

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

ABSTRACT

In the context of general philosophical knowledge, a comprehensive reference concept of "biomedical rationality" has been formulated for the first time in the present article. The concept is close in meaning to digitalization, but differs from it from a methodological perspective. In the system of scientific foundations, it is presented as a core notion in the characterization of human ontos and as a notion reflecting the multidisciplinary ideas about the values of the existing technological order. The phenomenon of reflection is considered as a gnoseological basis, an explanatory principle, a condition for a renewed style of rational thinking in the modern scientific paradigm. From the connective tissue individuality, the causality of processes in the living and the foundation of biorationality as the intersection of reality are modeled. The evaluative and parametric analysis of the phenomenon based on the generalization of new neuroscience data shows the theoretical and methodological prospects of this understanding within the framework of the substrate and attributive approaches. The operational nature of the concept of reflection and its components - vector, efficiency, intensity - are introduced into the system of personality traits as performing a predictive role on the way to truth including medical truth. The involvement of the patient's personality as a component of the 5-PSM model of medicine as the most developing sector of science means the vision of reflection as an instrumental-significant resource in the objectification of information. In the context of post-non-classical science, deployed to the paradigm of the integrity of information-material reality, reflection in the medical worldview provides the focus of attention on the essence of the disease and the patient's personality in diagnostics.

Keywords: biomedical rationality, multi-disciplinarity, ontos, paradigm, scientific foundations

INTRODUCTION

In a situation of periodic renewal of paradigms in medicine, the problem of creating a general meta-focus has remained relevant in modern society. The problem is studied with the help of the methodological involvement of philosophical knowledge. The technological component of social development is associated, consequently, with the parameters of information and its quality; the value-cultural component is associated with the established patterns of discussion of the information structure of society and the focus on the preservation of culture. During the formation of the values of the seventh technological order, their rational basis is investigated¹, which is increasingly associated with multi-disciplinarity. Due to the demand for the systematization of multidisciplinary knowledge accumulated by socio-humanitarian knowledge, specific scientific areas² and medicine, there has emerged a need for a practical definition of biomedical rationality. In post-non-classical science, the latter is associated with the representation of the human image and the determination of the disease. Based on the need to systematize interdisciplinary knowledge accumulated by individual areas of medical science and humanitarian knowledge, the practical need to determine biomedical rationality is built in conjunction with a specific model of a human and views on the causality of the disease of the post-non-classical period. The scientific and practical perspective of the concept of biomedical rationality lies in the fact that it is a special type of scientific rationality. It has emerged due to post-non-classical thinking, in which the phenomenon of life has a decisive role. An in-depth ontological concept of the phenomenon develops from its connection with objective reality, which is genetic. The value-gnoseological and methodological aspects of the present type of rationality in contemporary history takes on a different understanding when intertwined with virtual reality

formed by human consciousness, its multiple technical and technological creations and situations of objective reality. There is medical rationality in the life sciences or "organic" sciences - biology, medicine, and the humanities. Here, in addition to the category of "life", are the concepts of human health and medical truth as adequate knowledge of living things. The term "biomedical rationality" in this study is used by the authors as a key and systemic one. To consider this complex concept, it is necessary to converge natural scientific, humanitarian approaches and medicine as a synthetic type of knowledge. For fundamental research, it is also important to establish the unity of the meta-language. As the most complex subject-object modification, biomedical rationality is associated with a variety of self-developing reflexive active environments and their parameters. The mode of cyclic contracting meta-time in the conditions of network information technologies brings about radical informational changes in human life. The level of "consciousness" and the level of "corporeality", according to the principle of complementarity, form a single integrity, the perfection of which is an integral part of obtaining medical truth. Biomedical rationality, as a historically evolving benchmark towards which biomedical knowledge is moving, remains essentially a human attribute.

MATERIALS AND METHODS

The purpose of the study is a theoretical meta-analysis of the ontology of the phenomenon of bio-rationality in the system of its scientific foundations. The phenomenon is realized through reflection - the basic foundation of the ontos of a person as a social actor. On the basis of the concepts of agent-focused, humanistic, systemic-constructive value approach, the principle of anthropocentricity of medicine, the authors of the present article define "biomedical rationality" as a new category

