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The essence and challenges of artificial intelligence in the context of contemporary scientific and philosophical concepts

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Abstract

The present study aims to conduct a comprehensive comparative analysis of natural and artificial intelligence within the framework of contemporary scientific and philosophical discourse. The research focuses on examining artificial intelligence as a complex phenomenon situated at the intersection of epistemology, ontology, ethics, and technological development. Particular attention is devoted to identifying the conceptual boundaries between human (natural) intelligence and artificial intelligence, as well as assessing their respective cognitive, functional, and existential potentials. The scientific novelty of this study lies in its integrative and interdisciplinary approach to the problem of artificial intelligence. The article offers one of the first holistic philosophical analyses of the concepts of intelligence and artificial intelligence, addressing not only their definitional aspects but also the prospects and limitations of creating an "integrated" or "strong" artificial intelligence. Special emphasis is placed on the philosophical implications of artificial intelligence development within the broader context of transhumanism and post-humanist thought. From a methodological perspective, the study employs a combination of philosophical analysis, comparative methods, systems thinking, and socio-cultural interpretation. The research highlights the key challenges in the formation and development of artificial intelligence, including technological constraints, socio-cultural barriers, and ethical dilemmas arising within the evolving "human–machine" interaction paradigm. The results of the study demonstrate that the increasing integration of artificial intelligence systems into various spheres of human life generates profound existential, moral, cognitive, and social consequences. The theoretical and practical implications of artificial intelligence extend to redefining communication mechanisms between the natural and socio-cultural layers of reality, thereby transforming traditional conceptions of knowledge, agency, and responsibility. The theoretical and practical significance of this research lies in its contribution to advancing scientific, technical, and philosophical inquiry into artificial intelligence. The study underscores the potential of artificial intelligence to reshape future societal development and to expand the boundaries of human existence in ways previously considered unattainable.

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Introduction

One of the defining characteristics of contemporary civilization is the rapid and pervasive digitalization of human existence. This process involves the transformation of reality into numerical and algorithmic forms, accompanied by the accelerated development and dissemination of digital and remote technologies. The emergence of the Internet as a global communication network has profoundly reshaped virtually all spheres of human activity, including everyday life, labor practices, economic relations, and business operations.

Within the broader framework of digital transformation, particular significance is attributed to the development of distance learning technologies and innovative educational models. These forms of education have become not only a practical necessity but also an essential component of the modern knowledge society, reflecting deeper structural changes in the ways information is produced, transmitted, and assimilated.

At the present stage of civilizational development, society faces the urgent task of reconciling its system of values, norms, and priorities with the rapidly evolving scientific and technological landscape. This challenge becomes especially acute in the context of artificial intelligence research, which increasingly influences human self-understanding and the interpretation of reality. In the long term, artificial intelligence has the potential to facilitate a transition from classical paradigms of scientific thought to synergistic and integrative paradigms, ultimately leading to the emergence of hybrid "human–machine" systems. Such transformations entail far-reaching socio-cultural, physiological, psychological, and ethical consequences.

The concept of *intelligence*, widely used in scientific and philosophical discourse, originates from the Latin notions of *intellectus* (mind) and *ratio* (reason). Traditionally, intelligence has been understood as an inherent human capacity for rational thought, problem-solving, learning, and creative activity. By analogy with natural intelligence, artificial intelligence is commonly conceptualized as a technologically constructed system capable of simulating cognitive processes such as perception, reasoning, decision-making, and adaptive behavior. In this sense, artificial intelligence is often viewed as a functional model or computational analogue of the human brain, implemented through software architectures and algorithmic structures (Nazarov, 2022).

The term *artificial intelligence* was first introduced by John McCarthy during the seminal scientific conference held at Dartmouth College in 1956, marking the formal emergence of artificial intelligence as an independent field of research. Since that time, artificial intelligence has evolved from a speculative concept into a powerful technological force with significant philosophical implications. Today, the development of artificial intelligence raises fundamental questions concerning the nature of consciousness, the limits of human cognition, the ethical responsibilities of creators, and the future trajectory of human civilization itself.

