation proceeded from the principle "Let the brotherhood be, and the brothers will be". However, history has very convincingly demonstrated the unrealizability of this principle on the real substratum (humanity). The history of mankind can be represented as a history of man's struggle for the constant increase in the level of life's comfort. Having inherited from his predecessors the ability to exterminate his own kind, man turned his intellect into a powerful means of fighting against his own kind for his comfort life – hence war, crime, etc. take place. Scientific and technological progress gives people the means, the use of which in the struggle for the realization of their selfish interests (individual, group, ethnic, etc.) can lead to a global catastrophe. In these conditions, the idea of the need to translate the principle "Let the brotherhood be, and the brothers will be" is beginning to be expressed in the principle "Let the brothers be, and the brotherhood will be". The creation of "brothers" is supposed to be done with the help of genetic engineering methods. Within the framework of this principle, an important role is assigned to the problem of preventing of antisocial and deviant behavior.

Throughout the history of mankind, the problem of the antisocial behavior of some of its representatives was (and is) very acute. The possibility of using of the funds provided by modern scientific and technical progress for criminal purposes makes the problem of preventing of asocial behavior one of the most urgent. All states since ancient times have tried to create not only an effective system of punitive measures to combat crime, but also to develop a system of upbringing that keeps from committing criminal acts not by fear of punishment but by internal "brakes". Pedagogy and art are those "fields" that are called upon to form these "brakes" in the minds of people. However, it becomes clear nowadays that the historical experience of mankind demonstrates the unsatisfactory effectiveness of specific human sciences in combating with antisocial behavior – the number and severity of crimes over time does not show a tendency to reduction. The explanation of this fact is possible only by the presence of serious flaws in the very biological nature of man.

Behavioral characteristics of a person are largely determined by his genetic structure. Each person is unique in his set and a combination of genes. Genes responsible for behavioral signs have a significant amplitude of modification

variability, a wide range of the norm of reaction to the environment. The actual task here is to "grope" the optimal point (zone) within the frames of the norm of the reaction set by the "behavioral" genes and bring the person as the bearer of a certain combination of these genes as close as possible to the "genetic-behavioral optimum" that excludes antisocial behavior. The fact that a certain percentage of criminals cannot be re-educated testifies to the fact that such individuals have the entire range of the genotype reaction's norm (including the "genetic-behavioral optimum"), which is not beyond the "antisocial framework". Thus to solve the problem of antisocial behavior more or less radically it is not enough to use only means of pedagogy and art (although they are absolutely necessary and cannot be replaced by anything). It is necessary to prevent the emergence of "fatally criminal genotypes".

Methods of selection as a means of this prevention cannot be used. This is due, first of all, to moral considerations, because it is unacceptable fight crime by criminal methods. In addition, selection in this case is not entirely effective, since law-abiding parents can give off with a nonzero probability offspring with "criminal genotypes" – as a result of the processes of gene recombination there is a certain probability of appearance of "unreliable" (in terms of antisocial behavior) individuals. The same genes in some combinations can form "law-abiding" and "criminal" genotypes, thus the "criminal" ones are constantly reproduced in the human population. It is necessary to decipher these genotypes and, through genetic engineering methods, to exclude in the future the appearance and reproduction of "criminal genotypes", qualifying them as a serious genetic disorder along with other serious hereditary diseases (hemophilia, phenylketonuria, Down's syndrome, etc.).

Undoubtedly, the technical implementation of such a project is very difficult, because it is unlikely to create an effective tool for manipulating genes and chromosomes in the foreseeable future. Now we can only speculate on how the "genetic vaccinations" will be produced – through intrauterine screening of the genotype of the newly formed zygote with its subsequent correction (if necessary), or by imposing of limitations on the processes of chromosomes' crossing-over (interchange of homologous sections) during formation of gametes, or through some other methods. But the exceptional complexity of this task does not deactualize it. The problem of preventing of asocial and deviant behavior has acquired global significance, and therefore it is necessary to solve it with adequate means on a global scale.

At present, there are very strong prejudices in the world against interference in the "holy of holies" – the human genetic apparatus. At the same time, there is a hope that these prejudices will tend to disappear, just as the prejudices against surgery, vaccination and other interventions in human nature disappeared in their time. Of course, interference in this nature can be fraught with undesirable consequences, so the principle of "do no harm" remains decisive. Such prejudices are based on values accepted by the society at the current moment. The task is to prepare the mass consciousness for the re-evaluation of values in relation to the methods for solving the problem under discussion.