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

and as an explanatory and prognostic concept of contemporary science. The movement towards medical truth as an adequate knowledge about the body presupposes a broad theoretical understanding of the nature of social phenomena, while the constant increase in their cognitive foundations suggests the study of the essential nature through reflection. Biomedical rationality and its field are represented as the factor of effectiveness of therapeutic and pharmacotherapeutic effects. At the first stage of the research, data was collected on the scientific foundations of this phenomenon, which include philosophical, general scientific, worldview, methodological and epistemological, and social foundations proper. In accordance with the attributive approach to human sociality in philosophy, a system of basic foundations for studying the phenomenon of biomedical rationality was formulated. General philosophical methodology as a general method expresses the content of the most common features of the scientific methods used, acting as their common basis. The philosophical basis of the analysis of the foundations of the phenomenon of biomedical rationality is a system of theories, concepts and principles of an ideological nature, methodological and cognitive significance for considering human nature and the mechanisms of thinking. The study of spiritual and social hypostases is carried out using philosophical cognition with its concepts of value, meaning of life and worldview. The foundations of the essential nature of man are explored through reflection. In the analysis of the phenomenon, the following instruments have been applied: a system of philosophical, worldview, epistemological, methodological and social foundations of the study. The worldview foundations include the fundamental principles that reflect the universal properties and laws of existence of objects and processes, the most important aspects of reality: the unity of space-time, the dependence of space-time properties on structural relations in material systems, the principle of causality, integrity and systemic organization of material objects and processes. The gnoseological and methodological foundations of explanatory kind have been applied to integrate scientific knowledge about the phenomenon, as normative-orienting attitudes. These are: the principle of complementarity of knowledge, descriptive and explanatory approaches, the unity of theory and experiment, as well as the relationship between general methods of cognition - analysis and synthesis, analogy and modeling, systemic and structural approach. As general scientific foundations of the analysis of the phenomenon of biomedical rationality, the following approaches have been used: the substrate approach, the theory of self-organization of natural, social and technical systems, information approach and modeling. The information approach is applied as a tool for studying information and energy unity and interconnections of complex system objects, such as a human being. This served as a methodological basis for characterizing the complex of interactions of the organism-carrier of life with the environment, for understanding the essence of a wide range of states of the subject and the subject's consciousness in rational activity. At the second stage, the concepts of the medical worldview and the category of bio-rationality itself as an explanatory and prognostic concept in the contemporary period of history were formed. For this purpose, interdisciplinary, analytical-synthetic, and descriptive approaches were used. The concept of reflection in the context of the general methodology of the

holistic study of a person and the person's worldview is used as a projection concept in relation to both the individual ontological space of the person and health in general. Reflection serves as an explanatory principle and a means of objectifying knowledge (self-control, introspection, etc.), as a way of recording internal spiritual experience. This is facilitated by the substrate approach applied to the subject of research in the present study, combining the micro- and macro-levels of description carried out on the basis of the principle of complementarity of knowledge. By means of the axiological approach to the phenomena of reality, adopted in philosophy, in the paradigmatic aspect, a person's worldview is considered as a substrate of various psychophysiological functions in general, and a medical worldview as a type of substrate-organized professional worldview, in particular. The direct impact of the professional medical worldview on the effectiveness of treatment, regardless of other specialized influences, in the context of biomedical rationality is a sufficient condition for the positive effect of the treatment. The worldview approach to solving the problem of the foundations of biomedical rationality and health is applied as a macroscopic one in a situation of renewing the scientific paradigm. At the third stage of the study, the results were formalized and general conclusions were drawn.

RESULTS

In the light of the development of a unified strategy for the development and reforming of society, specific scientific approaches are being developed, reflected in works on economics^{3,4}, sociology^{5,6,7,8}, medicine^{9,10}. Their goal was to coordinate the components that link together the event plane of historical, socio-technical, cultural and economic processes and their time interval. In all studies, it is noted that social development and new thinking are impossible without the humanization of the individual³. In this situation, the entire context of the post-non-classical science turns towards the paradigm of the integrity of material and informational reality. This paradigm serves as a general methodology for the holistic study of a person, the person's social activity/worldview, focusing an attitude towards values, life, health and future. A new concrete historical rationality as a feature of human thinking is formed in a single world outlook project of modern life on the principle of complementarity of knowledge. According to Russian researchers, it consists in reception with various types of rationality - formal, substantive, etc., integrated into the worldview¹¹. In a cultural context, scientific rationality is present as a sum of methods and a value position that determines the choice of natural-scientific and philosophical tools for studying a person and his phenomenal manifestations. The problem of foundations as one of the most important problems of scientific knowledge is of paradigm importance for the development of knowledge about the interaction of the world and individual. Philosophical foundations as integrative knowledge are organically included in the content of natural science and medical sciences, defining their ideological and methodological structure. The explanatory and prognostic value of a particular concept or phenomenon depends on the initial philosophical position. When analyzing the philosophical foundations of a particular science, both specific problems and their constructive solutions that enrich scientific knowledge are important. The solutions obtained are included in the system of foundations of science, in this study - the

