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Transformations in education in the context of AI (philosophical analysis)

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Abstract. The ability of philosophical methodology in optimizing the outputs of scientific and pedagogical study of artificial intelligence (AI) and its implementation in the educational process are analyses in the paper. Implementation of philosophical and methodological principles into a certain scientific research makes possible to highlight that the society forms intellect of a personality; artificial intelligence as a direct analogue of authentic intelligence can only exist in fantasy or as an ideal. Positive aspects of the use of AI are outlined, as well as main threats from its use which are of a methodological nature. In particular, scientific and pedagogical work will be carried out using simplified models of thinking and in a partly artificial reality. Examples of the introduction of philosophical methodology into scientific and pedagogical research are shown with the following goals: to stay within the philosophical line of measure; to reach the stage of tolerance, psychological stability. It is pointed that such threats could only be minimized but only on the global scale applying philosophical methodology. Conclusion: the task is extremely complex, but it is adequate to the complexity of AI challenges; its solution is possible only on the basis of combining efforts of politics, philosophy, ethics, psychology, economics and pedagogy. At this stage, philosophical and methodological guidelines in scientific and pedagogical activities can be taken into account as markers.

Keywords: authentic intelligence, artificial intelligence, philosophical methodology, conceptual unity, contradiction, freedom, philosophical line of measure, academic integrity

Introduction

Currently, the relevance of the topic of artificial intelligence and its modifications is growing rapidly. The prospects of the global influence of artificial intelligence determine global tasks for educators and scientists to train personnel and expand scientific and pedagogical capabilities in the formation of a dynamic balance of danger (harm) and benefits in the process of its application. At the same time, we draw attention to the specifics of today's situation. It is no longer just a question of expanding AI access to educational information and continuing scientific and pedagogical research. It is about the need for a quali-

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tative leap in this process, which provides a sharp intensification of the efforts of teachers and scientists, the formation of a "trajectory of modern theoretical generalizations and motivational orientation of the education of the future" [1, P. 78]. This position about art education, in our opinion, also corresponds to the mission of philosophy. The formation of a trajectory of modern theoretical generalizations in the study of AI presupposes their deepening into the field of philosophical methodology (of course, along with the use by educational practitioners and educational researchers of the possibilities of interdisciplinary and general scientific methods). Only it brings the research of certain AI manifestations (or their totality) into the general strategic direction, intensifying and optimizing this process.

Another important feature of philosophical methodology is its connection with folk wisdom, with common sense of an ordinary citizen, that is the main mass consumer of artificial intelligence achievements. And this is the main condition for the prevailing of benefits over threats from its application, because (ideally) it leads to the correspondence of AI achievements to the personal interests of each citizen. All of the above determines the relevance of the topic of our article.

Analysis of recent studies and publications

From a rather rich list of publications on artificial intelligence and its modifications, we will focus on the analysis of scientific studies that summarize its typical assessments and implementation possibilities.

A. Panukhnik, calls artificial intelligence "an effective and modern pedagogical mechanism" of combining education and science, but rightly points out that "it is worthwhile to dwell on highlighting and detailed analysis of the key advantages and negative sides of AI use in education and the search for higher school applicants" [2, p. 207]. Wankhede deepens the study of artificial intelligence, comparing its modifications ChatGPT, Bing Chat and ChatGPT-4, and argues for the feasibility of their use and capabilities in the educational process [3].

M. Halaweh is an active supporter of the idea of implementing artificial intelligence in the educational process; he substantiates the opinion that combining students' creativity with artificial intelligence will give high results, freeing them from routine work, and gives recommendations on the effective application of artificial intelligence in teaching and research [4].

M. Farrokhnia, S. K. Banihashem, O. Noroozi & A. Wals, while appreciating artificial intelligence (as means of personalizing learning, expanding the information base), see it as a threat to virtue through the spread of plagiarism and a danger of cognitive skills decline. Recommendations for practitioners to master the technology of artificial intelligence are noteworthy [5]. M. Sullivan, A. Kelly, P. McLaughlan also, expressing their hope that the use of AI will improve student performance, specify the risks. And these are problems of morality, virtue, and the loss of critical thinking skills by applicants. They see the solution in a call for active, public discussion by the academic community of the topic of artificial intelligence in education [6].