If we take into account that the general direction of social evolution (within V.I. Vernadsky's concept of the noosphere [Vernadsky, 1998]) is expressed in the desire of man to become a designer of the biosphere, then a positive solution to the question of necessity to interfere into heredity does not seem unacceptable. Earth as an astronomical object due to natural causes (cooling of the Sun, etc.) has a finite history of its existence. A certain time will pass, and mankind will aspire to space not only to satisfy its thirst for knowledge, but also for the practical purposes of finding a new home. Therefore, the formulation of the question of whether the gene pool of humanity will correspond to its new tasks should be regarded as of fundamental importance. Absolutely new conditions of existence will necessitate the improvement of the species itself in the direction of adaptation to these conditions. As for the desire to transform the principle "Let the brotherhood be, and the brothers will be" into the principle "Let the brothers be, and the brotherhood will be", it raises certain doubts. It would seem that it is quite simple: do make a decision based on genetic engineering methods and suppress the possibility of replenishing of society with individuals who are unreliable in terms of antisocial behavior. But who and how will make such decisions? It seems that both principles must constantly interact with each other, because one of them is aimed at "cultivation of brothers", and the other one – at creation of conditions that allow making decisions that are free from selfish interests of individuals and social groups. One way or another, the culture of society must develop a mechanism for the interaction of these principles.

The essence of man and his history can only be understood on the basis of taking into account the laws of both natural and social development. The question of the relationship between the human genotype and its history remains controversial. It is not entirely clear whether the genotype predetermines the historical path of mankind's development, the forms of its economy, social ties and relations. I.A. Efremov put forward the idea of a principled unity of the ways of evolution and social development of living matter in any part of the universe. One can be an adherent of a certain system of values, but scientific analysis must prevail over considerations of the emotional, ideological, etc. character must retreat. The social form of the movement of matter, which arose on the basis of the formed human genotype, evolves on the basis of social laws. Man, proclaiming himself as the crown of nature, began to interfere into it, ignoring its laws. He violated a number of biological laws: he "rejected" the prohibitions on intraspecific extermination and on the limitation of the species; violated the interspecific balance, removed restrictions on the effects onto the abiotic environment; transformed the need for utility, from utility to desire, from desire to whim, prestige and the like. So, the objective category of the need was shifted by the subjective one. The historical fate of many species of living organisms is already under the power of man, and this power will continue to grow. Finally, the Darwinian theory of evolution will cease to function, and man will act not simply as an element of the biosphere, but as its designer. However the question of whether the available gene pool of humanity will satisfy its new tasks remains unanswered.

The evolutionary process has formed two interconnected information genetic systems of evolution. One of them, the "vertical" one, is more ancient, lies at the very sources of life and provides stability and diversity of the evolutionary process on the basis of mutations and recombinations. The "horizontal" information genetic system (the historically later one) is responsible for individual development (vital activity of whole organisms). It has reached a high level of development in higher vertebrates (especially in mammals).

The horizontal system provided in the course of its evolution the response of the organism to the environment, which became apparent in higher animals in the form of elementary extrapolation acts, forms of rational activity and the ability to continuity. It was formed under the influence of the vertical system (which determined the capabilities of the organism in its learning ability, the ability to extrapolation and continuity) and the specific conditions of life. In other words, the individual's capacity for continuity and the conditions of life in the community are hereditary properties determined by the vertical system. As for the specific behavior of an individual in the community, it always comes from the interaction of genetic possibilities and social conditions.

Man as a product of biological evolution is subject to biological laws (genetics as well). As is known, blood type, eye color, etc. are inherited from parents. However, personal characteristics are the result of socialization of the learning process, upbringing, daily life, etc.). A person cannot exist outside the society. At the same time, this does not mean that a person is completely freed from the hereditary factors in the manifestations of his psyche – all people in their abilities, inclinations, etc. are different from birth.

6. Biomedical anthropology and bioethics

The rapid development of biomedical knowledge, the creation and introduction into medicine of new technologies (especially of genetic engineering) led to the emergence of biological ethics (bioethics), designed to develop new ethical norms based on the recognition of new moral conflicts associated with artificial insemination, the change in the quality of life through methods genetic engineering and transsexual surgery, the possibility of euthanasia, organ transplantation, the establishment of the moment of life's cessation, etc. In other words, bioethics acts as a system of knowledge about the limits of permissible manipulation of a person's life and death [Siluyanova, 1997], on the possibility of dialogue and solidarity of citizens in protecting of good and opposing evil in situations generated by modern medicine. Bioethics is at the intersection of biology and social disciplines [Tischenko, 1992].