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

biomedical science. The philosophical basis of the analysis of the foundations of the phenomenon of biomedical rationality is a framework of a sum of theories, concepts and principles of an ideological nature, having methodological and cognitive significance for considering human nature and the mechanisms of reflective thinking. This sum of theories ensures integrity and the ability to perform an explanatory function in relation to empirical facts. The recording of these facts in the scientific cognition of human nature in its biological dimension is provided by natural science and medicine. The boundaries of recording and the study of spiritual and social hypostases are overcome by the actual philosophical knowledge, using the instances that determine the values, the meaning of life and the goals of a person through the worldview as a substrate of physiological functions and a communication tool. The constant self-development of a person as a natural-historical creature implies a constant increment of cognitive foundations and the research of human essential nature through reflection. Thus, when analyzing any phenomenon, one should single out the philosophical, worldview, epistemological and methodological and social foundations of the research. The worldview foundations include the fundamental principles that reflect the universal properties and laws of existence of objects and processes, the most important aspects of reality: the unity of space-time, the dependence of space-time properties on structural relations in material systems, the principle of causality and systemic organization of material objects and processes. The gnoseological and methodological foundations have an explanatory function with respect to the integration of scientific knowledge about the phenomenon, as well as normative-orienting function. In this work, these foundations include: the principle of complementarity of knowledge, descriptive and explanatory approaches, the unity of theory and experiment, as well as the relationship between general methods of cognition - analysis and synthesis, analogy and modeling, systemic and structural functions. The general scientific foundations of the analysis of biomedical rationality include approaches that give it integrity and the approaches that constitute the essence of its content, the principles applicable in most sciences: the substrate approach, the theory of self-organization of open non-equilibrium systems. The information approach is used as a tool for studying the information and energy unity and interconnections of complex systemic objects to which human beings belong. Finally, social foundations include a system of principles and provisions that determine the place of the phenomenon in modern science, in general human cognition, as well as its goal in the aspect of satisfying social and spiritual needs, the interaction of science, practice and social phenomena. At each historical stage in the development of an anthropological issue, philosophical thinking about the human is stimulated by worldview factors. Philosophical reflection is constantly required by different areas of humanitarian knowledge, and its task is to study how the accomplishments and deeds of humanity, history, society, culture¹¹, medicine, and science follow from the structure of human existence. Philosophical comprehension of mankind at the beginning of the XXI century in its bodily-mental-spiritual integrity, in all the fullness of its being¹² originally took shape as a subject-matter paradigm in science, going back to the conceptual basis of human psychology. But the activity of a human as a unique social actor⁵ in relation to social, technological and natural environments, is constantly

expanding and transforming its ontological space, changing the contours of rational thinking and behavior. The study of the latter is included in biorationality, which plays the role of a common denominator, a new methodology and method of thinking. In the XXI century it is introduced by the combined efforts of biomedicine, social and humanitarian knowledge, and culture¹³. The phenomenon is recognized as close in meaning to the idea of digitalization, but retaining differences in methodology¹³. In medicine, as the most developing sector of science with increasing digitalization (including epidemiology)¹⁴ and volumes of information under the conditions of urbanization, metadata about the population and the objective profile of every person are increasingly in demand, and, consequently, the systemic basis for the study of processes and phenomena are demanded as well. As is noted in modern literature, the practice of digital self-tracking (Quantified Self-movement and others) and "securization of health risks"¹⁴ as a result of the technicalization of diagnostics, do not contribute to the motivated strengthening of the instinct of self-preservation and the maintenance of a person's own health, based on the spiritual outlook. Therefore, the significance of reflexive thinking, which provides the focus of attention on the essence of the disease and the patient's personality in diagnostics, is of instrumental intrinsic value. The concept of evidence-based medicine with its value/evaluative methodology, perceived by modern medicine, does not have a meta-level, and therefore cannot claim universality without the evaluative and norm-focused logic present in philosophical axiology. The presence in bio-rationalism as in a style and method of thinking of the space of values and evaluations that transforms knowledge into social action gives rise to the introduction by the authors of the present article of the term "biomedical rationalism" or "biomedical rationality". The concept contains knowledge about the contemporary mankind and health as a systemic integrity in contact with the activity of self-developing reflexive-active environments and serves as an explanatory and prognostic concept of the meta-level. Reliability, accuracy, validity and truth of the diagnosis in case of accordance of theory with practice will rightfully serve as the basis of the scientific nature of modern medicine. There is an initial focus on norms and truth of knowledge about the personality and the body, with an adjustment for progressive development trends. The rationalization of medicine is combined with the modernization of the scientific research of human in the sixth technological order: nano-, bio-, and information-cognitive technologies (NBICS) and their positive convergence. The order is built on the predominance of a cause-and-effect approach to processes and phenomena. The biomedical rationality existing in such conditions is characterized by a less deterministic approach to consciousness, which, in accordance with its synthetic characteristics, forms the direction of the meaning-forming foundations of objective reality. The intersection of realities in medical biorationality includes the spaces of interaction of both the patient and the healthy person (including physiological and pathological processes in somato-psychic organization), as well as the activity of specialists trained in the framework of the traditional direction of medicine; the activity of medical, preventive and scientific organizations, healthcare and pharmacy, with their local conditioning in a specific period of social development. Such a mobile structure is defined as a medical reality, which implies the existence of medicine with a certain