Yu N. recognizes both the benefits of artificial intelligence (e.g. assistance to knowledge seekers with disabilities) and potential threats to educati-

on. Among the dangers of implementing artificial intelligence in education, he singles out the difficulty of verifying the reliability of scientific works, the ability of AI to spread misinformation, and excessively high trust in artificial intelligence. Yu N. concludes that since the expansion of artificial intelligence in education entails a fundamental rethinking of pedagogy itself, the existing research on AI is not enough and should be continued and deepened [7] is valid.

"A fundamental rethinking of pedagogy itself" involves the inclusion of the content of philosophical methodology (categories, principles, methods) as the core of the general competencies of future specialists[1] , as the leading narrative of pedagogical research and social engineering. But it is so hard. Even a brief analysis of studies and publications reveals two problems.

Problem one. There is a danger of simply "slicing" the facts and fragmenting the research. After all, most articles describe and analyze all new research results of individual AI manifestations and individual facts of their implementation in practice. As a result, a conditional horizontal chain of cause-and-effect relations of one fact with another is formed as a supposed basis for a future theory.

The origins of such logic are known to be in the sphere of everyday thinking, common sense. But philosophical methodology warns that such an attitude has no prospects in scientific research, because a fact as an objective single phenomenon does not exist in principle; a fact is perceived mainly through a "network" of subjective preferences and has a hand "fan" of interpretations. Therefore, if we continue AI research in this paradigm — in the paradigm of mere accumulation of facts and results of inductive analysis — we can expect a "bad infinity" (to use Georg Hegel's expression) — research and discussions will enter the mainstream of populism and eclecticism, and their implementation — the "mainstream" of chaos — possibly on a global scale.

Problem two. Deepening inductive research and discussions can lead to deepening disagreements (let's also take into account a person's attributive ability to absolutize his own position, which often turns into emotional aggressive conviction). And "deep disagreements are characteristically resistant to rational resolution" [8, P. 1], and therefore resistance to truth.

But the logic of the inductive formation of knowledge (conceptual unity) from the mass of facts and the mass of their perceptions in the methodological paradigm is different. "It presupposes a certain 'cognitive vertical', namely, a consistent deepening of consciousness — from a multiplicity of primary diverse ideas about reality to the reflection of this reality at the conceptual, and then at the categorical level" [9, P. 198]. That is, knowledge is being formed in sequence — ordering certain facts — their meaningfulness (finding causal link, "semantic nodes") — building a conceptual scheme (argumentation scheme) at the beginning from concepts, then from the philosophical categories, which — finally — represents itself an extremely broad basis for scientific study and its implementation in use.

"The difficulties of conceptualization", even ways of determining the "conceptual content of perception" [10, P. 88], are extremely great. The difficulties

[1]We are impressed by the words of A. Kapiton: "It has been proven that the professional competence of specialists is not a simple sum of knowledge in all principles of university graduates, but is the result of a formed set of general cultural, professional and general competencies" [11, P. 49].

of realizing the deductive requirements of philosophical methodology, including in the field of AI, also pose a huge problem. But if not taking this way, talking about optimizing the future through the use of artificial intelligence on a global scale is very difficult.

Does all of the above mean that the process of understanding and determining ways to implement AI is now going down the wrong path? Of course not. Analysis of publications shows:

1) the beginning of the classical study (comprehension) of the new and its implementation in the practice of social life;
2) diversity, some contradiction of analysis and "ambivalence" of AI implementation, which indicates that the conceptual unity, synthesis of knowledge as a result of the accumulation of the critical mass of information and its analysis are possible in the future;
3) through numerous, various studies and implementation, the philosophical principle of continuity is partially realized as the objectively necessary preservation and further development of everything rational, that has been reached at previous stages, without which a significant moving forward is impossible either in knowledge or in the practice of implementation.

Outputs about the need to continue and deepen the analysis of such a phenomenon as artificial intelligence and its modifications indicate, rather, an intuitive understanding of the regularities of this process among scientists and pedagogies. And the use of the characteristics "partially", "possibly" indicates some approximations, chaoticalyness of the direction of studies, but sometimes great efforts with low results.