Conceptual and Scientific Dimensions of Artificial Intelligence

Despite the rapid advancement of artificial intelligence (AI) technologies, contemporary researchers have not yet reached a unified and universally accepted definition of the term *artificial intelligence*. This conceptual plurality reflects the interdisciplinary nature of AI and the diversity of methodological approaches applied to its study. In modern scientific discourse, artificial intelligence is most frequently interpreted in three interrelated but distinct senses.

First, artificial intelligence is understood as a scientific and research-oriented field aimed at modeling cognitive and intellectual processes through computational means. Within this framework, AI seeks to reproduce human problem-solving strategies, decision-making mechanisms, and reasoning patterns in order to enhance the efficiency and productivity of computing systems. This interpretation emphasizes AI as a methodological and theoretical discipline grounded in mathematics, logic, computer science, and cognitive science (Floridi, 2019).

Second, artificial intelligence is perceived as a set of technical systems, devices, algorithms, and software applications that demonstrate behavior traditionally associated with human intelligence. These include machines and programs capable of learning, adapting, recognizing patterns, processing natural language, and making decisions under conditions of uncertainty. In this sense, AI is evaluated according to functional criteria, whereby a system is considered "intelligent" if it can successfully perform tasks that typically require human cognitive abilities.

Third, artificial intelligence is conceptualized as a complex system of ideas and theoretical constructs designed to reproduce, simulate, and model human cognition and intellectual activity. This approach situates AI within a broader philosophical context, raising fundamental questions about the nature of intelligence, consciousness, knowledge, and creativity. From this perspective, artificial intelligence serves as both an object of scientific investigation and a conceptual tool for rethinking human cognitive capacities.

As demonstrated above, artificial intelligence can be interpreted simultaneously as a scientific discipline and as a collection of technical artifacts capable of modeling and reflecting aspects of human intelligence. Consequently, the scope of issues encompassed by the concept of artificial intelligence in contemporary science is remarkably broad. Today, AI integrates numerous subfields, ranging from general theories of perception and sensory processing to highly specialized applications such as strategic gameplay (e.g., chess and checkers), automated theorem proving in mathematics, medical diagnostics, and decision-support systems.

Researchers actively apply artificial intelligence methodologies across diverse domains, including engineering, medicine, economics, education, and social sciences. At the same time, scholars whose primary specialization lies outside the field of AI increasingly draw upon its conceptual and methodological foundations to systematize knowledge and address complex intellectual problems. For this reason, artificial intelligence can be characterized as a fundamentally universal and integrative field of knowledge, capable of bridging disciplinary boundaries and fostering interdisciplinary collaboration [Kuznetsov, 2005, p. 12].

In recent decades, the global scientific landscape has been marked by the rapid and dynamic development of exact and natural sciences, particularly mathematics, biology, and neuroscience. Special emphasis has been placed on disciplines that directly influence the evolution of information systems and digital technologies. Advances in neurobiology, cognitive psychology, and computational modeling have significantly contributed to the refinement of artificial intelligence research, enabling more sophisticated simulations of learning, perception, and decision-making processes.

Simultaneously, the ethical and philosophical dimensions of artificial intelligence have gained increasing prominence. Central to these discussions are questions concerning the fundamental differences between humans and machines, the moral status of potentially conscious or sentient artificial systems, and the possibility of recognizing social rights for intelligent machines. Additional concerns include the ethical implications of human–machine interaction, the potential dehumanization of labor, and the risk of inhumane exploitation of intelligent systems, should they acquire attributes such as self-awareness or emotional responsiveness.

According to the *Dictionary of Philosophical Terms*, intelligence is defined as "a conscious, non-stereotypical search and the ability to discern forms of thought based on experience and knowledge, coupled with the capacity to anticipate events and respond with behavior patterns appropriate to their content" [Timofeev, 2019, p. 202]. This definition emphasizes intelligence as an active, creative, and anticipatory form of cognitive engagement with reality.

