ISSN 2414-1143
Научный альманах стран Причерноморья. 2022. Том 30. № 2

DOI 10.23947/2414-1143-2022-30-2-3-9
UDC 167.7

BACKGROUND KNOWLEDGE AS A SOCIOCULTURAL FACTOR IN THE DEVELOPMENT OF SCIENCE

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The urgent demands of the present, as well as the epistemological interests in which mankind's intentions regarding the prediction of future forms of studying reality, as well as its transformation, are the most important factors that determine the movement of knowledge as a whole. The development of knowledge in the world occurs through a huge number of existing sciences. In fact, all of them represent a variety of directions of this information expansion. Throughout history, the justification and analysis of the most common foundations of human knowledge, as well as the identification of their prerequisites, have always referred to the most pressing tasks of knowledge, the importance of which is not only scientifically and theoretically, but also socially and practically beyond doubt. From this perspective, consideration of the specifics of background knowledge, which acts as a vector of the epistemological process and the fundamental mechanism for the development of culture, is super actual and valuable. Having a worldview orientation, background knowledge not only contributes to the formation of a historically adequate picture of the world, but also reveals a powerful prognostic potential.

Key words: background knowledge, science, scientific and technological progress, future, cognitive activity, search for truth, historical conditionalism, culture.

[*А.В. Перекрестова* Предпосылочное знание как социокультурный фактор развития науки]

Насущные запросы настоящего времени, а также гносеологические интересы, в которых являют себя интенции человечества относительно прогнозирования будущих форм изучения действительности, равно как и ее преобразования, — вот те важнейшие факторы, которыми обусловлено движение познания в целом. Развитие знания в мире происходит посредством огромного количества существующих наук. По сути, все они представляют собой разнообразные направления этой информационной экспансии. На протяжении всей истории обоснование и анализ самых общих оснований человеческих знаний, равно как и выявление их предпосылок, всегда относилось к самым насущным задачам познания, важность которых не только в научно-теоретическом плане, но и в плане социально-практическом не подлежит сомнению. В этом ракурсе рассмотрение специфики предпосылочного знания, выступающего вектором эпистемологического процесса и основополагающим механизмом развития культуры, является сверхактуальным и ценным. Имея мировоззренческую направленность, предпосылочное знание не только способствует формированию исторически адекватной картины мира, но и обнаруживает мощный прогностический потенциал.

Ключевые слова: предпосылочное знание, наука, научно-технический прогресс, будущее, познавательная деятельность, поиск истины, историческая обусловленность, культура.

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Nowadays, science is the main direction of human knowledge, which has a tremendous impact on the lifestyle and conditions for the existence of society. Any knowledge about the world that claims to be objective needs justification, empirical confirmation and systematization, which is one of the competencies of science, which acts as the main type of cognitive activity. In the 21st century, a person faces such a range of unexpected, unpredictable

and often dramatic impacts of scientific and technological progress on everyday life that there is a special need to understand the origins of their formation and identify the possibility of minimizing their destructive and uncontrolled aspects. As W. Heisenberg wisely noted in his speech to students at the University of Göttingen in 1946: "The task of science is, perhaps, to arouse in people a sense of how dangerous this world has become, to show them how important it is that all people, regardless of their nationality and ideology, unite to reflect this danger" [3, p. 29]. However, do not forget that science, even reflecting the world and trying to change this image into reliable knowledge, gives only one version of the surrounding reality, formalized and structured. In the magnificent building of human civilization, science, acting as a core element of construction, thanks to the integrating nature of culture is closely connected with other spheres of being. Interaction between different levels of the cultural area opens up new prospects for the further development of society, which in the future may lead to completely unimaginable achievements at the present stage, and they are especially intriguing in the framework of science. After all, a unique property of scientific knowledge is a constant aspiration beyond what is known and mastered, the ability to discover new subject worlds and implement seemingly fantastic projects in practice.

In the 21st century, in the era of global crises and social disasters, humanity is especially faced with the problems of finding new worldview principles and developing a strategy for the development of science that will be relevant for future generations. All this is possible only with a deep understanding of not only the specifics of scientific knowledge, but also taking into account sociocultural factors that act as a catalyst for cognitive activity. As academician V.C. Stepin emphasized: "Today it is important to organically combine the values of scientific and technological thinking with those social values that are represented by morality, art, religious and philosophical comprehension of the world" [6, p. 458].