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

ontological status, structure and object. As a type of reality, it expresses the worldview of society in a specific historical period, and at the same time is a process and a result. This includes the concept of the style of scientific rationality as thinking, which does not function without the transforming role of an actively thinking and cognizing subject, with its ontology and capabilities. The medicalization¹⁵ of the space of human existence as one of the manifestations of life demonstrates the limitations of the existing medicine of the disease. It should be postponed by the development of methods for optimizing the use of drugs, since it is impossible to completely cancel it in the present. The leading principles of drug treatment have been formed for centuries, based on ideas about the causality of the disease and the needs of society. Pharmacotherapy approaches are updated taking into account advances in the multi-disciplinary field. In this regard, the authors define the concept of biomedical rationality as "a special type of scientific rationality, in which, in the post-non-classical period, the phenomena of a person, his health and medical truth as concrete knowledge are of primary importance." In the context of the most general rational knowledge about the world, formed by philosophy and biomedical science, the concept expresses the activity of heterogeneous self-developing reflexive-active environments with their essential characteristics¹⁶. The basic component of biomedical rationality unites symbols, socio-cultural patterns, values, attitudes, skills, automatisms and stereotypes of thinking, among which there are those that are not realized by the carriers. The variable component contains the parameter of ontological ethno-skepticism, which reflects the dynamics of the unique states of an individual in a social group in terms of health-disease and the body's functional response to painful deviations in time-space, at its own ontogenetic stage¹⁶. This understanding at the level of a useful model will make it possible to make rational therapeutic decisions in modern classical medicine based on the principles of the functioning of a whole organism in changing environments. Biomedical rationality is an object of analysis both from the point of view of its semantic content or the result of reflection of reality in the consciousness of a person as a subject of social action. The paradigmatic aspect of the study is not valid without defining the worldview, its essence, role and meaning. The system of worldview determines the characteristics of the personality's self-awareness and its relationship to the world, as well as the meaningfulness of its actions. This means the organization of the development of the environment "in a circuit way." It should be noted that connective tissue-motivational causality, as the basis of human life and a feature of ontos at the same time, manifests itself as a circuit connection. On the bioenergetic or thermal control circuit of all physiological and pathological processes, all other control circuits are superimposed: nervous, endocrine, muscle circuits, etc.¹⁷. Secondly, this causality manifests itself as the basis of rationalism, including biomedical rationalism. For a medical practitioner, this means intellectual orientation in theoretical knowledge with a simultaneous mastery of the practical side of the profession, from specialized to macro-philosophical aspects. To express the problem, the terms "medical worldview" and "traditional worldview" were used¹⁸, which, in the case of their operationalization, are of instrumental and practical interest for the formation of the foundations of modern medicine. The fact that the medical worldview as a type of substrate-organized professional

worldview directly affects the effectiveness of treatment, regardless of the pharmacological and surgical influence, was investigated in the works of¹⁸. As an instrument of verbal influence, the worldview serves as a system and a cognitive basis for medical knowledge proper as a system of semantic (cognitive) load. This basis is constantly constituted in the process of inactivation of the properties and potential of the individual and is cognitive activity. The worldview of a medical practitioner or medical worldview is a humanitarian component, which, due to its algorithmization, has a therapeutic (treatment) function, is a sufficient condition for a positive effect of treatment. Therefore, the formation of bio-rationality of a new social structure procedurally begins in the field of medicine of the humanities and humanitarian culture from the parameter of spirituality when combined with bio-dimensionality. It includes the integrity of the personality in all its complexity and demonstrates the need for involvement of the patient's personality. Patient involvement as another component of the 4-PSM model of medicine means a transition to the 5-PSM model, in which reflection is an operational concept. A person, as a condition and element of the artificial complexity he/she creates, reflectively creates him(herself) through language and culture, and cognition as a functional process is preceded by an analysis of processes on a human substrate. The grounds for studying the spheres of a person's activity are associated with his/her belonging to society and with human activity, firstly, as a generic being, secondly, as a self-asserting individuality, and thirdly, as an active self-expressing person with a measure of constitutionalism and environmentalism. The connection of spiritual values with the cultural-typical substrate of the individual's worldview in the spiritual-anthropological basis in this case becomes the key factor. This is relevant in modern social philosophy and human history. The construction of an individual metaphysical world predetermines the construction of social reality, and causing a deep and broad knowledge of the value foundations of social practice and their modulation into existing historical traditions.

DISCUSSION

In medical literature, this issue has been discussed from different positions - social and cultural, organizational, and legal^{19,39}. For example, it has been discussed in the aspect of health care modernization based on the humanistic concept in management²⁰. The situation in modern medicine is often presented from a technocratic view-point. The relevance of patient concentration is shown²⁰, in particular, as a legal category, as well as the prospects of individual instrumental approaches - the agent-focused one and others²¹ covering the social, physical and biological aspects of human life and medicine. The agent-focused approach, as one of the latest ones, is recognized as a tool for modeling complex social objects, complementing the classical methods of modeling and forecasting²². Consequently, it can also be used in the study of healthcare as a complex and multidimensional system. At the same time, it should be noted that there is specific scientific aspect and methodological fragmentation of approaches, the difficulty in ensuring a doctor's focus on the essence of the disease, and the patient's personality as key diagnostic values. In contemporary literature, there is a small number of fundamental works devoted to the analysis of the social and technological structure and their influence on the way of thinking^{23,40}. Existing publications contain multidisciplinary synthesis. Discussions about the

