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THE PRINCIPLE OF CONTRADICTION IN SCIENTIFIC AND PEDAGOGICAL RESEARCH ON AI (METHODOLOGICAL ASPECT)

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A purpose for the paper is a highlighting the role of scientific- and pedagogical study on artificial intelligence and its modifications in establishing a dynamic balance of risks and prospects from its implementation.

A new discourse has been determined to study artificial intelligence and its modifications in education. An analysis of the place and role of philosophical methodology in scientific and pedagogical research and the implementation of artificial intelligence and its modifications into practice is given. The philosophical position on the leading role of the social factor in the formation of intelligence is singled out as the main methodological setting of the study. There are highlighted positive characteristics of AI, as well as negative manifestations. The inconsistency of the results of research into AI and its implementation into practice were emphasized as a natural result of the inconsistency of social reality and the ambivalence of consciousness. The need is pointed out on: 1) expanding the role of the philosophical methodology in the AI study from the sphere of education to a global dimension, 2) getting deeper the scientific and pedagogical study to the philosophical conceptual stage, and the formation of a holistic conceptual- and perceptual system for training and upbringing young people. The mechanism for the functioning of such a system is proposed.

Conclusion: the advantages of artificial intelligence and its modifications do prevail over its shortcomings using the conceptual approach and rational organization of the educational process. Joint philosophical and scientific-pedagogical research into artificial intelligence and its modifications and their extrapolation into the global dimension can become guidelines for improving the processes of such an organization.

Key words: authentic intelligence; artificial intelligence; philosophical methodology; academic integrity; common sense, conceptual unity; goal-ideal.

Since November 2022, when the OpenAI company has released a software that is called the "ChatGPT" chatbot on artificial intelligence technology, has been got a new global discourse – a comprehensive study of the new phenomenon – it's the artificial intelligence (hereinafter as AI), and its modifications with an aim of what way to use this discovery and how to escape from it. Now, with the background of a sharp increase in the positive influence of AI on all spheres of society, its negative role is also sharply increasing – “first of all, this technological phenomenon can get out of control, which will lead humanity into a zone of social and political instability” [1, p. 70]. The threats caused by the implementation introduction of AI in use are so significant that the issue is already being raised about the need to found a unite research center for the preventing threats under the leadership of the United States and even the UN. It is natural that given situation requires intensifying AI research and increasing the efficiency of their results. Based on the above written, authors've determined **a purpose** for the paper. This is a highlighting the role of scientific- and pedagogical study on artificial intelligence and its modifications in establishing a dynamic balance of risks and prospects from its implementation in using, as well as an analysis of the possibilities of philosophical methodology in increasing the effectiveness of their results.

For sure, intensive discussion of AI at all stages of the mass mind and at scientific communities has answered many current questions. Justified that AI using could significantly improve results in any field of activity, education is in as well. Some positive points of AI are highlighted there. Shortly:

- AI gives opportunities to prevent the possible negative effects of other information technologies on knowledge seekers, “find the needed and objective information, know how analyze it, compare it, determine whether it is fake, and apply only what is necessary and useful” [2, p. 188]

- The accessibility of any AI programs to knowledge seekers should be positively assessed. In Slovakia, for example, “in 2020, ... up to 96.6% of students have secure access to the Internet at home and 93.6% of students use a mobile phone with the Internet” [3, p. 51]. High information availability, and already AI, which reproduces “one, some or all cognitive functions (CF), sufficiently equivalent to human cognitive functions” [4, p. 47], should contribute to the development of students’ cognitive abilities;

- educational management sees AI as a means of intensifying and increasing the effectiveness of education in the smart organizational environment. AI has shown itself as an assistant to knowledge seekers, as a way for saving time doing a routine job, directed on creative searches. In the local scale of education, artificial intelligence can be involved in the preparing syllabuses, tests of knowledge, translating and improving speaking English skills, and supplementing the educational process with by educational methods.

Examples of the high effectiveness of the use of artificial intelligence and its variants could continue, and it promotes some optimism: the danger can be balanced by the benefits. But what makes to worry using AI? It looks a bit grotesque, but these are the same positive examples that we gave above. Their new “reading” shows:

- preventing the possible negative effects of IT on knowledge seekers with using AI is indeed extremely needed and useful. But this help is accompanied by the negative influence in the formalization of educational content on the formation of student thinking way. A long work with the formal-logical “language” of computer inevitably turns to a habit, into the “norm” the “computer like” (i.e. formal-logical) way of thinking, into opposed to the authentic, creative one;

- the general AI availability to knowledge seekers really contributes to the cognitive development of students. This is so, but, a) not all students (we have problems with academic integrity) and, b) not only students, but also cheaters. A personal device with AI of an honest seeker of knowledge will indeed become an indispensable assistant in training, but a computer of a dishonest seeker will turn out to an opportunity to avoid the need to progress intellectually. As a result, face an intellectual stage decline for entire generations of people in the future will indeed be difficult to prevent;

- We should support an AI ability to allow a human out of routine work. But there is the other “side of the coin”. Production might admit a completely replace employees of the certain spheres on AI equipped “smart” systems. As AI continues to develop, corporations may completely replace workers and engineers with automated “smart” systems. This process runs already and in the future would effect on an increasing inequality and mass unemployment – on a global scale.

