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EDUCATIONAL TECHNOLOGIES: MEMBERSHIP OF PHILOSOPHICAL LAW AND CATEGORIES IN SCIENTIFIC AND TECHNICAL CREATION

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Annotation
The article provides a philosophical analysis of the theoretical and practical significance of philosophical laws and categories in scientific and technical creativity. It has been studied that there is a growing need for the achievements of modern science, scientific discoveries and creative thinking around the world.

Keywords: creativity, thinking, research, activity, science, philosophy, society, methodology, law.

Introduction

In today's world of social development and dramatic changes in the field of scientific knowledge, the importance of science in life is increasing, defining the main directions of theoretical research. Part of the problem is the growing need for modern scientific advances, scientific discoveries and creative thinking around the world. Another important aspect of the urgency of this issue is the growing attention to this area in our country since independence.

At present, there is no clear boundary between applied research and research development, they are often interconnected. Research developments directly introduce science into various fields of design work. This field partially intersects with the field of science and goes beyond its boundaries and includes practical work related to the creation and testing of experimental samples, the development and mastering of technology for the production and use of finished products. In turn, this work will be connected with the manufacturing sector in the final stages. In this case, the need for research may arise both in the design process and in the production process (especially in connection with the improvement of the product and its manufacturing technology). Structural and functional reforms have become a priority in various sectors of society. In such a society, the introduction of innovative technologies, creative thinking and activity, the widespread use of the latest production methods have risen to the level of social need, have taken the form of sustainable practice.

The implementation of many innovative scientific discoveries in the world in the XXI century, the growing role of mathematical models in the study of reality means a deeper manifestation of the technique of technical creative thinking. The boundary between science and practice is deposit and mobility. In today's world, practice relies on science at almost every step of the way. For this reason, on the one hand, there is a need for researchers who develop the scientific basis of practical activities, and on the other hand, there is a need for highly qualified practitioners who have relevant scientific knowledge and can use it in their work. In the process

of its development, science, along with increasing the amount of knowledge it has accumulated, makes qualitative changes in its content, improves the methods of obtaining and substantiating it, restructures the system of its organization.

It is known from the history of the development of sciences that most of the modern sciences are separated from philosophy (e.g., physics, chemistry, medicine, psychology, logic, etc.). The formation of new sciences may be due to the fact that a single general science about any complex object is broken down into parts, and they become more or less independent separate sciences about different aspects or elements of the same object.

In the twentieth century, the previously unknown microcosm became a new field of physical research, which led to the creation of atomic physics, quantum mechanics, nuclear chemistry, and other sciences. The creation and development of computers, the development and use of this new type of technology, as well as the management of a number of scientific directions and disciplines have emerged.

The transformation of any field of knowledge into a separate science is sometimes caused by the need to solve a specific task in society - the social need for "social order". In epistemology, the process of creation is recognized as an active, absolute goal-oriented activity of the subject. Also, all disciplines have their own methodology, e.g. Al-Khwarizmi's teachings for algebra, Einstein's teachings for physics, Euclid's teachings for geometry, Newton's teachings for mechanics, Darwin's teachings for biology are methodologies. [1]

Any method or group of methods used in the study of various objects can also serve as a basis for the emergence of a new science (for example, the method of spectral analysis). The transfer of methods from one discipline to another sometimes leads to the emergence of new sciences where they meet (e.g., mechatronics, astrophysics, physical chemistry, biophysics, geobotany, economic geography, genetic engineering, etc.).

In this sense, the problem of classifying science functions is still controversial. This is partly due to the fact that science has taken on new and new functions, and partly it has begun to act as a socio-cultural phenomenon, thinking not about objective and impersonal legitimacy, but about the implementation of all the achievements of science and technology. The question of the social functions of science is noted as a problem of special and priority importance. Today, according to researchers, the following three social functions of science can be noted:

1) cultural and philosophical function of science;
2) direct creative force function; (technical)
3) social power function.

The last mentioned science function is intended to be used to formulate and forecast comprehensive plans for social and economic development. In its function as a social force, science manifests itself in solving the global problems of our time (depletion of natural resources, air pollution, determining the scale of environmental hazards, etc.). In its function, science is associated with social governance.