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

significance of the seventh social and humanitarian technological order²⁴ in understanding biomedical rationality are quite natural in the current situation. The above demonstrates its role in expanding the reflexive field in scientific activity, value correlation of knowledge about an object with the instruments and operations of activity (including medical activity). As basic for the existing medicine, the rationalistic worldview is built on key principles. Philosophy, as a rationalized worldview and a multidimensional method of therapeutic action, as the main instrumental principles presents the following: firstly, the value-worldview reaction of an individual to life situations; secondly, sensory and rational awareness of the disease. It is necessary to emphasize the moment of the synthesis of these positions in the context of the growing theorization of knowledge and the problematic nature, which is the main prerequisite for knowledge, especially medical knowledge. Scientific rationality, as a sum of methods and a value position, determines the choice of tools for studying a person and his/her phenomenal manifestations. Human social nature is characterized by the phenomena of complexity, information content, pluralism, global communication, multidimensionality, and network structure²⁵. The authors of the present article believe that these positions represent the person's interactions with the environment, the qualitative specificity and potential of social matter from the standpoint of the attributive approach in the philosophy of science. Reflecting the essence of the ordinary state of consciousness and sociality, reflection serves as its attributive component¹. In the model of biomedical rationality, reflection is the ontological basis for the manifestations of vital activity and is of scientific and practical interest in this work. The degree of exploration of reflection has its own traditions in social sciences²⁶, medicine^{27,28,9}, and psychological and pedagogical knowledge^{29,30}. In a multidimensional scientific search, the meta-model of reflection is formed²⁹ within the framework of meta-ontology - a multidimensional unity of consciousness, activity, thinking, and personality, applicable for any kind of activity. But, despite the strengths of specific studies, they incompletely disclose the mechanisms of reflection, which are especially relevant for the post-non-classical time. The procedural mechanisms of reflection, to which all types of determination of the personality's activity (biological, social, mental and spiritual) go back, are provided structurally and functionally by the substrate organization of human nature. Reflection (from lat. "reflexio") as self-understanding becomes a type of theoretical activity for the qualitative transformation of information encoded ontogenetically in neurons. Empirical studies in neurobiology describe compositional and other types of neural coding and the synergism of their functional activity³⁰ providing the architectonics and features of this process at the biological level of the organization³¹. Features of the process of neural support for the activity of individual consciousness and self-awareness are characterized by S. Dean as a "global neural workspace"³², including the symbolic, geometrically organized space³³, which allows us to make a conclusion about the bio-substrate basis for the formation of adaptive and cognitive structures that are significant for the study of the constructive mechanisms of transformations of the human ontos. In accordance with the substrate approach to the level of human organization, objective reality is perceived selectively, depending on the processing of information by neurons and their algebraic topology³⁴. Only after this does

consciousness and the brain include reality into the system of categorical thinking of the individual, into the system of the person's values and worldview. Information processing, neurobiological predictability and activity determined in this way contribute to the development and correction of life scenarios. The type of such development and any other theoretical activity aimed at the qualitative transformation of information encoded in neurons ontogenetically³⁰ is reflection as self-understanding and intellectual activity, including professional medical activity. The study of subjective introspection contributed to the assessment of the importance of the anthropological substrate component in medical communication. The question of the substantive basis of morpho-, anthropogenesis and cognitive phylogenesis, as well as life in general, is being developed in synergetics and connective tissue medicine¹⁷ in order to rationally understand their causality, in which the role of provision belongs to the connective tissue of the body. The influence of the mental, as the ideal specific content of brain neuro-dynamic codes, on the physical principle means the embodiment and signal transmission of information. Diagnostics as cognitive cognition is field conditioned¹⁷; the activity nature affects the processes of homeostasis in the body epistemically, as well: from the informational level to the tissue level. Cognitive states and processes depend not only on the anthropological substrate component, but also on external factors³⁵. The substrate component also affects the intensity of motivational and connective tissue reactions as a functional characteristic of connective tissue and processes in it, acting as a therapeutic value. This thesis implicitly contains the proposition about language as the nuclear part of the essential features of a person, connecting symbolic forms with psychophysical organization (up to the unconscious) in ontos. Connective-tissue motivational causality as the basis of human life is simultaneously manifested as the basis of rationalism, including biomedical rationalism. Concerning the worldview as a macroscopic whole, and axial one for biomedical rationality, it should be noted that the movement of parameters characterizing the worldview from the side of the microscopic whole deserves equal attention. The study of micro-level processes shows that the basis of the activity of internal neuro-physiological processes in the motivation of any activity is time and the experience of this time by a person¹⁶, as well as interrelated with reflection through goal-setting and space of co-existence with environmental objects. In addition to the substrate approach, in order to analyze the existential-epistemological and anthropological aspects of the problem, the authors used the intentional approach¹⁶, due to which the qualities and essential features of reflection, the possibility of manifesting personal experience and social activity were studied. Reflection manifests itself as an orientation towards changing and updating the order of events and life intentions, and is instrumental for social and humanitarian technologies, as their ideal component. The authors also introduced the concept of the vector feature of reflection in connection with the model-forming potential of reflection in the system of personality traits in relation to the environment. The content of reflection lies in its correlation with the truthfulness of knowledge, therefore, efficiency is to be assessed as the effectiveness of achieving truth, intensity as the degree of conviction in the correctness of efforts on the way to truth. Efficiency and intensity are formed in the system of ideas about one's own "Self" within the framework of the image of the world