Within this conceptual framework, intelligence is understood as a specific unity of rational and creative abilities, encompassing both mental capacities and the instrumental means of intellectual activity. These means include memory, technical tools, informational resources, methodological approaches, and scientific theories. Importantly, intelligence does not exist in isolation but is embedded within a particular socio-cultural environment. Outside such a context, its creative potential cannot be fully realized, and the tools designed to implement intellectual activity remain merely formal representations of cognitive capacity.

Historically, the problem of artificial intelligence can be traced back to medieval philosophical inquiries into the possibility of a universal "philosophical language" through which absolute truth could be apprehended. In contemporary science, these speculative ideas have undergone a profound transformation, culminating in the development of artificial intelligence as a rational and empirically grounded scientific construct. This transformation has been guided by three foundational ideas: epistemological optimism, rooted in the belief that the world is ultimately knowable; the conviction that objective knowledge exists independently of individual or collective human consciousness; and the vision of a qualitatively improved future shaped by cybernetics and advanced artificial intelligence technologies (McCarthy, 1956).

Scientific Aspects of Artificial Intelligence Research

From the standpoint of contemporary scientific inquiry, artificial intelligence represents one of the most actively discussed and rapidly evolving research areas. Positioned at the intersection of physics, computer science, philosophy, cybernetics, psychology, mathematics, and even chemistry, artificial intelligence has inspired a vast body of interdisciplinary scholarship [Osipov, 2011]. This convergence of disciplines reflects the complexity of intelligence as both a natural and artificial phenomenon.

Empirical studies conducted in the late twentieth century, particularly during the early 1990s, examined the functioning of nervous systems at relatively simple biological levels, such as the neural organization of cephalopod mollusks. These organisms possess nervous systems comprising approximately one hundred thousand neurons arranged in decentralized and non-hierarchical configurations. Despite their relative simplicity, such systems demonstrate remarkable capabilities, including self-learning, reflex formation, and rudimentary inference based on analogical identification. These findings provided important insights into the possibility of modeling intelligence through distributed and adaptive computational architectures.

Machine, or artificial, intelligence can thus be defined as an artificially constructed system designed to imitate human cognitive functions, including decision-making, choice, creativity, and logical reasoning. Over the course of its historical development, artificial intelligence has passed through several distinct stages, each corresponding to a particular level of scientific and technological maturity.

The first stage, spanning the 1950s and 1960s, was characterized by the conceptual formation of artificial intelligence as a research program. During this period, foundational tasks were formulated, and specialized programming languages such as Lisp and Prolog were developed to support symbolic reasoning and logical inference (Chalmers, 1966).

The second stage, extending from the 1960s to the 1970s, witnessed the application of artificial intelligence in educational contexts. AI-based systems were incorporated into teaching and learning processes, laying the groundwork for intelligent tutoring systems and adaptive educational technologies (Dennett, 1991).

The third stage, encompassing the 1980s and 1990s, marked the transition to widespread practical implementation and public accessibility of artificial intelligence technologies. This period was characterized by significant advancements in personal computing, expert systems, and early neural network models. Efforts were also made to simulate human cognitive processes more directly, including attempts to model consciousness through brain-inspired architectures, such as neurocomputers.

The ultimate objective of this evolutionary trajectory is the creation of self-learning artificial intelligence systems capable of autonomous development and evolution. In the contemporary world, computers already perform a substantial portion of tasks traditionally associated with human intellectual labor. Importantly, modern AI systems are no longer limited to executing repetitive operations; they are increasingly capable of adapting, learning from experience, and improving their performance over time.

The development of fully realized artificial intelligence opens fundamentally new pathways for human progress. To function effectively within complex social and environmental contexts, artificial intelligence must possess an internal model of the surrounding world. Such a model accumulates information about environmental properties, relationships, events, and dynamic processes. Decision-making within AI systems relies on the structured application of algorithms—defined as ordered sets of instructions that determine the sequence of actions required to achieve specific goals.

The central challenge lies in identifying, optimizing, and correctly applying these algorithms to solve increasingly complex tasks. In this sense, artificial intelligence represents not only a technological innovation but also a profound shift in humanity's understanding of cognition, agency, and the future of rational activity.