In general, we can draw the following conclusion. The absence of a natural connection between philosophical methodology and specific scientific methods of any research, including artificial intelligence, is normal and even necessary at the initial stage of accumulating a critical mass of the results of an inductive analysis of individual facts. But today scientists already need efforts combining of scientific methods and philosophical methodology since the studies of the manifestations of artificial intelligence, as it seems to us, begins gradually to "go in circles". Therefore, the further inductive analysis advisable to carry out in line with the deduction of philosophical methodology, along the "cognitive vertical".

Based on above mentioned, **the purpose** of the study was to argue for the need to take into account philosophical and methodological settings and their capabilities in the formation of a dynamic balance of the danger and the benefit from the application of artificial intelligence and its modifications in scientific and pedagogical activities.

Research results

At the beginning, let us briefly clarify the thesis about the need to turn up to philosophical methodology as a condition for the effectiveness of scientific and pedagogical research of artificial intelligence and its modifications. In general, philosophy is outside of science and does not pretend to be objective and unambiguous of its knowledge, but it concentrates in itself the thousand-year

wisdom of generations and is "the intellectual scouting" in getting knowledge. This is what allows giving a priority to abstract provisions and deductive conclusions, which form general strategic direction for certain scientific research. The brilliant answer to the question which philosophical school or direction belong the abstract provisions are meant? — Georg Hegel said — "different systems which the history of philosophy presents are not irreconcilable with unity" [12, P. 12], "we may either say, that it is one philosophy at different degrees of maturity: or that the particular principle, which is the groundwork of each system, is but a branch of one and the same universe of thought" [ibid.].

Let us briefly analyze the level of general understanding of artificial intelligence at present. The review of publications shows that there is no clear, unambiguous definition for AI yet. Numerous definitions are limited due to its versatility. Typical definitions of AI are through a set of features known today, for example: "Artificial intelligence (AI) is a certain set of methods, types and means, including hardware and software, that implement one, some or all cognitive functions (CF), sufficiently equivalent to human cognitive functions" [13, P. 47]. However, such methods of defining AI, firstly, are unlawful in the methodological aspect — artificial intelligence cannot exist as a direct analogue for authentic intelligence — it exists in this form only in fantasies or as an extremely expressed value, i.e. the ideal (a feature of the ideal is also fundamental unattainability, and imperativeness of performance; it is there as an organizing power that turns people's existence into a purposeful process); secondly, the permanent "approximate" equate of artificial and authentic intelligence contains a danger of a psychological nature: it contributes to over excessive mental pressure of the mass consciousness. That's why the time has come, in our opinion, to form a stricter "framework" for the study of AI although the polyvariance of definitions of AI is rightful at the beginning, where the psychological and philosophical, and methodological aspects will be taken into account.

Today it is already generally acknowledge that the artificial intelligence system could be adapted to educational needs and goals of almost every participant in the pedagogical process in accordance with its characteristics and capabilities (i.e., it can optimize an individual approach based on variable data). But research and teaching methods that are part of the AI discourse are often used chaotically (i.e. outside the system), with a strong sensory component; sometimes the first, intermediate or superficial results of the analysis are absolutized; global conclusions are made based on one or a combination of several methods. This is a "trap", since such conclusions will be only partially reliable, and together with the area of research, they expand the share of approximation and, as a result, confusion. And "...today most students have a low threshold of understanding of the importance of personal data protection; they are gullible; ... have a poor understanding of the workings of social network algorithms; they do not distinguish fact from judgement; they have a low level of critical thinking when consuming information. As a result, students are easy to manipulate, they believe misinformation; ... unconsciously commit criminal acts and share personal data without realising the potential consequences" [14, P. 67]. Note - if students "do not distinguish fact from judgement; have a low level of critical thinking when consuming information"; do not know from what

general positions it is necessary to check specific information, it means that our education has problems in the field of philosophical methodology.