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

that exists in the individual. Thus, on the substrate, reflection is characterized by moments of intentionality, efficiency and intensity of processes. The semantic side of information, its evaluative-parametric aspect - is the potential of reflection for assessing reality. The phenomenon of connective tissue individuality¹⁷, was taken as the basis for the multidisciplinary cognition of human integrity and occupies one of the main positions in rational medical thinking. In describing human sociality, this becomes a new way that allows one to model the beginning of informational causality of all regional processes in the living beings, as well as worldview algorithms. The epistemic determination of the mechanisms of self-creation, self-formation of the personality, was investigated by the authors in the analysis of the field conditionality of rational therapeutic action¹⁶ as a subject-subject interaction. Substantiality as a set of active media of information genesis in the course of diagnostic cognition undergoes changes depending on changes in information and energy storage devices¹⁶, which play the bio-energetic control function in each specific situation. The mechanisms of the semiotic and motivational-connective tissue substrate nature of a person (information content, energeticity, vitality) are shown as fundamental determinations. The study of the problem showed that the active principle is time, which is cumulated and acts as an inductor of any process. Preceding energy accumulation, time determines the state of energy complexes on the substrate, the internal system of conditions and the above-mentioned parameters of the vector feature, efficiency, and intensity of reflexive processes, and the development of the value motivation of the personality based on the syntheses in the intellect. Practical medicine in the modern world pays great attention to the patient as a direct participant in the treatment process. In the framework of bio-rationality, the concept of the developing "person-centered" or "patient-centered" medicine should include the foundations of psycho-bodily healing, the potential of which has been known since ancient times. Therefore, the study of their mechanisms takes place in the field of semiotic systems as a result of the interest of practical health care in the application of the instrumental potential of worldview-based treatment. In the latter, the symbolic nature of the human psyche is important, the field of which is in contact with the molecular and submolecular structures of living things. A person is actively studied through the environments that he/she transforms, and their characteristics, transforming, in their turn, the person; namely, through the information environment, and in a structurally logical relationship with it. In this case, the objectifications are symbolic space and sign systems. The solution of social problems in modern times depends on the optimal model of intercultural interaction, the openness of the human being, which is investigated in modern anthropology using the level and substrate approaches. A special place is occupied by the knowledge of the social and metaphysical world of the person, the person's moral law and the role of self-awareness. It is relevant in philosophy for the purpose of interpreting the evolution of the sphere of values. The basic grounds for studying the spheres of the person's activity refer to the contradictory "images of a person" at all levels of formulation and solution of the anthropological problem of the 19th-20th centuries. The metaphysical world of the personality predetermines reality, helping to understand the value foundations of social practice and their transition

into historical traditions. The current crisis of human nature, called eco-physiological, reflects the influence of treatment conditions on the adaptive-transformative potential of the organism. The discussion of the problem takes place for the purpose of in-depth studies of the quality of life of an individual, his/her social activity and the origins of anthropological activity³⁶. Understanding the system of regulatory mechanisms of the processes that determine the above manifestations involves an appeal to the spiritual sphere of the individual in the formation of the information space, which as a whole fits into the image of the existing model of medicine implemented through reflection. A synthetic model of medicine with a specific subjective component, which includes the ethical-social, value and existential layers, is the result of transition of the clinical picture to the molecular and submolecular level. In the framework of the discussion of the phenomenon of bio-rationality, the 4PSM-model of medicine^{36,37}, built on a holistic understanding of the patient and his/her qualities, simultaneously implements a number of principles - personalization, predictability, prevention and participation, which are fully implemented exclusively in the medicine of humanities³⁸ and humanitarian culture. Thus, reflection is the essential ontological basis of the model of biomedical rationality, which is of key importance in the new scientific paradigm. The study of reflexive thinking in the evaluative-parametric aspect is of instrumental importance, since through reflection the focus of attention is provided on the essence of the disease and the patient's personality in diagnostics, the field of which is integrity. This is due to the fact that reflection serves as an explanatory principle and a means of objectifying knowledge (self-control, introspection, etc.), as well a way of recording the inner spiritual ontological experience of a person.

CONCLUSION

- With the movement of the clinical picture to the molecular and submolecular levels of research, the interaction of instrumental methods and the potential of the worldview-based type of treatment as micro- and macro-level structures is relevant. The latter use the symbolism of the mental organization of the personality. Such relevance arises from the need for further work with a multilevel organization of consciousness. Its cognition will resolve the issue of the place and role of the supra-social and supra-biological in mankind in shaping the body's responses to environmental challenges. In this regard, it is important to further improve the medicine of the disease in the form of medical practices and technologies moving through tradition into innovation, towards humanization and development of a full-fledged health medicine. Thus, as a conclusion of this study, the following should be pointed out.
- The ontology of medical reality has been first described in the system of scientific foundations of the phenomenon of biomedical rationality. The phenomenon is characterized by philosophical, onto-epistemological, methodological and social foundations, in the field of which its interdisciplinarity is formed.
- In the paradigmatic aspect, biomedical rationality is theoretically defined and applied as an explanatory and prognostic concept for the formation of ontogeneological foundations of fundamental research: first, the image of human health in the form of

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

regularly updated substantial schemes of the person's interactions with social, natural and virtual environments, and secondly, changes in activity and psychosomatic processes over time in all of these conditions.