Features of the Functioning of the "Human–Computer" System

Within the framework of contemporary philosophical and scientific analysis, it is essential to account for the fundamental differences between human and machine modes of cognition. Machine thinking, in its current form, is primarily reduced to the formal and logical manipulation of signs, symbols, structures, and the relations between them. These operations are implemented through algorithmic procedures embedded within artificial intelligence systems. Machine cognition is

thus grounded in formal logic, statistical inference, and syntactic transformations, all of which operate independently of subjective experience.

Human thinking, by contrast, is characterized by a significantly richer and more complex structure. In addition to logical reasoning, it incorporates figurative representations, holistic images, intuition, emotional states, and existential tension. These elements play a decisive role in human intellectual activity, particularly in situations involving creativity, moral judgment, and decision-making under uncertainty. Human decisions are guided not only by abstract reasoning but also by images as psychological reflections of reality, which transform accumulated experience into creative insight and original ideas. Such image-based and emotionally mediated processes are absent in contemporary computer systems, which function without subjective perception or lived experience (Timofeev, 2019).

Furthermore, human cognition cannot be reduced solely to its logical dimension. While machines are capable of reproducing formal logical operations with remarkable speed and accuracy, they lack the depth of semantic understanding and contextual awareness inherent in human consciousness. Human thought is embedded within a cultural, historical, and social context, enabling individuals to interpret meaning, assign value, and act purposefully. This multidimensional nature of human intelligence remains beyond the full reach of artificial systems.

In light of these distinctions, the effective organization of interaction within the "human–computer" system requires carefully designed measures that account for the complementary strengths of both components. Such measures include, for example, the use of computer technologies to support human decision-making in management and governance; the integration of human expertise and machine computation in cognitive activities aimed at solving complex forecasting and planning tasks through simulation modeling; and the development of advanced information services based on interactive dialogue between humans and computers in the information and communication sphere.

The intellectual potential of the "human–computer" system possesses a unique characteristic: both human cognition and computational systems not only serve as instruments for understanding and shaping reality—particularly the informational environment surrounding individuals—but also function as mechanisms for preserving and structuring this reality. Through the accumulation, storage, and transformation of knowledge, the combined system significantly enhances the efficiency with which society utilizes its intellectual resources. This includes the development of extensive databases, advanced technical infrastructures, and sophisticated software platforms facilitating human–machine interaction.

As a result, the "human–computer" system enables the construction of more flexible and diverse semantic structures than those available within purely human or purely machine-based frameworks. These structures can be continuously transformed, updated, fragmented, or reconfigured, allowing for the representation of the complex and dynamic states of the objective world through multiple models. Such models are essential for addressing newly emerging applied problems in science, economics, governance, and social life (Castells, 2010).

Main Problems of Artificial Intelligence

The governance and legal regulation of artificial intelligence play a critical role in the responsible implementation of AI systems. The rapid expansion of artificial intelligence technologies necessitates the development of a comprehensive normative and legal framework grounded in clearly defined rules and standards. Such a framework must ensure the ethical, transparent, and accountable use of artificial intelligence across all spheres of society.

The establishment of regulatory norms is essential not only for controlling technological development but also for ensuring the fair distribution of the benefits generated by artificial intelligence. Legal regulation must address the protection of individual rights and freedoms, the prevention of discrimination and misuse, and the formulation of ethical principles governing human–machine interaction. Moreover, regulatory mechanisms should include measures aimed at mitigating potential negative impacts of artificial intelligence on human cognitive, social, and moral capacities [Aliyev,, 2025].

From a conceptual standpoint, artificial intelligence can be understood as a computational process endowed with properties that partially resemble human thinking. In certain interpretations, artificial intelligence is regarded as an intuitive computational system capable of approximating human-like reasoning. By this characterization, several key properties of artificial intelligence can be identified.

First, artificial intelligence requires an internal model of the external world. This model must possess the capacity to incorporate new information, revise existing knowledge, and adapt to changing conditions. Such functionality presupposes

a degree of individuality in algorithmic execution, whereby each computational process produces a distinct binary outcome based on specific input conditions.

Second, adaptability constitutes a fundamental characteristic of artificial intelligence systems. While contemporary AI demonstrates adaptive behavior primarily at the software level—through mechanisms such as machine learning and neural networks—this adaptability remains constrained by predefined architectures and training data.

