



UDK 62.930.8:71:06-9/13

SUBJECT OF THE HISTORY OF SCIENCE AND TECHNOLOGY**ПРЕДМЕТ ІСТОРІЇ НАУКИ І ТЕХНІКИ****Griffen L.A. / Гриффен Л.А.***d.t.s., prof.,*ORCID: <https://orcid.org/0000-0002-3020-9636>*National Historical and Architectural Museum "Kyiv Fortress",
Hospitalna str., 24a, Kyiv, Ukraine 01133***Ryzheva N.A. / Рыжева Н.А.***d.i.s., prof.*ORCID: <https://orcid.org/0000-0001-8379-4325>*V.O. Sukhomlynskyi National University of Mykolaiv,
Nikolska street, 24, Mykolaiv, Ukraine 54001*

Аннотація. В статті показано, що предметом історії науки і техніки являються производительные силы общества. Последние образуются в результате взаимодействия двух общественных подсистем – техносферы, обеспечивающей материальное взаимодействие общества с окружающей средой, и ноосферы, ответственной за его информационное обеспечение.

Ключевые слова: история науки и техники, производительные силы общества, энтропия, ноосфера, техносфера.

Abstract. It is shown that the subject of the history of science and technology is the productive forces of society. The latter are formed as a result of the interaction of two social subsystems – the technosphere, which ensures the material interaction of society with the environment, and the noosphere, which is responsible for its information support.

Key words: history of science and technology, productive forces of society, entropy, noosphere, technosphere.

One of the most important characteristics of any scientific discipline is its object and subject. The object of the history of science and technology as a historical science is society, but its subject is very specific. It is determined by the historical role of these social phenomena in ensuring the existence of society. And, of course, for a better understanding of the social role of science and technology, the evolution of these social phenomena over time is important.

Let's say, a few thousand years ago, neither science nor technology in the form in which we know them now existed. This does not mean at all that the then existing social means of knowing the world and interacting with it are not essential for us. Without knowledge about them, we could not determine their general trajectory, and hence understand the current patterns of development of science and technology. From the moment of its formation, the society already had certain ideas about the world and had a number of objects that it used in interaction with it. The first system of knowledge was mythology. And there were the first man-made means of labor - hand axes for the connection between the hand of the individual and the object of labor. With the general development of culture, both mythological systems and technical devices, which formed certain systemic aggregates – technocenoses, became more complicated and modified. In ancient times, they are further developed, and the foundations of a new system of knowledge organization – philosophy, as well as new technocenoses. In the feudal era, both continue this development, and the



industrial revolution in Western Europe gives impetus to the development of not only technoceneses that turn into entire technical systems, but also scientific knowledge in our current understanding. Since then, science and technology, being part of the productive forces as active driving agents of social progress, have received a particularly rapid development, thus influencing all social processes.

Playing such an important role in social development, science and technology, on the one hand, go beyond social processes, acquiring a planetary character, and on the other, they themselves undergo significant structural and functional changes. As a reflection of this process, the concepts of noosphere and technosphere appear, relating to our entire planet, in particular, its outer "shells".

The concept of the noosphere as the modern stage of a kind of shell of our planet, including living organisms – the biosphere, was introduced by V.I. Vernadsky [1]. But his followers most often represent the noosphere as a kind of independent "shell of the mind", supplementing it with another one – the technosphere [2, 3].

According to these trends, the history of science and technology is faced with the need to clarify the nature of its subject, at the forefront of which it is necessary to put the indicated "shells". However, historians of science and technology are not in too much of a hurry to make such adjustments to their research. So far, philosophers have considered these questions as a theoretical abstraction. At the same time, if the noosphere usually causes a positive attitude of researchers, then the technosphere is often presented as a kind of "masterful genie" released to freedom, which, as it grows stronger, becomes more and more aggressive and creates a danger not only for humanity, but for the entire planet.

One of the main reasons for this attitude is a misunderstanding of the phenomenon of the noosphere and technosphere, which, as already noted, are often presented as independent "shells" of the Earth, generated by mankind, but now they have gained independence and uncontrollability. In our opinion, the noosphere and technosphere have a different nature.

Although they arose due to the emergence of a new complex self-developing system in the biosphere of human society, the noosphere and technosphere are its integral subsystems that perform functions vital to society itself as a biological superorganism, simultaneously dividing it and connecting it with the environment. They ensure its existence due to the release into the environment of the entropy that society generates as a biological system. At the same time, thanks to the noosphere, the environment is analyzed and the nature of the necessary interaction with it is determined, and thanks to the technosphere, material and other means of this interaction are provided. Therefore, neither the noosphere nor the technosphere occupy an independent position in relation to our planet, they do not form any special "shells" of it, but enter the biosphere together with society and as part of it.

The functioning of these subsystems of society depends on the state of the latter, which determines the necessary conditions for the successful performance of their functions. A developed brain not only made it possible for human individuals to analyze their environment deeper than animals, but also through sign systems made it possible to combine their capabilities into a single whole – social consciousness, and also to store information in material formations. All this together creates a "shell"



between the social organism and the environment – the noosphere.

As for the interaction with the environment, already in the animal world certain prototechnical material formations are sometimes used to intensify it. In the process of functioning of human society, a special system of many interconnected material objects is purposefully created, forming a kind of technosphere of society, which also includes the people themselves, bringing these objects into action.

At the same time, both in the noosphere and in the technosphere, any material objects created and used by society represent the material embodiment of ideal images through their peculiar objectification. At the same time, ideal representations are created on the basis of the perception of material objects of the “outer” world with the formation of their ideal images, i.e. through their deobjectification [4]. Both the noosphere and the technosphere arise simultaneously with society and develop together with it, as a whole making up what is the driving factor of its development – the productive forces of society. Therefore, in fact, it is they, their evolution, that are the subject of study of the history of science and technology. As, in particular, and their components - the noosphere and technosphere – which today have acquired a planetary scale.

As regards the geochemical history of the Earth, the "sphere of reason" and "the sphere of technology" are not independent factors in it. They act as such only as part of an integral biogeocenosis, of which humanity is a part (albeit a very specific one). And the nature of their action, as well as its direction, are determined by the organization of society, primarily by its production relations, which change as a result of the development of its productive forces. In some cases, this influence is extremely negative, sometimes really threatening the society itself, which requires a response from the latter.

Thus, it seems desirable that specialists in the history of science and technology pay closer attention to the mentioned new areas of research on the role of productive forces in the modern world, in particular regarding the nature and functioning of their components – the noosphere and technosphere, freeing these phenomena from the role of "horror stories" and showing the possibilities of their effective use for the benefit of mankind.

References

1. Vernadskij V.I. Biosfera i noosfera. Moskva: Ajris-press, 2004. 576 s.
2. Aleksashina V.V. Triada: biosfera, tekhnosfera, noosfera (na puti k noosfernoj civilizacii). Biosfernaya sovместimost': chelovek, region, tekhnologii. 2015. №. 2. S. 25-44.
3. Balandin R.K. Noosfera ili tekhnosfera. Voprosy filosofii. 2005. № 6. S. 107-116.
4. Il'enkov E. Dialektika ideal'nogo. Logos. №1(69). 2009. S. 3-62.