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LECTURE 1
PHILOSOPHICAL ASPECTS
OF THE COMPREHENSION OF SCIENCE

1. The philosophy of science as a discipline and as one of the approaches of the philosophy: its main tasks and the subject of studying.
2. What is philosophy?
3. What is science?
4. Philosophy and Science: the complex of relationships between these two spheres of human cognitive activity.

1. The philosophy of science as a discipline and as one of the approaches of the philosophy: its main tasks and the subject of studying

The philosophy of science is the division of philosophy, which studies the concept, boundaries and methodology of science. There are also more special sections of the philosophy of science, such as the philosophy of mathematics, the philosophy of physics, the philosophy of chemistry, the philosophy of biology, the philosophy of medicine.

Philosophy of science is represented by many original concepts that offer one or another model for the development of science and

epistemology. It focuses on identifying the role and importance of science, the characteristics of cognitive, theoretical activity.

Philosophy of science as a philosophical discipline arose in response to the need to comprehend the sociocultural functions of science in the context of scientific and technological revolution. This is a young discipline, which manifested itself only in the second half of the XX century. While the trend, called "the philosophy of science," arose a century earlier.

The tasks of philosophy of science are:

1. Philosophical understanding of the phenomenon of science;
2. The inclusion of scientific achievements in the present socio-cultural context of the era;
3. Synthesis of philosophical and part-scientific knowledge.

The subject of the philosophy of science is general laws and tendencies in the development of science which is a system of knowledge, cognitive activity and social institution. Only the philosophy of science has such an apparatus (cognitive, logical, methodological) that allows us to determine the place and significance of science in human culture.

2. What is philosophy?

Quite literally, the term "philosophy" means, "love of wisdom." In a broad sense, philosophy is an activity people undertake when they seek to understand fundamental truths about themselves, the world in which they live, and their relationships to the world and to each other. As an academic discipline philosophy is much the same. Those who study philosophy are perpetually engaged in asking, answering, and arguing for their answers to the most basic questions. To make such a pursuit more systematic academic philosophy is traditionally divided into major areas of study.

Philosophy takes on the knowledge of the most general principles of the reality, the beginnings of the whole things in the world. It provides

an opportunity to go beyond the limits of empirical experience, but it also emphasizes the fact that human cognition has its own limits.

Three Questions of Philosophy by Immanuel Kant

- 1) what can I know?
- 2) what should I do?
- 3) what can I hope for?

The philosophical way of thinking is critically reflexive. Philosophy carries out the specific role of the world-view "sieve": as a rule, the most progressive thinkers question the outdated views, dogma, schemes of world-view, but besides, they try to keep everything invaluable, rational, true, in the deviant theories, to preserve all, that is valuable in them, in centuries.

Functions of philosophy:

1. world-view;
2. epistemological;
3. methodological;
4. informational and communicative;
5. value-orientation;
6. critical;
7. integration;
8. ideological;
9. educational;
10. prognostic;
11. projective.

The contradiction in the role of the philosopher lies in the paradox: on the one hand, he or she thinks in the context of that culture and that time in which he or she is living at the moment, but on the other hand he or she criticizes the old customs and traditions, because there is a need to divide what is generally accepted (public opinion), and what is "truly true" (knowledge). The philosopher puts the obvious (at first sight) aspects in doubt in order to "catch up" the true roots of these aspects.

3. What is science?

Definition. Science is the basic form of a systematic, constantly evolving and relying on the practice of cognition of the objective substantial connections of reality, which makes it possible to foresee events and acts as the basis for the expedient activity of people.

Science can be viewed from 3 main sides:

- 1) as a system of knowledge and the form of social consciousness;
- 2) as a specific type of social division of labor, as a scientific activity, as a social institution;
- 3) as a sphere of practical application in real life.

Extreme points of view on the definition of science:

- 1) science is an ordered system of knowledge;
- 2) science is a specific method of cognition, science is the method by which doubt is cast out and stable ideas are achieved;
- 3) science is an embodied mathematics = absolutization of mathematics.

2 polar points of view on the importance of science for the mankind:

1. Scientism (from the Latin "scientia" "knowledge", "science"): science can do everything and is an absolute blessing for humanity. The methods of mastering reality that have not received scientific status, in particular, all kinds of arts, as well as personal, emotional and evaluative ways of cognition are subjective by their nature, therefore they are not able to bring anything that is ever useful for understanding the world.

2. Anti-scientism: science is accused of all the troubles of mankind, considered as an absolute evil. One-sidedness of this approach is due to the inability to distinguish scientific knowledge from imperfect, erroneous or even criminal use of its results. The achievements of scientific and technological progress are axiologically (valuably) neutral, and therefore people are responsible for the

consequences of the practical use of various results of knowledge, because they possess the spiritual freedom, they personally make a free choice of possible moral and immoral alternatives.

Science has a complex of its special fundamental aspects which allow us to distinguish science from all the others spheres of human cognitive activity.

