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MIND AND ARTIFICIAL INTELLIGENCE: TWO PRINCIPLES OF ORGANIZATION

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Introduction. The development of information technology has led to the fact that the discussion of the problem of intelligence has largely moved from the philosophical plane to the scientific and technical one. However, such a hasty change of the trend is hardly reasonable. Indeed, it is adventurous to set the task of creating an artificial mind without understanding what mind is.

However, for proponents of thinking artificial intelligence (AI), such a problem does not exist. This optimism is based on the doctrinal position of classical cognitivism that any mental event can be represented as a sequence of logically connected information symbols. The development of neurobiology did not significantly shake this approach, based on the well-known idea of Alan Turing. The main controversy comes down only to the choice of the optimal approach. One of them is based on the idea that the human mind can be realized with the help of a computer with a central processor that sequentially processes units of symbolic information. Another, connectionist approach is based on neurobiological data and suggests that thinking artificial intelligence can be implemented using artificial neural networks, in which parallel information processing is possible.

In recent decades, the idea has been promoted that modern cognitive neuroscience, using brain imaging techniques, can find a material basis connecting

mental phenomena with brain physiology. However, if we turn to the essence of these studies, we can see that the old model is also being exploited, in which consciousness (mind) is viewed as a chain of logically mediated events, i.e. program of action.

But, is it possible to find the answer to the mind through the analysis of what is its direct manifestation? Of course, modern technologies make it possible to realize almost any mental functions so that behind their manifestations it is more and more difficult to find the difference between the human mind and artificial intelligence in the ability to creation, communication, etc. At the same time, behind all this, the real properties of strong artificial intelligence, expressed in the ability for independent development, independent thinking and decision-making, are not yet visible.

The concept of denial of strong artificial intelligence, which also has a considerable number of supporters, is based on the fact that the cognition process is an exclusive property of the brain, due to a special interaction with the outside world and is possible only when receiving sensory information. However, the preference for this skeptical approach is based largely on intuition, which has not yet been backed up by strong counterarguments. Moreover, supporters of thinking artificial intelligence may argue that interaction with the outside world is available within the framework of artificial intelligence, and the exclusivity of sensory perception is an unconvincing argument if in the end it all comes down to information transfer.

Aim. To define and analyze the main features that distinguish artificial intelligence from the human mind.

Materials and methods. The concept of artificial intelligence as a machine capable of performing all tasks available to the human mind is superficial, since it does not define mind as an object. Moreover, neither the nature of the elements, nor their relationships with each other, which form a thinking system, have not been finally established. Therefore, a systemic analysis of cognitive elements, including universal philosophical and biomedical categories, is the most promising for solving this problem.

Results and discussion. It becomes obvious that the analysis of this problem inevitably affects such basic elements of *res cogitans* (the thinking object) as memory

and information. These concepts appeared long before the era of computer technology, so their later use in the field of information technology acquired the imprint of anthropomorphism. However, the identification of computer and human memory leads to a distortion of the essence of the problem and already creates the illusion of closeness of artificial and human intelligences.

At the same time, it is obvious that outside the biological environment, memory and information, as obligatory companions of the intellect, can appear only when there is a third participant. Such a participant is a person for whom symbolic patterns are already associated with the physical world, embodying memory and information about the environment. Since memory is symbolic in nature, its patterns can be separated from the physical world and transferred to another medium. Thus, we can inform a non-biological object about what we know ourselves. By opposing each symbol with our own idea of the physical world, we endow a non-biological object with the same adequate behavior, i.e. we make him outwardly reasonable in the absence of real mind in him.

Why can't artificial intelligence be endowed with intelligence? Because the mind is not an information program. It does not have an algorithm, although it is formed by similar neurons, which are organized in networks that transmit information. It is in this duality of the organization of biological intelligence that it is necessary to look for its fundamental difference from computer intelligence.

In order to think, AI must not only reproduce intelligent algorithms, it must have a structure that forms and supports these algorithms and thus understands why they are needed. In other words, understanding is not a specific intelligent action, but a structure due to which algorithms of intelligent behavior are created. For AI, algorithms are created by a person who has a mind. Therefore, the AI itself is always weak - devoid of consciousness.