The privileged status of science in modern culture dictates not only the need to study the features of scientific knowledge, but also implies the study of prerequisites and interdisciplinary connections that are revealed in the wide context of the centuries-old intellectual tradition and affect the content of cognitive activity. The introduction of scientific methods in the management of all cultural processes as a mandatory principle requires a serious understanding of the specifics of science. This understanding is extremely important for the sphere of science itself, only it opens up the possibility of building a theory of effective management of it in the context of scientific and technological progress, which has been unusually accelerated at present. Indeed, to clarify the patterns of the specifics of scientific knowledge, it is not just an idea of its social conditioning that is required, but a multidimensional analysis of the latter, the analysis of the interaction of scientific knowledge with various phenomena of material and spiritual culture is no less necessary.

In general, the most important feature of scientific knowledge, distinguishing it from all other forms of cognitive activity, is the orientation of science to the study of various objects that can be included in the activity (relevant, or even potentially, that is, in the future), as well as the study of these objects as subordinating to objective laws of development and functioning. It will be appropriate to note the opinion of B. Russell, according to which "scientific knowledge seeks to become absolutely impersonal and tries to assert what is open to the collective mind of mankind" [8, p. 23]. Scientific knowledge reflects any of the objects of reality not so much in the form of contemplation as in an empirical form. As for the process of this reflection itself, it is determined by the specifics of the object under study, as well as, most significantly, by numerous sociocultural factors.

If we consider science in its historical development, it is easy to notice the transformation that the standards of presentation of scientific knowledge are periodically subjected to (as the type of culture changes, not only the styles of thinking, but also the methods of seeing reality themselves change), all this is re-framed in the context of each culture and experiences a powerful impact from all phenomena that make up its specifics.

It must also be remembered that the immediate goal and the highest value of scientific knowledge is objective truth, for although science itself cannot achieve it (almost all major researchers of our time agree with this statement in one form or another), the bold and tireless search for this truth as a desire for new and solid knowledge is one of the main motives for the activities of every genuine scientist, among whose dominant instincts there is the instinct of the game. As K. Popper expressed it in expressive form "bold ideas, unjustified anticipations and speculative thinking are our only means of interpreting nature, our only organon, our only tool of understanding it. And we have to take risks to win" [7, p. 228].

It is quite obvious that no scientific knowledge is inconceivable without background knowledge, which is its constituent and primary part, acts as a substrate of the epistemological process as a whole. In modern times, questions about the influence of society and culture as a whole on historical development and the logical and gnoseological foundations of science are especially actively being developed, a special case of this is the determination of the role of human ideals and norms, philosophical and worldview prerequisites. The formulation of a number of new problems naturally led to the emergence of new concepts. Thus, the role of sociocultural factors in scientific knowledge was recorded, as well as the influence of scientific knowledge on social life, which has noticeably increased in recent decades. "Background knowledge" has become one of such concepts.

Background knowledge has a certain pronounced specificity, the need for a special analysis to identify it is due to its "implicitness." After all, if we raise the question of the foundation of human actions, then it is obvious that every knowledge, even the very "knowledge," which is only recognized by skeptics who believe that there can be no evidence-based knowledge, that is, some kind of faith, plays the role of prerequisite; "thus, according to I. Lakatos, skepticism discredits knowledge, opening the door to irrationalism, mysticism, superstition" [4, p. 3]. And it is for this reason that it seems optional for many researchers to distinguish special "background knowledge" from the concept of "knowledge."

Nevertheless, an indication of the need to study the problem of the prerequisite of any knowledge, not excluding scientific, can be found in the works of great ancient philosophers, such as Plato and Aristotle. In particular, the "Second Analytics" begins with the reasoning devoted to this issue [1]. Aristotle introduced such concept as "background knowledge," based on the self-evident circumstance that all assumptions should have prerequisites. This concerns, for example, the formulation of common assumptions for deductive syllogisms: "all swans are white," "all people are mortal." According to the "father of science" it is necessary to be aware of the fact that there is even more general knowledge behind them. Since Aristotle was the first to raise this issue with all scientific seriousness, he, as the founder, managed to show the main thing: there is no development of knowledge without background knowledge which plays a special role and differs in any parameters from "ordinary" knowledge, always expressed in the form of the result, the deductive or inductive conclusion.