In the course of the historical development of medicine, various biomedical ethical concepts developed and replaced each other. One can distinguish among them those that are really important for a modern doctor. These first of all the concepts of Hippocrates, Paracelsus, the deontological concept and modern bioethics (in its two forms – conservative and liberal). The main principle of the concept of Hippocrates is the principle of "do no harm", the concept of Paracelsus – "do good." The principle of "do no harm" is inherently the basis of medical activity. The principle of "do

good" establishes the nature of the relationship between the doctor and the patient and the understanding of healing as an "organized exercise of good." The main principle of the deontological concept is the principle of "compliance with debt", which expresses the requirements of the medical community (these requirements are specified in relation to various areas of medical activity). The principle of "compliance with debt" appears as a necessary and sufficient condition for the activities of a doctor. The main principle of bioethics is the principle of "respect for human rights and dignity". Scientific and technological progress has given the doctor the means to interfere in the processes of vital activity of the human body and population that are able not only to help a person, but also to control the processes of conception, death, to invade into hereditary mechanisms, etc. Since such manipulations are related to human rights, the paternalistic relations between the doctor and the patient are modified into deliberative ones, involving the patient in making medical decisions about the medical procedures being undertaken [Siluyanova, 1997].

Currently, there are different models of the relationship between the doctor and the patient (these models are developed taking into account the human right to health). These include: a technical model, a sacred model, a collective model, and a contractual model. The model of the technical type proceeds from the notion of a doctor as an investigator who relies exclusively on objective facts in his activity, abstracting from value judgments on them and remaining thus absolutely impartial towards the patient.

The model of the sacred type proceeds from the maxim of "helping the patient, do not harm him." In this case, the doctor appears to be detached from everything that has no direct relationship to the disease and the patient. The doctor gives the patient advice, presenting to the patient in the role of a clergyman: "I affirm, as a doctor, that there is too little chance of a normal child being born, so the risk is not justified." In this case, the patient is deprived of the opportunity to make his own decision. Such a paternalistic model in its essence reduces to a minimum other moral grounds for decision-making that exist in society: "to bring benefits and not to harm", "protection of personal freedom", "protection of human dignity", etc. No one can refuse the moral obligation to bring good and at the same time completely avoid harm. The principle of "making good, do not harm" is only one of the moral norms of society. The principle of personal freedom allows a patient to refuse a number of procedures for religious or other reasons. The protection of human dignity is achieved through the freedom to choose a solution (some procedures are so hard for an exhausted patient that it is difficult for him to maintain self-esteem during their application, so he prefers to refuse them and to die). Moral obligations to tell the truth should not be eliminated in order to comply with the principle of "do no harm to the patient." Moral standards of society go beyond the obligation to provide patient assistance and avoid harm; these norms also consist in the demand for an equitable distribution of medical care, that is, the absence of discrimination of the right to medical care for certain individuals and social groups.

The doctor within the framework of the technical model is free from moral norms, and within the framework of the model of the sacral type suppresses the author's freedom and dignity of the patient. As for the model of the collegial type, the attitude of the doctor and the patient is built as the relations of colleagues. These relationships are aimed at protecting the patient's health, eliminating his illness and based on mutual trust. But within the existing social reality, this model, which proceed from the general ethnic, economic and other interests of the doctor and the patient, is largely utopian.

The realities of life correspond to the contractual type model that offers an agreement (contract), understood not in the legal sense, but in the symbolic, when the parties act on the basis of mutual obligations and mutual benefits, backed by mutual trust and legitimization of this interaction. This model, which allows real separation of moral authority and responsibility, makes it possible to avoid refusal to comply with moral norms (characteristic of the technical model), refusal to comply with moral norms on the part of the patient (typical for the model of the sacred type), and refusal of false and uncontrolled equality (characteristic of a collegial type model). The model leaves the patient free to manage his life – he remains confident that the doctor will decide on the appointment of medical procedures in accordance with the values of the patient. Naturally, such a contract implies mutual moral cleanliness [Vich, 1992].