Researchers focus on the design-construction function of science because it comes before the stage of transforming existence into practice and is an integral part of intellectual research at any level. The design function is associated with the creation of completely new technologies, which is very important in our time. [2] There are many references in the philosophical

literature to the concept of "Gordon synectics". According to Gordon's observations, some groups of scientists using the solution of the problem use four types of analogies: the correct analogy - a technical object is compared with a biological object (an airplane bird). Symbolic analogy - it is possible to describe the problem presented. Fantastic analogy - in this case, the problem is easily solved, even if it contradicts the laws of nature. Finally, there is a personal analogy in which group members see themselves as elements of a problem-solving situation.

The problem-problem-hypothesis-theory-concept epistemological chain strengthens the developing scientific knowledge. It can be said that knowledge about the problem is ignorance. A problem is understood as a set of opinions that contain previously established facts and considerations about the content of an object that has not yet been understood. The problem manifests itself as an objective contradiction between the language of observation and the language of theory, the empirical fact, and the theoretical description expressed in the concept. Putting and solving a problem serves as a new knowledge tool. However, the problem itself is sometimes interpreted as content that does not exist in accumulated knowledge, and sometimes as an existing basic theory, content derived from a set of knowledge.

When the French scientist Jacques Mono becomes interested in any phenomenon or problematic situation, he tries to model the situation subjectively without realizing it all the time. In doing so, his goal is to get to the inner essence of the event, and then to the other elements of the situation. Many physicists say that when they worry about a problem, they feel like an extra electron or other elementary particle, and ask how I would have acted if I had been such a particle.

Hypothesis is understood as the initial stage of creating a theory. Hypothesis (Latin "guess") is a form of conclusion, with the help of which assumptions, assumptions, opinions about the probable bases and causes of a particular event are put forward. Classical scientists have said that the hypothesis is a form of development of natural science. The phrase “I do not weave hypotheses” is associated with Newton’s name and to some extent negates the role and importance of hypothesis in scientific knowledge. If the hypothesis itself is able to explain all of the phenomena proposed for analysis, it becomes a theory. Leibniz argues that a hypothesis is valid if it satisfies the following three conditions: first, if it is simple; explains the second - a large number of events; the third helps to predict new events.

The predictability of the cognitive process encourages consideration of another important goal of science — forecasting — and forces us to record at least two types of forecasting: trivial and non-trivial forecasting. Trivial prediction is a form of manifestation of a more inert system stability. Its peculiarity is the uncertainty previously given in the system of causal links. The notrivial prognosis forces us to take into account that factors that were “not previously included in the model because they were less important” may be present in practice. Notrivial prognosis is characterized by the following symptoms. The first is the variability and mobility of the system. The second is a completely different kind of communication.

In the context of research on the philosophy of science, there are different types of forecasting, such as search forecasting and normative forecasting. The essence of search forecasting is to determine the performance of objects and events on the basis of extrapolation of currently identified trends. Normative forecasting allows us to talk about the probable state of the subject

in accordance with the given norms and goals. The current level of development has led to the creation of prognostic methods called “forecast graphs” and “goal trees”.

Nowadays, in addition to social, technical and natural sciences, fundamental and applied, theoretical and experimental sciences are also distinguished. Today, scientific directions are manifested in their wide diversity and, taking into account specialization, are also developing in various interdisciplinary fields. Scientific knowledge is very diverse as a form of conscious search for truth, where it is possible to distinguish between factual and hypothetical, experimental and theoretical, classification and conceptual, mathematical and natural scientific knowledge. There is talk of a great science, a solid core of science, a science at the forefront. However, all scientific knowledge must meet certain standards and have a clear ground. The following are commonly used as cognitive norms and tools used in science: defined norms and ideals of knowledge specific to this period and applied to the specifics of the field under study; scientific and technical landscape of the world; philosophical foundations [3].