Important steps in relation to the deepening and expansion of the substantive aspect of the problem of background knowledge after Aristotle were made by the largest philosophers of the 17th-18th centuries. So, L.A. Mikeshina, who has substantively and systematically considered background knowledge, notes in her fundamental research, that "Kant formulated an independent and multifaceted problem of background cognition, who not only discovered and investigated phenomenon a priori, but also introduced the concept of "background knowledge," investigated the dialectics of practical and theoretical reason, thus raising the problem of the methodological role of moral regulators and prerequisites in theoretical cognitive activity" [5, p. 318].

Over the past half century, significant work has been done in the world philosophy as a whole, the purpose of which was to identify the prerequisites and reasons for scientific

knowledge. It was found that both natural science knowledge and humanitarian and philosophical knowledge are subject to a serious influence of value prerequisites, which suggests the need to divide (albeit conditionally enough) knowledge into background (or worldview) and specifically scientific.

Background knowledge, since it reflects the way how a person sees the world and generally human attitude to the world and his place in it, takes on a worldview orientation. Therefore, the opinion of L.A. Mikeshina, directly calling background knowledge worldview, as such, seems quite justified, it exists and functions in close cooperation with and along with special scientific knowledge.

It should be noted that pre-conceptual and conceptual levels are distinguished in background knowledge. The latter can be indicated by means not only of natural, but also of a special scientific language. "The most significant is background knowledge, which <... > corresponds to some rules, norms and standards. Forms of such prerequisites can be correlated "by the degree of rationality." On the one hand, these are spontaneous-worldview prerequisites, including philosophical ones, and prerequisites of common sense (ordinary consciousness), on the other, professionally developed philosophical-worldview theoretical concepts that scientists consciously or unconsciously learn together with the "texts" of science itself and serve for its justification and development" [5, p. 319].

Summing up it must be said that the grandiose centuries-old history of humanity's discoveries of necessary and accurate, general processes is reflected in background knowledge. Contrary to the visibility, there is a clear structure in this knowledge: for example, there is a starting point for each subject or object, there is not only knowledge of development stages, but also knowledge of all possible and necessary results.

Any background knowledge allows something new to appear, that is, "generates" and opens up effective knowledge, and it, in turn, immediately becomes background, in order to "re-generate" other effective knowledge after a while, etc. This peculiar transmutation process has no completion, and this is how the prospects for new knowledge open up.

Background knowledge is systematic knowledge, it acts as such for us, because it is a fruit of knowledge not of one, but of many people. It can rightly be considered as a necessary base for new experiments, conducting recent experiments – actions that lead to new, as we mentioned, effective knowledge. Many thinkers have convincingly shown that background knowledge is bound to be proven and accurate, as opposed to inferential knowledge, which always requires evidence and verification. Although background knowledge is created by many generations, there is a necessary order in them, since the experience of people making artifacts is ordered. This experience has the form of systems and chains. All this indicates in favour of the fact that the initially systematic nature of background knowledge is a deeply grounded position.

In general, the 20th century brought with it a lot of vivid concepts closely related to the concept of background knowledge. Thus, the system of knowledge, which is background knowledge, can be presented, for example, in the form of the episteme of M. Foucault or the Kuhn paradigm, between which there are certain similarities. Kuhn's concept is characterized by a "narrower" scope of application; it was discovered and involved only in the field of science, purely scientific knowledge, while Foucault in his "archaeological research" relied on the cultural field of all social sciences and, accordingly, his concept applies to the field of culture.

The concept of background knowledge can also be associated with the research program of I. Lakatos. The latter, discussing its methodology, specifically notes that "we cannot get rid of the problem of "empirical basis" if we want to learn from experience, but we can make cognition less dogmatic, although less rapid, and less dramatic. By considering some "observational" theories problematic, we can give the methodology more flexibility; but we

will not be able to finally find out and include in the critical deductive model all "background knowledge"" [4, p. 96].