Third, artificial intelligence exhibits a limited form of situational assessment, enabling it to select actions based on specified conditions. However, this so-called "relative independence" is, in reality, heavily restricted. AI systems do not possess genuine autonomy; their actions remain fundamentally dependent on human-designed objectives, constraints, and evaluation criteria.

Fourth, artificial intelligence allows for multiple interpretations of input requirements and system outputs. This flexibility, while advantageous in complex problem-solving contexts, also introduces ambiguity and uncertainty, raising important questions about accountability and control.

It is evident that the creation of truly advanced artificial intelligence requires the fulfillment of several necessary conditions. Foremost among these is the need for artificial intelligence to approximate human cognitive processes not merely functionally but structurally. This entails a profound understanding of the nature of human intelligence and thinking, including the identification of their objective characteristics and underlying mechanisms.

Equally important is the need to comprehend the ways in which human activity can be restructured in light of artificial intelligence development. Such restructuring must account for the holistic organization of the human organism, encompassing not only cognitive functions but also physiological systems, including the nervous, hormonal, and sensory systems. Human intelligence emerges from the complex interaction of these systems, and any attempt to replicate or simulate it must take this complexity into consideration (Nilsson, 2010).

Finally, it must be emphasized that artificial intelligence should be formed through intellectual development rather than rigid programming alone. This implies a shift from deterministic algorithmic control toward systems capable of self-learning, self-modification, and contextual understanding. Only under these conditions can artificial intelligence evolve beyond a purely instrumental role and approach a more integrated form of cognitive functionality (Nilsson, 2010).

Epistemological and Ethical Limits of Artificial Intelligence

One of the fundamental arguments supporting the current impossibility of creating full-fledged artificial intelligence within existing scientific and historical realities lies in the intrinsic limitations of traditional formal logic. Artificial intelligence cannot emerge solely as a result of functional efficiency or the application of formal-logical procedures. While logical algorithms and computational models are indispensable tools in AI development, they do not exhaust the complexity of human cognition. Human intelligence transcends purely logical operations and incorporates dimensions that remain inaccessible to algorithmic formalization.

In the process of developing artificial intelligence, it is therefore essential to take into account the distinctive features of human associative thinking. This form of thinking is determined not only by the neurophysiological functions of the brain—such as reflexive and analytical reasoning—but also by emotional experience, intuition, and the external objectivity that is internalized within human consciousness. Human cognition is shaped through continuous interaction with the objective world, resulting in the formation of meanings, values, and symbolic representations. At present, this dimension of lived, experiential objectivity remains absent from artificial intelligence systems, limiting their capacity for genuine understanding and interpretation.

Most importantly, the creation of true artificial intelligence is impossible until the boundaries, structure, and mechanisms of human consciousness and thinking are clearly defined and scientifically substantiated. Consciousness remains one of the most complex and unresolved problems in philosophy, cognitive science, and neuroscience. Without a comprehensive understanding of consciousness—its intentionality, reflexivity, and subjective character—any attempt to replicate it artificially remains speculative and incomplete.

Modern philosophy draws particular attention to the ethical implications arising from this issue. If machines were to acquire the capacity for rational thinking, self-awareness, and emotional experience in the future, fundamental questions would inevitably arise: What distinguishes a human being from a machine? Where does the boundary between the natural

and the artificial lie? If machines were capable of experiencing feelings, would it be morally permissible to exploit them as instruments, or would they require ethical recognition and protection? Furthermore, how would communicative interaction between humans and intelligent machines evolve under such conditions?

These questions have long occupied a central place in science fiction literature and have been vividly represented in contemporary cinematography, where the line between human and machine is often deliberately blurred (European Commission, 2021). A particularly provocative philosophical dilemma concerns the problem of identity: can an individual who has replaced 99% of their biological organs with artificial implants still be considered human, or does such transformation render them a machine? This question challenges traditional notions of human essence, personal identity, and moral responsibility.

