ONTOGNOSOLOGICAL ANALYSIS OF THE CORRELATION BETWEEN ARTIFICIAL INTELLIGENCE AND MODERN BIOTECHNOLOGY

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Abstract: This article analyzes the interrelationship between artificial intelligence (AI) and modern biotechnology based on an ontognosological approach. The study examines the possibilities of artificial intelligence to study, model, and intervene in biological systems from a philosophical and epistemological perspective. The formation of new types of knowledge resulting from the use of information technologies and AI tools in biotechnology, especially in the fields of genome editing, proteomics, pharmacogenomics, and regenerative medicine, is analyzed. Through ontological foundations, the development of human knowledge, the connection between experience and artificial intelligence is philosophically explored. The article also epistemologically substantiates the possibilities of predicting, optimizing, and controlling biotechnological processes using artificial intelligence.

Keywords: ontognosology, artificial intelligence, biotechnology, epistemology, genome editing, epistemology, philosophy, regenerative medicine, consciousness, information technologies.

Introduction

As one of the important directions of modern scientific development, artificial intelligence (AI) and biotechnology are emerging as complementary, yet interconnected and complex systems. In the 21st century, the rapid development of information technologies, especially artificial intelligence systems, has led to revolutionary changes in the fields of biology and medicine. Biotechnology, in turn, constitutes a complex of advanced technologies that affect human life, health and the environment, and is widely used, especially in genetic engineering, regenerative medicine, synthetic biology and pharmacology.

Artificial intelligence algorithms are becoming increasingly important in the process of processing and analyzing large volumes of biomedical data and, as a result, making accurate decisions. This creates the need to analyze the inextricable link between AI and biotechnology not only from a technological, but also from a philosophical and epistemological (science of knowledge) point of view.

Ontognosological analysis - that is, the study of the relationship between being (ontology) and knowledge (gnoseology) - provides a thorough analysis of how AI and biotechnology affect the formation of human knowledge, thinking models, and scientific cognitive processes. This approach helps to understand how knowledge created on the basis of artificial intelligence is integrated into the natural development of human thinking.

This article discusses the interrelationship between AI and biotechnology, the ontological and epistemological foundations of this relationship, and the philosophical and practical consequences of this integration for modern science and society. The

epistemological significance of AI tools in modeling, predicting, and controlling biological systems is also analyzed.

Literature Review

In recent years, the interaction between artificial intelligence and biotechnology has attracted the attention of the global scientific community. Numerous studies show that effective approaches are being developed to solve biomedical problems through the integration of these two fields. For example, there are many articles on the use of artificial intelligence algorithms in genome analysis, personalized therapy, and proteomic analysis.

In the philosophical approach, the issues of the formation of knowledge based on ontology and epistemology and how they are combined with artificial intelligence are of great importance. Epistemological approaches also serve to analyze the reliability, empirical validity, and contribution of knowledge obtained through artificial intelligence to scientific knowledge.

Studies on the use of AI tools in the development of biotechnology are mainly focused on the fields of medical diagnostics, pharmacogenomics, regenerative medicine, and synthetic biology. These studies show not only the technical capabilities of artificial intelligence, but also how it creates knowledge theoretically and philosophically.

Methodology

This study analyzes the relationship between AI and biotechnology based on an ontognostic approach. The following approaches were used as a methodological basis:

Philosophical analysis - the ontological and epistemological features of artificial intelligence and biotechnology were analyzed through philosophical categories and concepts.

Comparative approach - the similarities and differences between AI and biological thinking were studied in a comparative manner.

Systemic approach - by considering AI and biotechnology in a single system, the mechanisms of their interaction were clarified.

Empirical analysis - examples of the application of AI in biological fields were analyzed based on practical research and scientific literature.

Epistemological analysis - the validity, reliability, and epistemological foundations of knowledge created using artificial intelligence were analyzed.

Methodological approaches help to deeply understand how artificial intelligence and biotechnology contribute to the development of modern science. Their impact on the cognitive process and how they relate to the evolution of human thinking are explored from a philosophical perspective.

Research results and analytical analysis

The integration of artificial intelligence and biotechnology is considered one of the highest peaks of modern science and technology. The results of this study show that the ontognosological approach serves as an important methodological tool for a deep understanding of the interrelationship of these two areas.

Ontological aspect: Biotechnology studies living beings and their functional systems, while artificial intelligence creates new beings and forms of knowledge by modeling, analyzing and replicating these systems. This leads to an expansion of views on existence.

Epistemological aspect: Knowledge obtained with the help of artificial intelligence is not a product of human thinking, but is formed on the basis of algorithmically processed data. This knowledge gives rise to a new approach to classical theories of knowledge - that is, the

artificial cognition model. The analyzes, predictions and decisions made by AI open a new knowledge platform for humanity.

The role of AI in biotechnological practices: AI technologies are being effectively used in genome editing (CRISPR), cell-level regeneration, the development of personalized therapy, as well as in the fight against pandemics. For example, the possibilities of AI in medical image recognition, monitoring virus mutations, and vaccine development are unparalleled.

Impact on the development of knowledge: Thanks to the symbiosis of AI and biotechnology, humanity is gaining previously unimaginable knowledge. This has led to a change in the epistemological paradigm, further intensifying philosophical debates around artificially created models of consciousness and thinking.

Conclusion

The results of the study show that the interrelationship of artificial intelligence and modern biotechnology is important not only from a technical and practical point of view, but also from an ontological and epistemological point of view. Modeling biological systems through artificial intelligence, developing new medical approaches, and in-depth study of genetic information have initiated a new stage in human thinking. The ontognostic approach allows us to understand, comprehend, and evaluate these processes on a philosophical basis.

In the future, it is expected that the philosophical, ethical, and social issues associated with the integration of artificial intelligence and biotechnology will become even more relevant. Therefore, research in this area should develop not only in a technical, but also in an epistemological and ontological framework.

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