Background knowledge acts as a system of ideals and philosophical foundations of science in the works of V.S. Stepin. According to him no serious researcher "applies the method without any reason, randomly and at random. He should have background knowledge, a kind of scoreboard for recognizing similar research situations, the similarity of the subject areas being studied" [9, p. 9].

Of course, the existing accurate knowledge needs organization for its effective functioning. Background knowledge acts as a means for their organization. And since the priority task of the available accurate knowledge is to help understand not only in the present, but also in the past and future, the role in scientific knowledge, as well as in the holistic knowledge of human reality, their organizational foundation, that is background knowledge, cannot be overestimated.

It can be said that background knowledge in its epistemological, "cognitive" content is definitely multivariable. For example, this knowledge can be explicit or implicit, which is invariably emphasized by researchers. A feature of the first is that it includes in its area a huge number of previously developed conclusions of both theoretical and empirical levels, as well as various kinds of regulators and values. Therefore, it is distinguished by logical organization and elaboration of thought, and therefore can be transmitted, thereby setting some framework for the application of accumulated achievements in the future; subsequent cognition is highly dependent on it.

It is quite obvious that background knowledge is the starting point of any intellectual product of human activity, and in its "explicit" form the starting point of the knowledge associated with it. In turn, any knowledge is the result of a certain type of spiritual activity corresponding to it, and all these types of activities, including artistic, philosophical, scientific, moral and others, serve as the foundation not only for the formation of culture, but also for its very existence. Thus, it will be legitimate to present background knowledge as a trigger of culture.

To put it most abstractly, everything has background knowledge. The thought that there can be no development of knowledge without background knowledge and that any knowledge begins with prerequisites, is supported not only by the authority of Aristotle, this statement is in accordance with the very principle of determinism. And in this sense, any new knowledge is not a "beginning," but a "continuation."

In fact, Gadamer comes from the same thought when he says that a language "is a comprehensive anticipating interpretation of the world and in this sense cannot be replaced by anything. Before any philosophically aimed critical thought, the world is always a world for us, interpreted in a language <... > the process of formation of concepts, starting within this linguistic interpretation, never begins from the very beginning. It cannot be likened to forging a new tool from any suitable material. This process is always the continuation of thinking in the language which we speak, and within the interpretation of the world carried out by it. There is no start from scratch anywhere." [2, p. 29].

As you know, the question of special prerequisites for knowledge acquired the most acute relevance during the formation of the phenomenon of non-classical science. Moreover, their presence was recognized as an indisputable fact. Speaking about "anticipating context" H.-G. Gadamer mentions the topic of cognitive prerequisites. The large-scale and complex system of cognitive prerequisites is entirely transmitted by tradition. It is the "anticipating context" beyond which, no task can be meaningfully set.

It is safe to say that the idea of unconditional knowledge at the moment is nothing more than an outdated delusion, an illusion that seems especially naive when it comes to the mechanisms of development, enrichment or transformation of culture and its most important spheres: science, art, religion or philosophy.

In this regard, it is necessary to emphasize the historical nature of background knowledge, because it is the prerequisites that constitute the changing, dynamic system that ensures the development of culture. Against their background, the content of any knowledge deepens, refracting in the formation of various kinds of theories and concepts, including scientific and philosophical ones.

Philosophy in this perspective can be described as a kind of universal way of cultural (or spiritual) production, since it acts as a "carrier" of relevant knowledge and occupies a special position in the space of culture. For centuries it, as well as science, has repeatedly claimed a dominant role in this area. The decisive basis of this claim lies probably in the ability of philosophy to concentrate an unbiased mind in the most effective way. This mind's fundamental need for truth as the most adequate comprehension of reality is no longer able to satisfy either the "deceptive" epiphany of art or religious dogmas. In contrast, in the 21st century, we observe how strong and productive the union of philosophy and science becomes in ontological and methodological aspects.

Summing up and simultaneously establishing the most direct connection with the topic, it must be said that just as Einstein would not have been possible without Newton, Niels Bohr without Rutherford, Mechnikov without Darwin, Hegel without Kant, neither science nor philosophy nor culture as a whole are possible without background knowledge. All the multifaceted culture of millennia and the very comprehension of the world by the man cannot exist without background knowledge, because it is a certain point "alpha" and it sets the coordinate system of human civilization.

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11 April, 2022