

Section 5. Philosophy

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SCIENTIFIC PROGRESS AS A DYNAMIC NONLINEAR PROCESS

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The article analyzes a number of issues of the philosophical understanding of the concept of “scientific progress” at the modern stage. A comparison of different approaches of philosophers to this concept is made.

The philosophical investigation of the problem was carried out in the interaction of social epistemology, the meanings of scientific progress, and epistemic coercion approaches. In this context, the context of scientific progress of philosophical analyses conducted within the framework of STS and the Great Anthropological Transition is also included.

Keywords: *disciplinarity, interdisciplinarity, nonlinearity, intersubjectivity, extended cognition, epistemic coercion, synergistic integration, natural intelligence, artificial intelligence*

The Oxford dictionary defines “progress” in two senses: 1) development towards something better (развитие в деверь улучшения); 2) upward movement forward (поступательное движение вперед) (OxfordLearner’sDictionary, 2024). We look at scientific progress in the synthesis of these meanings. Therefore, scientific progress is contained in the synthesis of the “further improvement” of science as a system against the background of the existing scientific criteria in a certain historical period and the “forward movement” in understanding. Of course, this is a general approach and there may be alternatives. However, the discussion of the problem in the philosophical aspect is also based on the acceptance of scientific progress in this

sense. In this article, we analyze the discussions held regarding TDSokolova’s framing of the issue in the context of the conceptualization of scientific progress. An interesting aspect of TDSokolova’s approach is that she views the problem in the context of the interrelationship of disciplinary and interdisciplinary forms of organization of science. Here, the philosopher actually sees a serious contradiction in the aspect of philosophical understanding of scientific progress. This contradiction stems from the fact that at the modern stage it is not adequate to unambiguously and completely associate the development of science with interdisciplinarity. Thus, according to TDSokolova, the perception of interdisciplinarity in academic science as the main sign

of scientific progress and the prediction that this process will eventually create new disciplines (in the sense of a new disciplinary differentiation at a new level) do not reflect the real situation (Sokolova, 2023, p. 24).

To substantiate his position, the Russian philosopher mainly refers to English-language research. In particular, he appeals to research conducted within the framework of the STS and the ideas of Federica Rousseau. He emphasizes that “strict disciplinary separation (isolation – FG) is still characteristic of English-language philosophy” (Sokolova, 2023, p. 25). TDSokolova draws this conclusion from the ideas of F. Rousseau. F. Rousseau writes that even philosophers working in the spheres of philosophy of science and philosophy of technology are “impenetrable to each other”. At the theoretical level, this means that philosophers differ in subject, approach, methodology and even paradigm. This also separates researchers in that sphere from each other both in publishing the results of their work, in various scientific events, and in referring to each other. In practical terms, this situation leads to a limitation of understanding in scientific activity. For example, it “creates a gap” in understanding the interaction between fundamental sciences and technical development (Russo, 2022, p. I–XXIV and 1–10).

Although the research conducted within the framework of the STS is dominated by an interdisciplinary approach, it is to some extent “tends to be self-contained” [Sokolova, 2023, p. 25]. The researchers themselves emphasize that the main problem of research is the expansion of expertise and the involvement of a larger number of researchers in the search for scientific truth (Jasanoff, 2017, pp. 260–287; Latour, 2017).

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Within the logic of the discussions conducted, it becomes clear that the philosophical reflection of scientific progress at the modern stage is a complex process. There is no unanimous position of philosophers on this. At the same time, the philosophical understanding of scientific progress requires, in addition to the consideration of the cognitive aspect, socio-cultural and technological aspects in a complex, appropriate expert assessment.

Currently, an approach that could synthesize the highlighted aspects into a single theoretical-epistemological and methodological field has not been formed. Here, in the context of the relationship between disciplinarity and interdisciplinarity, the third characteristic included by I. T. Kasavi (“the integration of knowledge in the form of disciplinary institutionalization of a number of areas of interdisciplinary interaction”) does not seem to be sufficient to adequately define scientific progress. Because the understanding of disciplinary institutionalization as a form of integration of knowledge in the aspect of interdisciplinarity is generally a useful definition, but it is not sufficient for an adequate philosophical understanding of scientific progress. The point is that in the modern era, scientific progress can be adequately understood in the context of a single position that can be formed in the field of interaction of cognitive (purely cognitive), social, cultural, psychological, technological and other spheres. I explain the reason for the main contradictions that currently arise in the philosophical reflection of scientific progress with this point.

It is understood that the philosophical understanding of the issue of scientific progress at the present stage is generally not set correctly. That is, the cognitive, epistemological, conceptual and methodological capabilities of existing approaches do not have the capabilities that would allow for an adequate philosophical understanding of scientific progress. In this issue, a paradox has arisen between the results of scientific progress and the understanding of the various factors that create them. The factors that condition scientific progress are understood philosophically adequately separately (for example, within the framework of social epistemology and its modern modifications), but this is not enough for the philosophical understanding of scientific progress, which is the effect of the synergistic integration of these conditions. Scientific progress from this point of view is a complex self-organizing, nonlinear and dynamic process. In this sense, scientific progress as a single system is greater (more, more) than the sum of its constituent parts.

An adequate philosophical understanding of scientific progress may be possible at the stage of the formation of a new level of re-

lations between the factors that condition it. Therefore, we conclude that science has yet to make a breakthrough in the direction of artificial intelligence and the latest technologies. We can also call this the Great Anthropological Transition. However, this is not an absolute condition. The main condition will be the invention of a “new creative being”, a representative of the human-artificial intelligence symbiosis.

The main reason for my understanding of scientific progress in this context is that, on the one hand, the relationship between philosophical and scientific cognition is at a stage of rising to a new level, and on the other hand, human cognition in general is approaching the next stage of expansion. Therefore, scientific progress can be adequately understood in the field of “expanded epistemology of cognition” (this direction is being developed in various variants) within the framework of “philosophical-scientific cognition” in a new quality.

Thus, the fact that scientific progress can be adequately reflected upon in the unity of

philosophy and scientific understanding, in the “emergent interface cognitive zone” that synthesizes them, is precisely due to the emergence of a new “creative intersubjective scientist” who will be an example of the symbiosis of natural intelligence + artificial intelligence. Therefore, the discussions currently underway around the philosophical understanding of scientific progress are extremely important.

Conclusion

The article’s analysis of current discussions in the context of scientific progress provides grounds for drawing several conclusions.

The topic of “scientific progress” is very relevant for modern philosophy, philosophy of science and epistemology. Here, the interaction of both the logic of internal renewal of science and its socio-cultural context is an important condition. In the field of joint understanding of these two aspects, scientific progress includes the main features of the development of science in the context of the development and humanization of society as a whole.

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