At the same time, technological progress and the widespread availability of information have significantly enhanced the adaptive capabilities of individuals in coping with increasing volumes of knowledge. However, the rationalization and optimization of labor, living conditions, and social organization may paradoxically lead to a weakening of certain aspects of human nature, particularly emotional and spiritual dimensions. This concern was powerfully articulated by N. Berdyaev, who warned that technology bears responsibility for the profound erosion of spiritual life, especially emotional life and human feelings. According to Berdyaev, modern civilization suppresses the spiritual and emotional elements that constitute the core of human existence [Ioseliani, 2019, p. 500].

Prospects for the Development of Artificial Intelligence

In recent years, the effective and responsible application of artificial intelligence systems at the global level has generated substantial socio-economic benefits for both individuals and legal entities. As a result, many countries have adopted national strategies for artificial intelligence development and are actively implementing policy frameworks to support innovation in this field. The sustainable advancement of artificial intelligence requires the establishment of robust computational infrastructures, including high-performance computing systems and cloud-based resources that facilitate the rapid training and deployment of advanced AI models.

In this context, the creation of open-source artificial intelligence libraries and the development of AI tools in national languages—such as Azerbaijani—represent significant steps toward inclusive and context-sensitive technological progress [Ahmadov, 2017]. These initiatives not only promote technological sovereignty but also enable broader participation in the digital transformation of society (Ahmadov, 2017).

Philosophical interest in artificial intelligence is primarily manifested in the search for analogies between artificial systems and human thinking, as well as in the recognition that such analogies may produce far-reaching social consequences. It is highly probable that in the coming decades the world will undergo profound transformations driven by emerging technologies, including superintelligence, nanotechnology, and advanced bioengineering. Within contemporary philosophical discourse, transhumanism has emerged as a particularly influential movement, focusing on the evolving role of humanity in a technologically transformed world and examining the impact of innovative technologies on society, culture, and the biosphere.

Modern socio-cultural reality is characterized by several fundamental features. First, a new type of social relations is emerging, accompanied by significant changes in the hierarchy of values as a result of ideologically oriented and technologically mediated needs. Second, cultural development is generating unprecedented opportunities for realizing the latent potential of the individual. Third, there is a substantial expansion in the differentiation of human needs and abilities, reflecting increasing social and technological complexity. Fourth, contemporary society is witnessing the gradual formation of a dialogue among major cultural traditions and worldviews [Harari, 2017, p. 7].

Transhumanist thinkers express confidence that future advances in molecular nanotechnology will enable the creation of artificial intelligence systems comparable to the human brain, as well as the potential transfer of consciousness from a biological substrate to a computational one. According to these views, experimental models of future superintelligence will not merely reproduce abstract cognitive functions but will also incorporate diverse aspects of human behavior, including perception, sensory processing, movement, and higher-order reasoning.

Despite the plurality of interpretations surrounding the concept of artificial intelligence, most contemporary approaches converge on a shared assumption: artificial intelligence systems are designed to model or imitate human thinking, particularly reflective and self-referential cognitive capacities. Historically, the problem of artificial intelligence can be

traced back to medieval philosophical attempts to construct a perfect or "primordial" language capable of expressing absolute truth.

As mythological and metaphysical conceptions of artificial intelligence gradually transformed into rational scientific constructs, three foundational ideas came to the forefront. The first is the belief in the possibility of achieving final and comprehensive rational knowledge of the world. The second is the conviction that objective knowledge exists independently of individual humans or humanity as a whole. The third is the cybernetic conception of knowledge as an objective process involving the reception, transmission, and processing of information.

It can be assumed that the future robotization of human existence will also entail negative consequences, exerting significant influence on individuals and society. Although humans remain responsible agents who make conscious decisions regarding the transformation of their environment, the expanding infosphere increasingly shapes and constrains these decisions [Nazarov, 2022].

Nevertheless, there are compelling prerequisites for the future emergence of advanced intellectual systems grounded in analogies between artificial intelligence and superintelligence. Such future superintelligence will most likely constitute a sophisticated imitation of human thinking. This imitation will prove fruitful if it enables the identification and modeling of hidden structures of knowledge, including non-verbal cognition, intuitive reasoning, and phenomena such as the so-called "sixth sense." By elucidating these elusive aspects of human cognition, artificial intelligence may not only transform technology but also deepen humanity's understanding of itself.