The emergence of bioethics as a special field of culture is based, as it is commonly believed, on the scientific, social and value-worldview factors. The first one is an expanding range of biomedical technologies. The second one is manifested in the increase of "social sensitivity" in relation to biomedical technologies. The third one is the existing value systems [Siluyanova, 1997]. If we take into account that the range of new biomedical technologies is expanding quite rapidly, and therefore there is a growing social concern about their use, and the existing systems of values in a number of positions are fundamentally different, it becomes clear that the development of bioethics will be accompanied by collisions of all kinds. Obviously, it will take a lot of time to overcome in the minds of representatives of different cultures "barriers" that impede the adequate perception of biomedical technologies. It is possible that the need to regulate the number of people on the planet will be a problem that can reverse the inertia of the negative attitudes of some cultures towards biomedical technologies that limit birth. The reality is that the planet will not be able to provide a normal standard of living with existing technologies and explored resources. Life by opportunity is a dire necessity, and sustainable development can be based only on a sober consideration of realities, and not on good-hearted utopias. Thus, in solving this problem of biomedical anthropology belongs not the last role.

Afterword

A change in the direction of development of biomedical anthropology from the treatment of pathologies to their prevention does not at all mean lowering the significance of treatment, but, on the contrary, implies the need for careful study of known and newly emerging pathologies, since the strategy for their prevention can be

constructed only basing on knowing of the causes of the pathologies' occurrence. It is important to realize not only the importance of solving of this problem, but also its difficulty. As is known, any problem has three levels of its solution: the principal possibility of its solution, the possibility of technical realization of the principle possibility and the expediency of its solution. Therefore, it is advisable, when analyzing the problem, to keep in mind all three levels. As for the third level here, the authors have no doubts – everyone wants to be healthy. However, one thing is to want to be healthy, another is to make efforts to preserve it. The first and second levels are very multidimensional and complex. It should be said specifically about some of them that seem most important.

Human health depends on many objective and subjective factors: on nutrition, natural environment, industrial, housing, social and other environments, on natural disasters and man-made disasters, heredity (on which depends the degree of resistance to unfavorable factors for health), and also what is particularly important, on the desire and will of a person to keep the norms of a healthy lifestyle. All this raises the question of the degree to which man has studied himself. The Kantian questions about what I can know, what I should do, what I can hope for, what a person is (Kant, 1980), remain relevant and they require a holistic, systemic representation.

It is advisable to fix the following provisions as a starting point. 1) Belonging to the species Homo sapiens does not at all mean to act reasonably (in the long run, it is important not just the presence of consciousness as the highest form of mental reflection, but primarily its direction). All social history testifies to the incredible unreasonableness of man. Having emerged from the animal world thanks to the intellect, man began to use it not so much to strengthen himself on the evolutionary development vector, but rather to deviate from it (smoking, alcohol, drugs, causing great harm to health). Man, being a bioid in origin, violated such biological laws as a ban on intraspecific extermination and a ban on limiting the number of species. Moreover, man violates the intraspecific balance, rapaciously exploits the abiotic environment to suit not only his immediate needs, but also his whims. This indicates that the person reasonably could not (and cannot) organize himself, which does not increase the chances of survival. This means the need to subordinate their social, political and other aspirations to the overall ones. Thus, it is actual to transform the egoistic nature of human being, fed by his biological nature, into an altruistic one. Human egoism is rooted in its biological nature. The nature of any substrate, including biological, determines its complex properties. But how to measure the possibility of changing human consciousness (arisen on the basis of bio-substratum) in the direction of turning them from egoistic into altruistic one?

What do we have as a springboard for the transition to the noosphere (more precisely, what do not we have)? At present, technical progress is unlimitedly accelerated, as a result of which the present-day reality can be characterized by the following conditions.

- the absence of ethical corrections to the methods of human's "conquest" of nature; of the scientific validity of constantly growing consumption's boundaries; of

qualitatively new assessments in the field of an expedient equilibrium between the "benefits of man" and the stability of the biosphere (this equilibrium must exist in the form of the cooperation of life forms and its material substratum (the substance of the planet)).

- the lack of people's determination to reconsider the first postulate of consumption "the more, the better".

- the lack of a serious alternative to the principles of "man is the conqueror of nature" and "man is a slave of nature".

- the lack of deep research in the field of human and nature cooperation on the common evolutionary trajectory of the Earth; in the field of search of opportunities for co-evolution of the technosphere and the biosphere.

The development of a program for the survival of civilization must proceed precisely from these conditions.