- At the macro level, the process of reflection is considered as the basis of the model of rationality and the explanatory principle. At the micro level, reflection is understood as a tool for the objectification of knowledge and epistemic determination of the mechanisms of self-construction of a person and algorithms for organizing the individual structure of existence, which has a practice-focused meaning in the new scientific paradigm.
- Within the framework of the substrate and attributive approaches, the evaluative-parametric aspect of reflexive thinking is highlighted in connection with the typology and specificity of the worldview. Through reflection, firstly, self-cognition and recording of the spiritual development takes place; secondly, the focus of the doctor's attention on the essence of the disease and the patient's personality in the diagnosis, the field of which represents integrity in the presence of metadata, is ensured.

REFERENCES

1. Pesotskaya, E.N., Inchina, V.I., Makarova, Yu.A., & Belova, L.A. (2020). Biomedical rationality in post-non-classical thinking: modern challenges and anthropocentrism. *Philosophical journal. Context and Reflection: Philosophy about the World and Man*. Vol. 9, Issue 2A. Moscow region, Noginsk: ANALITIKARODIS. DOI: 10.34670 / AR.2020.70.50.01.
2. Bazhanov, V.A. (2019). Brain - culture - society: the Kantian program in cognitive research. Moscow: Canon + ROOI "Rehabilitation".
3. Pulyaev, V.T., Skvortsov, N.G. (2014). A new paradigm of the development of society and its implementation in modern Russia. *Social and humanitarian knowledge*, 1, 55-68
4. Bondarenko, V.M. (2019). Digital economy: vision from the future. *DIGITAL ECONOMY*, vol.9, 1/5, 36-42.
5. Wiese, D., Escobara, J.R., Hsua, Y., Kulathinalb, R.J., & Hayes-Conroya, A. (2018). The fluidity of biosocial identity and the effects of place, space, and time. *Social Science & Medicine*, 198, 46-52. DOI: doi.org/10.1016/j.socscimed.2017.12.0237.
6. Mayakova, A.V. (2016). Reflection of complexity in the social sphere. *Scientific-methodical electronic journal Concept*, 11, 476-480. Retrieved from: <http://e-koncept.ru/2016/86105.htm>.
7. Starikova, E.A. (2017). Modern approaches to the interpretation of the concept of sustainable development. *Bulletin of Peoples' Friendship University of Russia. Series: Economics*, 25(1), 7-17.
8. Sukharev, A.S. (2017). Development of the Russian Mentality (Ed.). Institute of Psychology of the Russian Academy of Sciences. Moscow, p. 398.
9. Shlyakhto, E. N., Kogradi, A. O. (2018). Value-based medicine - a new paradigm in health care. *Remedium*, 1, 1-5.
10. Turrini, M., Prainsack, B. (2016). Beyond clinical utility: the multiple values of OTC genetics. *Applied & translational genomics*, 8, 4-8.
11. Reader, S.M. & Laland, K.N.(2017). Coevolution of cultural intelligence, extended life history, sociality, and brain size in primates. *PNAS*, 114(30), 25 Jul, 7908-7914. DOI: <https://doi.org/10.1073/pnas.1620734114>
12. Polyakova, O.O. (2008). Existential consciousness. *The humanitarian*, 7, 120-127.
13. Sedova, N.N., & Anipkin, M.A., (2019). The status of biorationalism in culture. *Philosophical problems of biology and medicine: the phenomenon of biorationality*. Issue 13. Moscow: LENAND, pp. 18-22.
14. Samerski, S. (2018). Individuals on alert: digital epidemiology and the individualization of surveillance. *Life Sci Soc Policy*, 14(1), 2-8. <https://doi.org/10.1186/s40504-018-0076-z>
15. Sheather, J.(2019). Does medicine help us? (N. Vakhtina, trans.). Moscow: Ad Marginem Press, ABCdesign.
16. Pesotskaya, E.N., Aksyonova, S.V., & Ivchenkov, A.I. (2019). Anthropological concepts in the integrative methodological basis of cognition: aspects of personality activity. *Paradigmatic strategies of science and practice in the formation of a sustainable business model in Russia: a collection of scientific articles based on the results of the National Scientific and Practical Conference*. 3-4 Oct. 3-4 2019. Saint Petersburg: Saint Petersburg State University of Economics, p. 78-80.
17. Alekseev, A.A. (2005). Integrative (systemic, family) connective tissue medicine. Vol. 3. Moscow: LENAND, p.52.
18. Pesotskaya, E.N., & Inchina, V.I. (2020). Biomedical rationality: contours of trans-disciplinarity = Biomedical rationality: contours of transdisciplinarity. monograph. Mordovia State University named after N.P. Ogaryov. Saransk. [Copyright certificate Reg. No. 1117 dated 25.03.2020, Moscow, National Fund for the Deposit of Scientific Works of the Russian Academy of Natural Sciences of the European Scientific Consortium].
19. Eskov, V.M., & Khadartsev, A.A. (2012). Personalized medicine from the perspective of the third paradigm in medicine. *International Journal of Applied and Fundamental Research*, 8,74-74. Retrieved 16.10.2020 from: <http://applied-research.ru/ru/article/view?id=2975>.
20. Pavlovskikh, A.Yu., & Shadrin, S.A. (2015). Patient focus as the main paradigm for the development of modern domestic health care. *Doctor-graduate student*, 32 (70), 309-315.
21. Fattakhov, R.V., & Fattakhov, M.R. (2015). Agent-focused approach: a new means of obtaining knowledge. *Regional economy: theory and practice*, 10, 47-62.
22. Macal, C.M., & North, M.J. (2009). Agent-based modeling and simulation. Piscataway, New Jersey: Institute of Electrical and Electronic Engineers. Proceedings of the 2009. Winter Simulation Conference, pp 86-98.
23. Ippolitov, K.Kh., & Lepskiy, V.E. (2003). On strategic guidelines for the development of Russia: what to do and where to go. *Reflexive processes and management*, 1, 5-27.
24. Lepskiy, V.E. (2010). Seventh socio-humanitarian technological order - an adequate response to the technological challenges of the XXI century. *Philosophy in the Dialogue of Cultures: Materials of the World day of philosophy*. Moscow: Progress-Tradition. pp.1010-1021.