First, let's highlight the main thing. On the background of growing confusion and anxiety in comprehending the manifestations of AI, a panic expectation of "complete fusion" of artificial and authentic intelligence in the near future is forming. But there is a methodological attitude of rational philosophy and philosophy of science about the determining role of the social factor in the formation of intelligence, and it says: the intelligence of an individual is formed only by society. The creation — artificial intelligence — will never surpass its creator — society; it can only infinitely approach the original — authentic intelligence, which includes rationality (and formal logic as its basis), creativity, irrationality and emotionality. AI "thinks" and acts when the discoveries of geniuses are transferred to university textbooks. Therefore, we do not consider it legitimate to refer to any modifications of artificial intelligence as an objective cause of crises. These are manifestations of the existentiality of human fear, i.e. the underlying "willingness to be afraid". But we believe that "AI not only conceals the complex, contradictory nature of cognition, but also underestimates the role of the subject and his or her ability to make intellectual efforts" [15, P. 71].

Here it is important to pay attention to an essential danger — complete identification of formal logic and rationality (inherent in the sphere of common sense) can lead us into a false space of neglecting rationality in the methodological aspect. The theory of rational argumentation is much broader than formal logic, it is a methodology of persuasion through: the value of a rational argument; the coherence of arguments; the acceptability of an argument (taking into account cultural and ideological contexts); the rhetorical and sensual persuasiveness of an argument (philosophers joke that nothing persuades like a properly constructed speech). But artificial intelligence functions only according to the algorithms of formal logic, and this has given rise to a very dangerous tendency in education, namely, prolonged computer use unwittingly leads to a certain "narrowing" of a student's authentic intelligence, reducing it to a "computer" (i.e. formal-logical) way of thinking as a contradiction to creative thinking. With the long-term dominance of computer "intelligence", the educational process loses the need and then the opportunity to apply creative initiative in irrational forms of cognition, where subjectivity plays a humanistic role. When developing methods and forms of work organisation in the sphere of education, social engineering, we consider it necessary to take this danger into account.

Let us demonstrate the usefulness of taking into account philosophical methodology in the study and use of AI and its modifications in higher education using example of the functioning of the principle of contradiction.

1. The philosophical principle of contradiction is important for scientific and pedagogical activity. The contradiction of reality (Hegel - "Contradiction leads forward") naturally extends, 1) to man - "...in man creature and creator are united: in man, there is not only matter, shred, excess, clay, ... chaos; but there is also the creator, the sculptor, the hardness of the hammer, the divinity of the spectator and the seventh day do you understand this contrast?" [16, P. 226] to society - one of the main reasons for social progress is the contradiction

between the desire for a goal and the impossibility of its implementation at the present time; 3) to public consciousness - the contradiction between the truths of common sense and the philosophical vision of essence (..."sound" common sense. It harps on the demand for palpable utility and inveighs against knowledge of the essence of beings, which essential knowledge has long been called "philosophy" [17, P. 1]. It follows that every innovation, inevitably, constitutes a unity of positive and negative, in the social aspect — good and bad. Therefore, the main condition for optimising the result of activity is to observe the philosophical line of measure. For a person of common sense this methodological attitude looks understandable (it has even entered folk wisdom through proverbs) and solvable. In reality, this task is so complex, so important - but it is adequate to the complexity and importance of AI challenges. Read more:

Philosophers have described innate human qualities that have a negative connotation for society: 1) the beginning of all our thoughts and actions is "personal interest" (C. Helvetius); 2) the desire for absolute freedom (i.e. arbitrariness) is inherent in human nature "genetically" (S. Freud); 3) the irrational trait of absolutization of one's own position, one's own rightness is innate (F. Nietzsche). This means that the power of personal interest is irrepressible and commensurate with the irrepressible craving for arbitrariness, with the absolutization of one's own rightness; their unification leads to the fact that a person does not see (often does not want to see) the boundaries of the permissible, accepted by society as the norm and is not ready to observe the line of measure either in thinking or in actions. Friedrich Nietzsche said it with fury and pain: measure (proportionality): "is strange to us, let us confess it to ourselves; our itching is really the itching for the infinite, the immeasurable. Like the rider on his forward panting horse, we let the reins fall before the infinite, we modern men, we semi-barbarians — and are only in OUR highest bliss when we — ARE IN MOST DANGER" [16, P. 224].