It is important to take into account one more circumstance: in the conditions of a constantly increasing scale of the technosphere, anthropogenic activity becomes an essential factor of organic evolution. In this connection, the task of developing a special concept that takes into account the qualitative originality of the present period in the development of the organic world becomes urgent. According to the concept of classical Darwinism, the direction of evolution is determined by the process of interaction of external and internal factors. External factors include climate change caused by cosmic causes, changes in the gas composition of the atmosphere, geological transformations of the Earth's surface and vital activity of organisms. These factors have been supplemented nowadays by human activity. Its peculiarity is the destruction of whole species of plants and animals, which violates the integrity of biogeocenoses. This, in turn, poses a serious danger to the integrity of the biosphere and its ability to self-regulation in the evolutionary process. The progress of the living is impossible without preserving the functional integrity of the biosphere and its ability to self-regulation. This leads to an important conclusion: "... no matter what human thought can achieve, we cannot escape our biological essence. This means that unlimited social and technical progress is possible only as a particular moment of the general progress of life on Earth" [Kamshilov, 1974, p.227].

The laws of evolution have not yet been studied enough to draw definitive conclusions about the consequences. There is an opinion that the number of species of organisms on Earth is excessive and that it is necessary to destroy harmful and useless for humans. It is forgotten that the place and role of any species in the biosphere is determined not by human interests, but by historically formed complex relationships in biogeocoenoses, interference in which, without the necessary knowledge of its consequences, may lead to irreparable consequences. The dramatic nature of the current state of affairs in this area is that evolutionary changes are determined not so much by immanent needs of species development as by human needs. How can man get rid of "addiction" on technological progress? There is no clear answer.

There is also the opinion that when analyzing the role of the anthropogenic factor in the evolution process, one should distinguish between evolution under the

influence of spontaneous human activity and evolution controlled by man. At present time (when the first form of evolution dominates), timely predictions of the results of evolutionary processes are extremely important. The hope for the possibility of obtaining such forecasts often leads to the conclusion that the only way to resolve the contradictions between human activity and the laws of the development of organic nature is to manage the evolution of the entire biosphere. However, the real results of evolution management take place only in a rather limited area of selection and cultivation of certain species of microorganisms, plants and animals (this is due to insufficient knowledge of the laws of the evolutionary process). A more accurate assessment of the current environmental situation boils down to the recognition that now man has much greater opportunities to perform transformative processes than to predict not only distant, but even close their consequences. Therefore, the preservation of the integrity of the biosphere and its capacity for self-regulation remains the most important task. This is modern reality. Human health is unthinkable beyond maintaining the equilibrium of the biosphere – that is why the special significance of this factor is emphasized.

We must start, apparently, with the development and justification of a universal human rational and healthy diet, since the foods that are currently consumed by the majority of the population are oversaturated with various kinds of harmful additives (often due to regional, national and other preferences). This aspect of the problem should be discussed by specialists in this field, so the authors of this article refrain from any advice. The main difficulty will be how to make these norms of nutrition accepted by all the people, what methods are acceptable for their distribution of these norms (taking into account the human rights). It is hardly possible in conditions of the exclusively complicated international situation, since it requires the restructuring of the existing forms of upbringing, education and state policy towards health (in this sense, it is expedient to have a state program to preserve the health of the population, develop a passport of a citizen's health, etc.). However, it is quite clear that a civilization based on the values of money, profit, and not of man, which spawned two world wars in the twentieth century, is an obstacle to the establishment of a just society in which the value of human health will be one of the main values. Hence it follows that the birth of a new truly human culture is a necessary condition for the survival of a healthy humanity. It seems that no other is given. Mankind will still have to prove its reasonableness, since it includes not only the intellect, but also the moral. Man must construct himself as a rational and moral being. The essence of life in the context of its evolutionary development is conceived in indissoluble connection with health. Historically, the social development of mankind has found itself to be been loaded with various sources of "surrogates of pleasure" (including tobacco, alcohol and drugs), which are devastating to health and deviate from the normal course of biological evolution. Therefore, the rejection of this kind of "banes" is absolutely necessary, and such a "price" for the survival of civilization is quite reasonable and morally justified. In the sake of this, the whole way of life of a person must necessarily rely on cultural humanistic values (including genetically fixed ones). Only such a culture can prevent the death of civilization and will mean the

appearance of man as a rational and moral being responsible for the consequences of its activity on a cosmic scale.

The very last point. It was hardly possible to touch many aspects of the problem in one article. Its goal was rather to draw attention to it. Therefore, the authors hope for the emergence of a discussion on this issue on the pages of the journal in the framework of a dialogical discourse providing mutual understanding.

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