Examples of the, so called, “combination” of high efficiency and a significant destructiveness in the embed of artificial intelligence will be continued, since there are no exceptions – the result is always ambivalent. But the ambivalence of solving current AI problems raises two extremely important questions: 1) do teachers have a fundamental opportunity to form a “non-conflict consciousness” [5, p. 150] of students in the situation of constant contradictorily

study results? 2) have been developed the pedagogical methods for driving the dynamics of opposing positions to a sustainable positive result? We think the questions are rhetorical.

Problems associated with the ambivalence of the results of AI research are not an exception – today scientists and teachers are increasingly running into barriers that they themselves are not clear- after all, the criteria for scientific study are blurred, including due to a lack of understanding of semantic horizons – only the radicalism of emotions is clear.

No reason to state that we've got a dead-end in the study of AI problems today. A variety of scientific recommendations, methods and forms of organizing the educational process using AI and its variants give us quite positive results. But troubles are also getting more complex and, this is important, getting deeper. Let's see the short philosophical analysis of the current situation. A study of a new phenomenon (including AI) always goes through a number of natural stages. We are at the first stage, which can be called as an analysis of the perceptual content of AI from a spatio-temporal perspective. Active scientific- and pedagogical research into AI problems is already being systematized in diverse and different discourses, but, to our mind, the possibilities of the first stage are closely run away. The fact is that these discourses are getting united by one feature, namely the “horizontal” nature of the analysis (in the rhizome interpretation by the representatives of postmodernism J. Deleuze and F. Guattari). The horizontal and flat model of explaining AI problems is fundamentally incapable to generate general recommendations for optimization of the “interconnection” with AI. And then emotions and personal interests replaced conceptual commonality, which can only deepen disagreements. This is dangerous because “deep disagreements are characteristically resistant to rational resolution” [6, p. 1]. Therefore, we think that the philosophy of science and philosophy of education is more appropriate to follow statements by Socrates (true knowledge is the cognition through concepts) or by Spinoza B. (if there is no concept, there is no knowledge). Why? – because the only philosophical, conceptual thinking has three basic capabilities: 1) it is an ability of identifying in any specific event a primary and most important points, and main, driving factors; 2) this is the ability to build theoretical models on this basis, draw conclusions and make predictions; 3) and – the most important thing is – the ability to compare the results of modeling with practice, the surrounding reality and adjust – either theoretical models or people's behavior.

Through the “prism” of the above mentioned, we allow us to draw the following output. Significant differences in assessments of the problem of using AI indicate incompleteness and “betweenness” of the analysis of the horizontal- and rhizomic discourses (although, emphasize that such an analysis is a needed chain in research). But now it is obvious that for to optimize the functioning of AI in the future is going to “come to a head” the time of a new etape, and the formation of a new discourse. It is noteworthy that among scientists and teachers there is an understanding of the need to form a new vector of research. Thus, Lappo notes that “to form the spiritual values of students, it is necessary to create a holistic education system” [7, p. 114]. Yu N. concludes that a radical rethinking and deepening of scientific and pedagogical activities is inevitable [8]; R. Rudomyotov, speaking about “pluralism of educational paradigms,” emphasizes that the modern “educational paradigm” ... should be mono” [5, p. 149]. And “it presupposes a certain 'cognitive vertical', namely, a consistent deepening of consciousness – from a multitude 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 means, a new vector of AI research involves the formation of a mechanism for connecting conceptual content (expressed in abstract concepts and categories) and specific sensory- and semantic data, which were obtained by a “common sense person” directly in space and time. Given issue is extremely difficult for the study and input AI in use – both in methodical and

methodological aspects. We will demonstrate the complexity of the methodological aspect using the example of the famous Socrates method – irony and maieutics. This is a dialogue that consists of two stages. At the first stage, Socrates, with a series of pre-thought-out questions, quietly ironizes the interlocutor's superficial but categorical understanding of the object of discussion (for example, what is justice?), at the same time leading him into a dead end. At the second stage of the dialogue, Socrates “agrees” to participate in a joint search for truth, again quietly defining the vector of the search for truth through a series of questions. This method has survived thousands of years, and today “the best way to convince a student is not to hand him a methodological brochure for independent mastery, but to involve him in dialogue” [10, p. 150]. But for the result to be effective, the teacher needs to deeply understand the conceptual unity of philosophical methodology and apply it to solving a specific situation of implementing AI in use – but this is impossible.