Conclusion

In the twenty-first century, as a result of intensive informatization and digital transformation, society has acquired a level of complexity, openness, and dynamism that significantly exceeds that of the twentieth century. Contemporary social reality is characterized by unprecedented volumes of information flows, accelerating technological change, and the growing interdependence of social, technical, and cultural systems. These factors collectively determine the multifunctional and non-linear nature of modern society, within which artificial intelligence occupies a central and increasingly influential position.

In this context, national strategies for artificial intelligence development play a crucial role in shaping both technological progress and social transformation. As emphasized in the *Artificial Intelligence Strategy of the Republic of Azerbaijan for 2025–2028*, the development and effective implementation of artificial intelligence in Azerbaijan is oriented toward achieving several key objectives: fostering the development of the national economy and markets; creating favorable institutional and technological conditions for the application of artificial intelligence; training a qualified workforce capable of operating within the artificial intelligence sector; and promoting broad public awareness of the benefits and opportunities associated with artificial intelligence technologies [Aliyev, 2025]. These strategic priorities reflect an understanding of artificial intelligence not merely as a technological tool, but as a systemic factor of socio-economic and cultural development.

At the same time, the field of knowledge concerned with artificial intelligence occupies one of the leading positions among contemporary sciences. It serves as a powerful driver of scientific and technological progress and contributes to addressing a wide range of global challenges faced by humanity. In the long term, artificial intelligence may offer significant potential for mitigating some of the most pressing problems of the modern era, including those related to resource management, healthcare, education, and environmental sustainability.

However, the integration of artificial intelligence systems into human life inevitably entails profound consequences that extend far beyond technical efficiency. These consequences bring to the forefront fundamental existential, moral, intellectual, and ethical questions concerning human identity, responsibility, and the future of civilization [7, p. 22]. While many of these issues currently retain a prognostic and speculative character, they nevertheless demand serious philosophical reflection and anticipatory regulation.

The realities of the present stage of development indicate that contemporary artificial intelligence represents, to a large extent, a specific physical or computational implementation of reflexive and algorithmic thinking, or, in many cases, a sophisticated programmatic environment. In this sense, what is often labeled as "artificial intelligence" does not yet constitute intelligence in the full philosophical and anthropological meaning of the term. Rather, it is a functional simulation of certain cognitive processes, lacking consciousness, intentionality, and genuine understanding.

Nevertheless, the significance of this technological endeavor should not be underestimated. The very attempt to implement artificial intelligence using the full spectrum of modern scientific and technological resources reveals its deep epistemological and practical potential. Even in its current form, artificial intelligence has already found wide-ranging applications across numerous domains of human activity. Its theoretical and practical outcomes increasingly mediate and restructure the mechanisms of interaction between the two fundamental layers of reality—the natural and the socio-cultural.

In this regard, artificial intelligence emerges not only as a technological innovation but also as a transformative factor that reshapes human knowledge, social relations, and modes of interaction with the world. The future development of artificial intelligence will therefore require not only technical advancement but also sustained philosophical, ethical, and socio-cultural reflection aimed at preserving human values while navigating the profound changes brought about by intelligent technologies.

Ethical Considerations

This study is theoretical and philosophical in nature and does not involve human participants, personal data, experiments on living beings, or the use of confidential or sensitive information. Therefore, no ethical approval from an institutional review board or ethics committee was required. The authors affirm that the research was conducted in accordance with internationally accepted ethical standards of academic integrity, including honesty, transparency, and respect for intellectual property. All sources used in the study are appropriately cited, and no form of plagiarism or unethical research practice has been employed.

Author Contributions

All authors contributed significantly to the conception, development, and completion of this study.

- **Muslim Nazarov** conceptualized the research framework, developed the philosophical and theoretical foundations of the study, and provided overall scientific supervision.
- **Faig Aliyev** contributed to the historical and philosophical analysis, interpretation of ethical and socio-cultural implications of artificial intelligence, and critical revision of the manuscript.
- **Aziza Firidun Agayeva** participated in the literature review, systematization of contemporary approaches to artificial intelligence, and assisted in drafting and editing the manuscript.