Why is the principle of contradiction so important for the research and implementation of artificial intelligence? The point is that it becomes obvious that it is impossible to find only positive solutions to AI "problems". Accepting the contradiction of reality as a regularity, in our opinion, will help to optimise the methods and techniques of social engineering in scientific and pedagogical activities, because the accents change: understanding the impossibility of completely eliminating something negative and undesirable reconciles with reality; leads away from absolutisation of one's own opinion; "neutralises" the panic "readiness to be afraid"; directs research and implementation of AI in the social direction — the ability to find a single truth in opposites, develop tolerance and search for compromises.

There is also a danger, commensurate with the global nature of the problems of artificial intelligence. If local manifestations of subjective unfairness in the process of using AI achievements are left without proper response, it will entail not only a decline in the intellectual level of the nation: most importantly, there may be a stratification of young people into an elite — who have formed motivation, finances, "new habits of mind" [18] — and a much larger segment of young people who do not recognize the need to make the effort to acquire knowledge. By doing this, they objectively put themself in a subordinate position. But these young people will also realize their desire for

freedom. And "...an increase in the number of young people who view freedom as a complete disregard for society threatens its very existence" [19, P. 21].

It is also becoming obvious that the implementation of artificial intelligence in practice is accompanied by a powerful psychological component. The real danger of a large-scale mental disorder of mankind is being realized. In the educational environment, the problem is no longer reduced only to the weakening of students' cognitive abilities or the use of plagiarism. The worldview and psychological — "...and justice demands" [20] danger of formation of antisocial archetypes of youth comes to the global level. This is a huge force that can be "directed against particular forms and demands of civilization or against civilization altogether" [20, P. 22]. In the future, this stratification may lead to global social consequences.

We consider an adequate response to global problems and challenges of AI to be the formation of a deductive cognitive vertical, which will be based on the philosophical and methodological requirements of searching for a single truth in opposing approaches, searching for the immanent connection between freedom and responsibility, as well as other methodological requirements. In education, this is the introduction of highly specialized, interdisciplinary, general scientific models and research methods into the mainstream of philosophical methodology, which determines the direction of optimizing research results and implementing AI.

The sequence of deduction of the cognitive vertical: philosophical and methodological requirements (conceptual stage) — their rational understanding by interdisciplinary methodology through the analysis of cause-and-effect relationships (emotional-intellectual stage) — the formation of the "new normality" in the system of students' value, for example, in fashion (emotionally expressive stage). This content should become the basis for the development of patterns, models and methods of work for teachers. As a result, the ambivalence of problems and the contradictory (up to the point of measure) nature of their solution in moral and psychological aspects will be perceived almost as a habit, and radicalism, emotional absolutization of one's own position — almost as a deviation.

However simplicity of the implementation of this scheme in the practice of education is somewhat deceptive. Here lies a global problem that can cause radical emotions. It concerns not only the practice of the educational process, but also the activity of people in all spheres. This is the famous "healthy" human mind" (Heidegger). Its inconsistency distorts the essence. And then "philosophical beings are covered up and distorted, semblance comes to power. In it the non-essence of truth comes to the fore" [17, P. 8]. And scientific and pedagogical work will be carried out according to simplified thinking patterns and in conditions of a partly artificial reality. Conversely, constant consideration of the requirements of philosophical methodology will contribute to a significant increase in the efficiency of scientific and pedagogical research, models and methods of social engineering, even in such a complex field as artificial intelligence.

Conclusions and prospects for further research

All of the above defines both some initial conditions for the future grandiose work in the scientific and pedagogical sphere and the prospects for further research. The maximum (out of the possible) realisation of the requirements that AI puts forward to teachers and scientists is possible only on the basis of combining the efforts of philosophy, pedagogy, ethics, psychology, economics and (most importantly) politics. That is, approaches to its solution should be commensurate with the problem itself: the solution can only be comprehensive and on a global scale. Now, in our opinion, in the process of developing effective methods for determining the dynamic balance of benefit and harm from the use of AI achievements in education, it is advisable to take into account philosophical and methodological attitudes as markers, gradually translating them from individual manifestations of folk wisdom into a general theoretical system of necessary requirements.

However, our statements and assessments of the role of philosophical methodology in scientific and pedagogical activities to optimise the results of AI implementation in practice should be considered as a field for discussion and as a possible methodological guideline for further research.

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