The Ontology Of Biomedical Rationality: A System Of Scientific Foundations And Reflection (Aspects Of Material And Informational Reality Paradigm)

25. Kurmeleva, E.N., & Rudanovskaya, S.V. (2017). Man and Society in the Context of Modernity (Philosophical Readings in Memory of Professor PK Grechko): A Brief Review. *Bulletin of the Peoples' Friendship University of Russia. Series: Philosophy*, 21(4).
26. Anistratenko, T.G. (2016). Reflexive rationality as a characteristic of reflective thinking. *Bulletin of the Moscow University of the Ministry of Internal Affairs of Russia*. pp. 140-144.
27. Barsukova, M.I., Sheshneva, I.V., & Ramazanova, A.Ya. (2019). The riskiness of communication between a doctor and a patient: the communicative aspect. *The world of science, culture, education*, 3(76), 486.
28. Chekushkina, E.N., & Rodina, E.N. (2020). The role and significance of reflection in the process of teaching social studies to schoolchildren. *Context and reflection: philosophy about the world and man*, vol. 9, 2A, 107-113.
29. Mylnikov, A.M., & Vasilieva, M.G. (2016). Social reflection in the professional activity of a doctor. *Bulletin of medical Internet conferences*, 6(5), 945.
30. Sizikova, T.E., Voloshina, T.V., & Poveschenko, A.F. (2016). A Review of Research on Reflection in Psychology. *Pedagogical reflection. Scientific review. Pedagogical science*, 2, 89-102.
31. Iacaruso, M.F., Gasler, I.T., & Hofer, S.B. (2017 Jul.). Synaptic organization of visual space in primary visual cortex. *Nature*. DOI:10.1038/nature23019.
32. Hand Knob Area of Premotor Cortex Represents the Whole Body in a Compositional Way by Frank Willett et al. in *Cell*. Published March, 2020 doi:10.1016/j.cell.2020.02.043
33. Reimann, M.W., Max Nolte, M., Scolamiero, M., Turner, K., Perin, R., Chindemi, G., Dłotko, P., Levi, R., Hess, K., & Markram, H. (2017). Cliques of Neurons Bound into Cavities Provide a Missing Link between Structure and Function. *Front. Comput. Neurosci.*, 12 Jun. <https://doi.org/10.3389/fncom.2017.00048>.
34. Luczak, A., McNaughton, B. L., & Harris, K. D. (2015). Packet-based communication in the cortex. *Nat. Rev. Neurosci.*, 16, 745-755. DOI: 10.1038/nrn4026.
35. Chernyak, A.Z. (2019). Knowledge, memory. Subject boundaries. *Epistemology and Philosophy of Science*, 56(1), 101-115. DOI: 10.5840 / eps201956110.
36. Averkina, E.I. *Deformation of human life in the context of technological medicine / Philosophical problems of biology and medicine: the phenomenon of biorationality*. Issue 13. Moscow: LENAND, 2019. P.p. 106-110
37. Ferry-Danini, J. (2018). A new path for humanistic medicine. *Theor. Med. Bio-eth*, 39, 57-77. Retrieved 12 jun. 2019 from: URL: <https://doi.org/10.1007/s11017-018-9433-4>.
38. Mukhamedova, Z.M., & Umirzakova, N.A. (2019). The phenomenon of medical humanities and the international experience of integrating the humanities in medical education. *Philosophical problems of biology and medicine: the phenomenon of biorationality*. Issue 13. Moscow: LENAND, pp.290-291.
39. Tsaranov, K. N. (2018). Approaches to the formation of a patient-oriented corporate culture of a medical organization. *Topical issues of medicine in modern conditions*. p.p. 49-54.
40. Arshinov, V.I., & Lepsky, V.E. (Ed.). (2010). *The problem of assembling subjects in post-nonclassical science*. Moscow: Publishing house of the Institute of Philosophy of the Russian Academy of Sciences.