The mind has no algorithms, so it cannot be created using an information program, despite the fact that the structure of the mind is represented by the same physical elements - neurons that provide algorithmic programs. However, the mind cannot appear on the basis of information, since it is physically primary in relation to

it. The manifestation of reason, i.e. an indicator of his presence are emotions. Their presence indicates that the behavior of the object is determined not only by logic programs, but also by the reaction to them. External displays of emotion can be programmed and reproduced in AI - this is another imitation of the mind in its absence. Real emotions are not triggered by an information program.

For example, having created an AI capable of competing on equal terms with the strongest chess players in the world, you cannot "force" it to worry about its defeats. But if there are no feelings, there are no aspirations, and, therefore, the AI will be able to improve its game only on the basis of additional programs introduced by a person. In other words, there is no competition with the human mind that can lead to the so-called. technological singularity is not visible - AI remains an obedient instrument of the human mind.

Thus, the creation of a strong (thinking) AI is the creation of a physical system that is capable of perceiving the surrounding physical world in the same way as the nervous system of the brain, which has reached perfection on the path of biological evolution. Repetition and imitation of the work of neural networks recreates only one part of the human intellect, devoid of intelligence, i.e. understanding their own reasonable behavior. This, in particular, illustrates a pathological condition called depersonalization syndrome in psychiatry. One of the impressive features of this syndrome is the preservation of previously acquired skills of intelligent behavior, in the absence of an understanding of why all this is needed. At the same time, the emotional attitude to the surrounding reality disappears: love, anger, hatred, desires, etc. In this case, a person turns into the same intelligent robot as AI.

As you can see, the mind as the ability to understand is inextricably linked with the fact that provides an emotional attitude to the carried out intelligent acts. It should be noted that an emotional reaction is revealed in a child already at the moment of birth, although there is no understanding yet, but there is a positive or negative attitude towards influences from the internal and external environment. Analyzing all this, one can see that neurons in the brain carry out not only information transmission, but are also capable of generating energy. Indeed, although

information, as noted by Norbert Winner, is not energy, energy is needed to transmit it.

The ability to generate energy and support its neural activity in biological intelligence arises long before neural networks begin to support intelligent actions. This is what distinguishes biological intelligence from artificial intelligence, which supports algorithmic processes like a Turing machine, where the execution of an intelligent act proceeds as a path to achieving a goal. On the contrary, the generator is itself the target. So, with a certain impact on such centers of the brain, you can get meaningless actions, an example of which is an experimental rat with an electrode implanted in the brain. The rat is able to repeat the same action several thousand times, devoid of meaning. AI does not have such centers, the excitation of which can lead to insane actions, just as there are no intelligent (conscious) actions.

In the pathology of the brain, generators are studied as the cause of some neuropsychiatric abnormalities. However, any pathology develops on the basis of preexisting normal structures. Therefore, pathological situations demonstrate extreme variants of what is characteristic of the biological nervous system in the norm, i.e. the ability to generate independent patterns that become centers of activation of other zones - neural networks running on algorithmic programs.

Conclusion. It is obvious that outside the biological environment, memory and information, as obligatory companions of intelligence, can appear only when there is a third participant - a person for whom symbolic patterns are already associated with the physical world, embodying memory and information about the environment. The biological mind is not an information program, although it is formed by neural networks that transmit information like AI. A human mind cannot be created from information. In order to think, AI must not only reproduce intelligent algorithms, but have a structure that supports this function. Thus, the creation of a strong (thinking) AI is the creation of a physical system capable of perceiving the surrounding physical world in the same way as the nervous system of the brain, which has reached perfection on the path of biological evolution. Repetition and imitation of the neural networks recreates only one part of the human intellect, devoid of intelligence, i.e.

understanding their own reasonable behavior. We believe that this is the fundamental difference between human and artificial intelligence, in which one should look for a solution to the phenomenon of reason.