

Editor's column

This year marks 70 years since 1956, when at the famous seminar at Dartmouth College (USA), organized and led by the outstanding cyberneticists and information theory specialists John McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude Shannon, the creation of a new field of scientific research and technological development – Artificial Intelligence (AI) – was announced. The term AI was coined by McCarthy.

This was not an unfounded claim: searches in this direction had already been actively unfolding even before the two-year seminar at Dartmouth was held. By that time, Alan Turing had already introduced the term Machine Intelligence. There were also impressive groundwork achievements. In 1955, Allen Newell, Clifford Shaw, and Herbert Simon (the future Nobel laureate in economics, 1990) developed the Logic Theorist (LT) program, built on classical propositional calculus. LT easily and elegantly proved theorems of symbolic logic by A. Whitehead and B. Russell (from their three-volume *Principia Mathematica*, published back in 1910–1913) at the level of a good mathematics student, and in some cases surpassed the authors of the theorems in the “art of proof”. Bertrand Russell took this positively, with his characteristic sense of humor. In 1957, the same authors presented the General Problem Solver (GPS) program – the first genuinely “heuristic program” for computers, i.e., a program operating on incomplete algorithms to solve “non-typical problems” and capable of “self-learning” and extending algorithms. The authors announced the possibilities of computer simulation of intellectual and creative processes. Unlike LT, GPS did not merely prove already proven mathematical-logical theorems, but also solved puzzles, chess problems, and so on.

But even then it became clear that, while coping with the solution of conditional problems (like the “Tower of Hanoi” puzzle), the program often falters before real ones, without going beyond the framework of the propositional calculus principles built into it. And the point is not that formally conditional problems possess less “cognitive complexity” compared to real ones – often the opposite is true (let us repeat: from a formal point of view). It is simply that real problems arise in the changing, unpredictable, “non-precomputable” conditions of people's lives, which sometimes require a conscious change in the foundations of their modes of action. These conditions themselves have not yet taken shape, have not been created by people for themselves – and not for a machine – conditions that, as they are created, change people themselves and transform their potential. This happens constantly in history, and in individual destinies. Therefore, even the first wave of AI euphoria – in some – and AI phobia – in others (we are now experiencing a second, more powerful one) – was “cooled” by arguments, or more precisely, by proofs of the fundamental impossibility of AI copying even certain specific functions of thinking as reason, which did not deny but, on the contrary, allowed for the transfer to a machine of part of its utilitarian-rational functionality, which, strictly speaking, does not presuppose the labor of living thought.

It would be naive to think that everything here can be “put on shelves” in advance. The discussion about the capabilities of AI and its limitations is extremely important for the entire family of human sciences, and above all for psychology. It makes it possible to sharpen the question of the nature of human thinking (E.V. Ilyenkov), of “Natural Intelligence” (NI), of its involvement in human life, in the processes of solving life's tasks, where the main “object sought” is the person himself and the prospects for his development in various forms of activity of people and their communities. This includes activity mediated and enhanced by the potential of AI thanks to the searches and discoveries of NI, which, of course, cannot but be transformed in this creative process. Moreover, what more than half a century ago was created in university laboratories and discussed at the Dartmouth seminar has become a phenomenon of the life of humanity in the 21st century. Everyone today knows about AI and neural networks (the first of which was built in 1943 by W. McCulloch and W. Pitts on a vacuum-tube, analog basis). But what do we know about NI and its modern realizations in the unprecedented diversity of human activities? What functions of AI in various areas of social practice can serve the solution of NI's “own tasks”, given its historical distinctiveness? Although the question is usually posed differently: what is required of man in a world ruled by the “digital” and where everything is “generated” by AI?

Hence the interest of cultural-historical psychology in the theme of AI, in which it not only finds points of its own growth, but the theme itself is also revealed in a special optic. The features of this optic are revealed by the authors of the issue of the journal offered to the reader's attention.

From the standpoint of CHP (cultural-historical psychology), any natural human intellect, including even the so-called “natural mind”, is artificial. Let us use an example that our common teacher V.V. Davydov gave in his lectures. A child independently builds a construction out of blocks, unaware that he is grasping the simplest mechanical regularities, with account taken of which these very blocks were constructed before him, and in which the logic of the initial grasping of these regularities is already given. In grasping this mechanics, he masters a definite mode of thinking. One could say that the blocks are a prototype of AI “by the design” of NI. But they will not assemble themselves, although they do “suggest” a mode of assembly — though, of course, only the person who thought them up and made them can suggest. And even he cannot fully foresee how the child will assemble the blocks so that what results is not a heap that will fall apart, but a reliable construction. Their designs must coincide in something, but the details of the coincidence are not fully known. After all, reason is not a device but a deviser, not a construction but a constructor, who creates his own unique construction as well. It — the aggregate “construction of reason” — does not lend itself to imitation.

This means that the problem of AI is the problem of AI mediating the relations of at least two NIs within the human community. The way AI is included in people's lives is determined precisely by this. It is no accident that in the history of science and practice there occurred a shift of priorities from the “cybernetics of signals” to the “cybernetics of symbols”, and the processes of information and its understanding came to be conceived in the logic of the processes of mediation, communication, and mutual understanding among people, in which each person's self-relation takes shape.

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