Comprehending the issue of study and input AI in use, Rudomotov's words deserve special attention: “...education, in its human dimension, is broader than science. The relative independence of education is due to the development of a methodology for forming a system of subject-subject relations as a communicative process with which use is transmitted scientific knowledge. But the content for education has being got from science. Science constantly expands man's knowledge of the surrounding world in depth” [5, p. 149]. We can only add – not only science, but also philosophy.

Nowadays, publications and materials of scientific conferences are required, which should become a philosophical- and theoretical stream, the fundament for concrete-scientific study, intermediate decisions, the methodics development and organization of teaching practice; in which the problem of using AI and its modifications is analyzed deeply and systematically, determining the research strategy and reaching a global result. For the search for a global reaction on a global threat, it is necessary to supplement the various “horizontal” scientific- and pedagogical analysis with a “vertical” one – a search for the conceptual unity in solving the AI issue at the philosophical- and methodological stage, at the philosophy of science level and philosophy of education. Skeptics may point out the impossibility of conceptual unity of philosophy due to the diversity of philosophical movements and schools, but they were still in the 19th century Georg Hegel answered brilliantly: “The different systems which the history of philosophy presents are not irreconcilable with unity” [11, p. 12]; these systems are “...a branch of one and the same universe of thought” (ibid.).

Therefore we will allow ourselves to determine the direction of some possible solutions to the problem of AI in the process of reaching the global level of national scientific- and pedagogical study. Firstly, let's underline the main philosophical and methodological installation – the obviously superiority of authentic mind over artificial intelligence with all its variants. Authentic intelligence is being formed only by society; AI will never get the features of sociality as the highest modus of human being; authentic intelligence attracts AI as its brainchild to increase productivity and intensify the learning process; The effectiveness of AI is ensured by proper training of scientists and the organization of work by teachers.

A way to the solvation of the issue about ambivalence of the results of scientific- and pedagogical study is also seen in the flow with philosophical methodology, namely in the flow of the contradiction principle (clarify that, according to the words Heidegger, all philosophy is “turned outward” by the methodological side, therefore its categories, principles, methods are both fundamental and regulating). Society moves forward by contradictions (Hegel), moreover, “...a man is a creature and a creator united: in man, there is not only matter, shred, excess, clay, mire, folly, 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?" [12, p. 226]. Ignoring this philosophical attitude can minimize, make temporary and superficial any achievements in the field of developing a non-conflict consciousness or a society of mutual understanding among young people. But, since these are no alternative options for harmonization and optimization of society, the scientific- and pedagogical elite are obliged to find opportunities and mechanisms connecting abstract and general concepts with specific data of perception – only the non-conceptual content of knowledge provides a direct connection between the subject of knowledge and the outside world.

True, in philosophy there is an opinion that an objectively limited number of philosophical concepts cannot “cover” with their explanation the infinite variety of specific situations in subject- object space-time relations. I. Kant refuted this position, saying that the adequacy of the explanation is possible due to the specificity of thinking concepts – they are free, because we can think “limitlessly”, about everything. Agreeing in general, let us allow ourselves one clarification: if freedom of thinking is linked to actions and responsibility, the picture changes somewhat, and we again come across the principle of contradiction: “The immanent contradictivity of freedom and responsibility accompanies every human action and is a reflection of the contradictivity of use in all its aspects: economic, political, legal, moral” [13, p. 71].

We tried to show that the inconsistency of reality (and social) is of a total nature, and if we do not take this fact into account in any human activity – and especially in scientific and pedagogical activity – to talk about increasing efficiency in educating young people (for example, about the feeling of shame for plagiarism) it will be incredibly difficult.

A person does not have the opportunity to “smooth out” the inconsistency of objective reality, but he can and must change approaches to the formation of the consciousness of the younger generation. Let us demonstrate the possible theoretical direction of such formation through the sequence of philosophical analysis of the problem:

- philosophy recommends to clarify the content of the optimization goal, namely, changing it to an goal-ideal (the main thing in an ideal is the paradoxical combination of perseverance, enormous energy of actions to achieve the goal and the fundamental impossibility of its full implementation);

- basing this perspective, a methodological programing focused on a dynamic balance of behavior within the framework of the possible becomes logical: compromises, tolerance, psychological readiness for partial rather than absolute success. In a philosophical interpretation, this is a requirement to adhere to the line of measure. But in fact, the mass behavior of people is oppositly, which struck Friedrich Nietzsche: “Proportionateness 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” [12, p. 224];