It has not been long since the analysis of the technical sciences in Western philosophy of philosophy has emerged as a separate field. Charles Snow once remarked: “People working in the pure sciences have a completely wrong view of engineers and technicians. When it comes to applying science in practice, it all seems absolutely uninteresting. They can't imagine that many engineering tasks are no less accurate and consistent than the ones they work on, and that the solution of these tasks can satisfy even the most demanding scientist. ”

In the technical sciences, it has become customary to distinguish between invention as the creation of something new and original, and perfection as the transformation of the existing. Human creative abilities have evolved to improve them in order to achieve greater efficiency of adaptation from the assimilation of finished natural products. The artificial living environment, more precisely, the creation of some of its elements, meant that things were invented that nature did not have ready. Inventions are the second body of man. Things and objects that were a continuation of the human body were invented to do things that the first body could not do. For example: The knife is a continuation of our hands, the bike is our feet. The invention also claims a separate status. It relies on a variety of degrees of freedom and can be done “by any kind of criterion”. Sometimes in the invention there is an attempt to imitate nature, to imitate. For example, a floating fish was the basis for the creation of ships, and a flying bird was the basis for the creation of an airplane. [4] It is also a universal structure of a large number of objects in the plant world - a cylindrical shell-technique and a common form used for various purposes in everyday life.

However, the technical sciences are so diverse and diverse that the search for a basis for uniting them into a single family becomes a serious problem. As a mechanism for combining various structural and technical knowledge, N. Abramova proposes a growth model of the crystal. Here the main condition is to maintain compatibility between the foundation and the structure of the nutrient environment. The basis is understood as labor activity, and the nutritional environment is based on the principles and concepts of such disciplines as occupational hygiene, information theory.

For example, creative thinking in the field of technology is manifested as follows: identification of a technical problem, disclosure of a technical contradiction, expression of a technical task,

development of a technical idea, creation of an ideal model, materialization of an ideal image, introduction of a viable technical object.

The problem of creative thinking is not a simple problem in epistemology, but one of the central problems of the worldview, which is inextricably linked with the fate of civilization, the history of mankind. In this sense, it must be viewed in terms of the development of universal culture.

Nowadays, the role of information technology in the formation of creative thinking is growing. Therefore, the process of informatization is developing rapidly and is being implemented, and the growing amount of information is of particular interest in understanding society.

However, the influence of the media can also have a negative impact on people's worldview, values and traditions. These include, for example, sites that promote terrorism, spread religious extremist ideas, and promote immorality, such as pornography. Today, the Internet is a global network that reflects the diverse cultures, ideas, values and interests that exist on our planet. The analysis of the problems associated with the creation of a world-wide alphabet, which is one of the main factors for the widespread dissemination of the information process, which serves to expand people's creative thinking, harmonization of ideas, is important.

Are the discoveries of Archimedes, Khorezmi, Ulugbek, Copernicus, Einstein only individual and unique? Wouldn’t such discoveries have been possible without these individuals? Is the role of individual intuition so great and is it a factor that determines scientific creative progress? Yes, given the many obvious individual discoveries and random solutions in the history of science, it is clear that the answer to this question is not so simple. There is no doubt that the role of eminent scientists in science and the importance of their work is enormous. However, examples of the same phenomenon being discovered by many scientists at the same time are also common in the history of science.

It should be noted that humanity has never been satisfied with coincidences and spontaneity in knowing the world. At all stages of the development of science, science has sought tools that effectively influence creative thinking.

Scientific creative thinking can also be governed to a certain extent. These are issues that affect both the conditions under which the researcher demonstrates individual abilities and the socio-cultural conditions, economic, political and cultural factors that increase the likelihood of partial problem solving. For example, Creation is the most mysterious, enigmatic, exciting, and most important event in the human spiritual life for the present day.

Moreover, in the process of scientific creative thinking, scientists rely on mental and logical research methods that do not discriminate against the role of intuition and chance, but, above all, have a special place in it, are able to produce huge scientific results and at the same time lead the intuitive leaps.

Also, all disciplines have their own methodology. For example, Al-Khwarizmi's teachings for algebra, Einstein's teachings for physics, Euclid's teachings for geometry, Newton's teachings for mechanics, and Darwinism for biology are methodologies”[1]. These methodologies have emerged, evolved, and changed over time. There is a methodology in the history of science that does not change. This is Philosophy. Philosophy is a common methodology for all disciplines. Therefore, scientific creation is also based on philosophy. The methodology itself, which directs creativity, must be scientific. Hence, the role of scientific creativity in the process of

creative thinking, technical thinking and creativity is incomparable. Scientific creativity is a high level of knowledge and skills, thinking and abilities of the researcher in relation to the object.

Thus, creative thinking is the level of intellectual ability and capacity that is manifested in a person's goal-oriented activity. In addition to being manifested in the activity, it manages the activity and ensures its high efficiency.

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