



SOCIO-ETHICAL ASPECTS OF THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND THEIR SYNERGISTIC NATURE

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Article history:	Abstract:
Received: 14 th March 2026 Accepted: 11 th April 2026	<p>This article analyzes the socio-ethical aspects of the development of artificial intelligence and their synergistic nature. The rapid development of artificial intelligence technologies in modern society is leading to the transformation of social systems, the formation of new relationships between humans and technology. This process is considered from the point of view of synergism as a complex, self-organizing system.</p> <p>The article reveals the impact of artificial intelligence on moral norms, value systems and social relations in society. The social consequences of the development of artificial intelligence are also analyzed based on synergetic categories such as chance and necessity, order and chaos, stability and instability.</p>

Keywords: artificial intelligence, synergism, social system, ethical problems, chance and necessity, self-organization, technological progress.

INTRODUCTION. In the context of modern globalization and digital transformation, artificial intelligence technologies are becoming one of the important factors in the development of society. Artificial intelligence has a significant impact not only on the economy, education, medicine, but also on the system of social relations and moral values. This requires studying its development not only as a technological process, but also as a complex socio-philosophical phenomenon.

Although the widespread use of artificial intelligence today increases efficiency in many areas of human activity, a number of social and moral problems are also arising. In particular, these include changes in the relationship between man and machine, the issue of responsibility, information security, privacy, and the transformation of ethical decision-making processes.

The synergetic approach serves as an important methodological basis for a deeper understanding of these problems. Synergetics studies the self-organization of complex systems, the interrelationship between order and chaos, as well as the factors of chance and necessity in the development of systems. From this perspective, it becomes possible to analyze artificial intelligence as a dynamic, open and changing system of society.

LITERATURE REVIEW. The issue of artificial intelligence and its socio-ethical aspects is one of the most relevant areas of modern scientific research. In particular, foreign and local scientists have studied the impact of

artificial intelligence on society, its social consequences, and ethical issues from various perspectives.

In the research on the philosophical and ethical problems of artificial intelligence, the issues of responsibility, freedom, decision-making and control that arise as a result of its integration into human activity occupy an important place. While some researchers interpret artificial intelligence as a successor to human thinking, others evaluate it as a source of social danger and ethical problems.

Scientific research conducted in the direction of synergetics, in particular, is aimed at revealing the self-organization of complex systems, the harmony of chance and necessity, and the dialectical relationship between order and chaos. Based on this approach, society and technology are interpreted as open systems that develop in interaction.

Artificial intelligence (AI) is a new science, direction, and mechanism that emerged on the basis of computer science, cybernetics, neurobiology, and psychology, studying the capabilities of computing machines and artificial devices to perform certain human intellectual tasks. There are many definitions of artificial intelligence. But the most popular and most fully revealing definition was presented in 1989 by scientists A. Barr and Y. Fengbaum. According to them, "Artificial intelligence is a branch of computer science aimed at creating intelligent computer systems, that is, systems that have the capabilities to understand, learn, observe, and solve problems, such as language, which we usually associate



with human mental abilities[1, 442]. However, today, artificial intelligence has gone beyond this definition. Russian scientists led by K. Anokhin believe that AI will create great opportunities in science and describe some of these opportunities. At the same time, they do not deny that artificial intelligence may have shortcomings in some aspects. They argue that artificial intelligence will not be able to replace the abduction method of scientific knowledge. Einstein emphasized the extreme importance of this method and noted that the vast majority of scientific discoveries were made precisely through this method. At the same time, he believes that the solutions are simple, and the most difficult process is to solve the problem. Therefore, some scientists believe that "the most complex problems, problems that are built on the intuitive abilities of the scientist, remain beyond the reach of artificial intelligence" [2.96]. This issue requires a deeper study of artificial intelligence.

RESEARCH METHODOLOGY. This study uses a comprehensive, systematic, and interdisciplinary approach to explore the socio-ethical aspects of the development of artificial intelligence and their synergistic nature. The research methodology is based on a combination of philosophical, social, and technological analysis methods.

First of all, the theoretical basis of the study is synergetic. This approach allows us to study the laws of development of complex, open, and self-organizing systems. From this perspective, artificial intelligence is interpreted as a dynamic system interacting with society. The study also used general scientific methods such as abstraction, induction, and deduction. Through these methods, the socio-ethical problems of artificial intelligence were summarized and theoretical conclusions were formed.

This methodology made it possible to reveal the complex and multifaceted nature of the development of artificial intelligence and analyze its socio-ethical consequences from a synergistic perspective.

ANALYSIS AND RESULTS. The development of artificial intelligence is transforming modern society into a complex, multi-level and interconnected system. Analyzing this process based on a synergetic approach allows us to understand its internal laws, development mechanisms and socio-ethical consequences in a deeper way. From the point of view of synergetic, artificial intelligence is manifested as an open system that develops in interaction with society.

The results of the analysis show that factors of chance and necessity play an important role in the development

of artificial intelligence. Although the emergence of technological innovations is often associated with random factors, their widespread distribution and consolidation in society are determined by a certain necessity - social needs. This confirms the evolutionary development model inherent in synergetic systems. Also, the introduction of artificial intelligence changes the balance between order and chaos in society. On the one hand, it optimizes production and management processes, forming a new order. On the other hand, it creates instability, such as job losses, increased social inequality, and increased moral dilemmas.

Bifurcation points, which are one of the important concepts in the synergetic approach, are also clearly manifested in the development of artificial intelligence. That is, at a certain stage, society is faced with the need to choose one of the different development paths. For example, the issue of using artificial intelligence as a means of full automation or developing it as a means of supporting human activity is one of them. The results of the study also show that the development of artificial intelligence creates new self-organization processes in socio-ethical systems. In this process, society is forced to form new moral norms, values, and procedures. In particular, issues such as algorithmic fairness, transparency, accountability, and the protection of human rights are gaining relevance.

Overall, the results obtained demonstrate the methodological importance of a synergistic approach to managing the development of artificial intelligence. This approach makes it possible to predict and balance the socio-ethical consequences of technological progress.

CONCLUSION. The development of artificial intelligence is having a significant impact on the social and moral systems of modern society. Analyzing this process on the basis of a synergistic approach allows us to understand its complex, multifaceted and dynamic nature more deeply. Artificial intelligence is manifested as an open system that develops in interaction with society, in which factors such as order and chaos, chance and necessity play an important role.

The results of the study confirm that the development of artificial intelligence creates new opportunities in socio-moral systems, along with new problems. In particular, technological progress, along with increasing efficiency, brings to the agenda such pressing issues as moral responsibility, justice, transparency and ensuring the priority of the human factor. This requires society to develop new moral norms and procedures.



From a synergistic point of view, the development of artificial intelligence is manifested as a process with bifurcation points, in which society has the opportunity to choose one of several development directions. This choice is directly related to social values, political decisions, and moral principles.

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