- we again see in philosophy the main reason for the mass deviant behavior of people; its name: “sound” common sense» (Heidegger): «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.” «Common sense ... asserts its rights, ... appeal to the “obviousness” of its claims and considerations. «..philosophy can never refute common sense, for the latter is deaf to the language of philosophy, ... is blind to what philosophy sets before its essential vision” [14, p. 1]. Heidegger actually states: a) the contradictory nature of object-subject relations is irreconcilable; b) the absoluteization of one’s own opinion by a person of common sense is irremovable; c) the dominance of common sense is inevitable – although this is a tragedy for humanity. We admit that there are good reasons for such a conclusion. Common sense is filled with

mutually exclusive ideas and values, which, under the powerful influence of personal interest (not arguments!) lead to fierce defense of an own position by one person, and by another one – an opposite position.

– it is extremely difficult for both sides to refute the “obviousness” of its claims and considerations” and “palpable utility”. The contradiction nature of reality is reflected by the ambivalence of human consciousness. It is filled with mutually exclusive ideas and values, which, under the powerful influence of personal interest (not arguments!) lead to fierce defense of an own position by one person, and by another one – an opposite position. A «a furious onslaught of an «absolutely correct» position ... is capable to destroy even ingenious demands to optimise people's lives» [9, p. 202]. Since philosophical «beings are covered up and distorted, ... semblance comes to power. In it the non-essence of truth comes to the fore» [6, p. 8].

Conclusion. As we see, the logic of philosophical analysis of subject-object relations as a whole is irrefutable and in some ways “ruthless”. Tasks are indeed extremely complex, but they are adequate to the complexity of the AI challenges. Moreover, in the Christian tradition, a person sets himself only such tasks that, he is able to solve, in principle. There are already some ideas for creating a hierarchical system of youth education: to form emotional intelligence from philosophical rational ideas as the basis for thinking and decision-making by a person of common sense; to form transitional intellectual and emotional patterns, models at the interdisciplinary level; “place” these models in soft skills and competencies sequentially – pathos-ethics-logic (Aristotle); based on these patterns and models, develop psychological, pedagogical and organizational methods of practical work with youth. The goal-ideal is to create not only “new habits of mind” [15], but also a “new normal” within the framework generally accepted by society. But in order to navigate what reality is in the dynamics of its changes in social space and social time, philosophy must have constant feedback from pedagogical practice – because only then can (say with the methods of social engineering) effectively fit youth into the picture of vision peace, which will be generally accepted in the state and society.

The authors count on broad discussions of this topic among educators, scientists and philosophers with an outcoming identification of prospects for further study.

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ПРИНЦИП ПРОТИРІЧЧЯ У НАУКОВО-ПЕДАГОГІЧНИХ ДОСЛІДЖЕННЯХ ШІ (МЕТОДОЛОГІЧНИЙ АСПЕКТ)

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Мета статті – підкреслити роль філософських та науково-педагогічних досліджень штучного інтелекту та його модифікацій у встановленні динамічного балансу ризиків та перспектив від його впровадження.

Визначено новий дискурс із вивчення штучного інтелекту та його модифікацій в освіті. Дано аналіз місця та ролі філософської методології у науково-педагогічних дослідженнях та впровадженні штучного інтелекту та його модифікацій у практику. Як основна методологічна установка дослідження виділена філософська позиція про провідну роль соціального фактора у формуванні інтелекту. Виділено позитивні характеристики штучного інтелекту, а також негативні його прояви. Неузгодженість, навіть суперечливість результатів досліджень штучного інтелекту та його впровадження у практику виокремлена як закономірний результат суперечливості природи людини, соціальної реальності та амбівалентності свідомості. Вказано на необхідність: 1) розширення ролі філософської методології у дослідженні штучного інтелекту зі сфери освіти у глобальний вимір; 2) поглиблення науково-педагогічного дослідження штучного інтелекту до філософсько-концептуального рівня по «когнітивній вертикалі» та формування цілісної понятійно-перцептивної системи навчання та виховання студентської молоді. Запропоновано механізм функціонування такої системи.

Висновок: переваги штучного інтелекту та його модифікацій можуть переважати над його недоліками у разі задіяння концептуального підходу філософського рівня, моделей емоційного інтелекту в міждисциплінарній методології та методів соціальної інженерії в організації освітнього про-

цесу. Спільні філософські та науково-педагогічні дослідження штучного інтелекту та його модифікацій, а також їх екстраполяція у глобальний вимір можуть стати орієнтирами для вдосконалення процесів такої організації.

Ключові слова: аутентичний інтелект; штучний інтелект; філософська методологія; академічна доброчесність; здоровий глузд, концептуальна єдність; мета-ідеал.