All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article. The authors confirm that the research was conducted without any financial or personal relationships that could be construed as a potential conflict of interest.

References

1. Aliyev, I. (2025, March 19). *Artificial Intelligence Strategy of the Republic of Azerbaijan for 2025–2028* (Presidential Order No. 530). Republic of Azerbaijan. https://e-ganun.az/framework/59218
2. Berdyaev, N. A. (1994). *Philosophy of art, culture and creativity* (Vol. 1). Iskusstvo.
3. Devyatkov, V. V. (2001). *Systems of artificial intelligence: A textbook for universities*. Bauman Moscow State Technical University Press.
4. Ioseliani, A. D. (2019). Artificial intelligence versus human intelligence. *Tambov University Review. Series: Humanities*, 12(4), 102–107.
5. Kuznetsov, V. G. (Ed.). (2005). *Dictionary of philosophical terms*. INFRA-M.
6. Nazarov, M. H. (2022). *Philosophy of education: Teaching materials*. Baku.
7. Nazarov, M. H. (2024). *Social philosophy: Teaching aid*. Baku.
8. Osipov, G. S. (2011). *Methods of artificial intelligence*. FIZMATLIT.
9. Timofeev, A. V. (2019). Transformation of the value system in the era of digitalization. *Scientific Opinion*, (9), 22–25.
10. Wikipedia contributors. (2024). *Artificial intelligence*. Wikipedia. https://ru.wikipedia.org/wiki/Искусственный_интеллект
11. McCarthy, J. (1956). Programs with common sense. *Proceedings of the Teddington Conference on the Mechanization of Thought Processes*, 75–91.
12. Turing, A. M. (1950). Computing machinery and intelligence. *Mind*, 59(236), 433–460. https://doi.org/10.1093/mind/LIX.236.433
13. Newell, A., & Simon, H. A. (1976). Computer science as empirical inquiry: Symbols and search. *Communications of the ACM*, 19(3), 113–126.
14. Searle, J. R. (1980). Minds, brains, and programs. *Behavioral and Brain Sciences*, 3(3), 417–457.
15. Dennett, D. C. (1991). *Consciousness explained*. Little, Brown and Company.
16. Chalmers, D. J. (1996). *The conscious mind: In search of a fundamental theory*. Oxford University Press.
17. Floridi, L. (2019). *The ethics of artificial intelligence*. Oxford University Press.
18. Bostrom, N. (2014). *Superintelligence: Paths, dangers, strategies*. Oxford University Press.
19. Russell, S. (2019). *Human compatible: Artificial intelligence and the problem of control*. Viking.
20. UNESCO. (2021). *Recommendation on the ethics of artificial intelligence*. UNESCO Publishing.
21. European Commission. (2021). *Ethics guidelines for trustworthy AI*. Publications Office of the European Union.
22. Kurzweil, R. (2005). *The singularity is near: When humans transcend biology*. Viking.
23. Braidotti, R. (2013). *The posthuman*. Polity Press.
24. Ahmadov, H. (2017). Taking into account the integration context of the world education sector as the main instrument of ensuring the security of the Republic of Azerbaijan. *Azerbaijan Journal of Educational Studies*, 681(6), 91–94.
25. More, M., & Vita-More, N. (Eds.). (2013). *The transhumanist reader*. Wiley-Blackwell.
26. Castells, M. (2010). *The rise of the network society* (2nd ed.). Wiley-Blackwell.
27. Bauman, Z. (2007). *Liquid times: Living in an age of uncertainty*. Polity Press.
28. Harari, Y. N. (2017). *Homo Deus: A brief history of tomorrow*. Harper.
29. Nilsson, N. J. (2010). *The quest for artificial intelligence*. Cambridge University Press.
30. Russell, S., & Norvig, P. (2021). *Artificial intelligence: A modern approach* (4th ed.). Pearson.
31. Minsky, M. (1986). *The society of mind*. Simon & Schuster.