Fundamental aspects of Science:

1. *ontological aspects* – the ideas about the picture of the world, the types of material systems, the nature of their determinations, the forms of the motion of matter, the general laws of the functioning and development of material objects adopted in one or another science;

2. *epistemological aspects* – provisions on the nature of the scientific process of cognition, the relationship of the rational and sensory levels of cognition, the status of theoretical concepts;

3. *logical aspects* – the accepted rules of abstraction, the formation of output and derived concepts and statements, rules of inference;

4. *methodological aspects* – provisions of the methods of discovering and obtaining real knowledge, ways of proving and substantiating the individual components of theory and theories;

5. *value or axiological aspects* – accepted statements about the practical and theoretical significance of science as a whole phenomenon or as a number of individual sciences, the aims of science, scientific progress, its links with social progress, the ethical aspects of science.

Key features of science that distinguish it from all other forms of knowledge:

1. The desire to know the objective world.

Alternative point of views.

G. Rickert: "Cognition is not a reflection, but a transformation, and always is a simplification of reality." With this simplification, the main role is played by the teleological question: "For what? For what purpose?"

Neopositivism and the question of the scientific language.
R. Carnap: "To accept the world of things means only accepting a certain form of language. The adoption of a material language leads to the acceptance and confirmation of certain assumptions and to belief in them. But the thesis about the reality of the world of things cannot be among these assumptions, because it cannot be formulated in a material language and, apparently, in no other theoretical language. A sentence claiming to affirm the reality of a system of objects is a pseudo-affirmation that is devoid of cognitive content. Adoption of any language framework should not be seen as implying any metaphysical doctrine concerning the reality of the objects under consideration."

2. Revealing the essential, most important aspects of all phenomena of nature, society, thinking – "production" and discovery of objective laws, according to which material phenomena operate.

B.M. Kedrov: "While the relevant laws are not discovered, we can only describe phenomena, collect and systematize facts, accumulate empirical material. But this is not science, in any case, not a real, developed, formed science: it cannot explain anything and cannot predict anything. " The legitimacy in science is a more or less exact coincidence of the conclusions of science and the essential, necessary links of reality. This is not just a formal logic, but a reflection of objective reality.

3. Creation of a single logically harmonious system of knowledge about different sides of the surrounding world = *science is a knowledge which is brought into the system*. Moreover, this systemic character is a characteristic of the object itself = in its structure science only reflects the patterns that are observed in a real object. Such systematization is an adequate reflection, reproduction of the structure of the object in the structure of scientific knowledge about it. + Thanks to systematization, science acquires the form that is the most appropriate to its public tasks – the preservation and consolidation of

knowledge, their transfer from one person to another, their using in practice.

4. The possibility of prediction: on the basis of the allocated regularities and the systemic nature of the construction of science, the ability to predict the consequences of human activity, the tool for decision-making becomes possible.

G.V. Plekhanov: "*The future can be predicted by the one who understood the past.*" + the principle of the Cartesian method of the "fishing net", which allows to fill all the "white spots" in the unknown objects. This is a general pattern that extends to the logical series of objects and phenomena that we will be able to observe in the future (the principle of function).

5. The active search character of science: since science is a reflection of the objective world, and the latter is in a state of constant change and development, it, naturally, must also constantly move forward, find new solutions and results. This does not abolish the old gains of science, but complements them, contributes to the creation of more detailed and integral theories. Any science exists not in a static state, but in a dynamic state, in the process of constant development and improvement of knowledge (the analogy is like the Sagrada Familia of Antonio Gaudi. "There is no reason to regret that I cannot finish the temple, I will grow old, but others will come after me." The spirit of work must remain, but its life depends on the generations to which it is transferred and with whose life it is connected").

6. Science tells people how to do what they want to do.

The division of science into "pure" – which operate with theories, explore methodology and are necessary for new discoveries – and "applied" – which are applicable in specific areas of knowledge – is very conditional.

B. Russell: "Pure sciences influence our way of thinking deeply, applied sciences influence our way of life ... These two branches of science are different in many respects and require different thinking abilities for their development".

This distinction is conditional, because "pure" sciences are simply more remote from the direct application of their results in practice, since they are engaged in the search and discovery of new regularities (theoretical physics, theoretical chemistry, etc.). Applied sciences are more closely associated with production, since they have the development of technic as their goal and finding the most rational and the most economically profitable ways of introducing the discoveries of "theoretical" science as their main aim = *all the achievements of applied science are based on theoretical science.*

Specificity of scientific knowledge. It is...

1. clearly expressed, shows the purposefulness of the cognitive process: from the very beginning the scientist has an idea of what exactly he or she is going to study and for what purpose he or she is going to study something.

2. planned: is carried out according to a certain plan;

3. systematic, with high level of organization;

4. armed with certain methods and tools of cognition.

All these features of scientific knowledge are inherent in other types of human cognition, but only in scientific knowledge they do exist all and in the most concentrated form.

Therefore, scientific cognition is the special kind of cognition which is the most purposeful, systematically organized and armed with special methods cognition of the human. The social role of science is very important and multifaceted: it is connected both with the progress of the productive forces of society, and with the spiritual culture of mankind, with the sphere of education and upbringing of future generations. In other words, the achievements of science depend not only on the level of production of material goods, but also on the development of the human and the main humanistic principles.