S.SEIFULLIN KAZAKH AGRO TECHNICAL UNIVERSITY

DEPARTMENT OF PHILOSOPHY
(2708)

History and Philosophy of Science

Lecturer: Ainur Abdina - Doctor of philosophical sciences,
Associate Professor of Department of Philosophy

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Theme 6. Basic concepts and directions of the non-classical and post-nonclassical stage of history and philosophy of science

- **The purpose of the lecture:** a critical analysis of the basic concepts of non-classical stage of scientific development

Plan:

1. Epistemology of neo Kantianism: Baden and Marburg schools.
2. The positivist tradition in the philosophy of science.

Basic concepts:

- The epistemology of neo Kantianism
- Social and humanitarian knowledge
- Positivism
- Verification principle
- Principle of falsification
- The paradigm

Epistemology of neo Kantianism: Baden and Marburg schools

- Kantianism - direction of the German philosophy of the second half of XIX - early XX centuries. The central slogan of the neo-Kantians was "Back to Kant!" Was formulated by Otto Liebmann in "Kant and imitators" (1865) in a crisis of philosophy and fashion of materialism.

Epistemology of neo Kantianism: Baden and Marburg schools

- The neo-Kantianism distinguish Baden school (Freiburg, south-west), to focus on issues of values and methodology of the humanities, and Marburg school, primarily engaged in logical and methodological issues of the natural sciences.

Epistemology of neo Kantianism: Baden and Marburg schools

- Baden school of neo-Kantianism is associated with the names of Wilhelm Windelband (1948-1915) and Rickert (1863-1939), which developed mainly issues related to the methodology of the humanities.

Epistemology of neo Kantianism: Baden and Marburg schools

- The famous neo-Kantian Marburg school, which for decades has become a center of attraction for philosophers of different countries, created by Professor Hermann Cohen of the University of Marburg.

Epistemology of neo Kantianism: Baden and Marburg schools

- The key thesis of the Marburg school was that all of the latest discoveries in science and the nature of modern research activities are irrefutable evidence of an active constructive role of the human mind in all spheres of life. Mind, which is endowed with a man does not reflect the world, but, on the contrary, creates it.

Positivism

- Auguste Comte first described the epistemological perspective of positivism in The Course in Positive Philosophy, a series of texts published between 1830 and 1842. These texts were followed by the 1844 work, A General View of Positivism (published in French 1848, English in 1865).

Positivism

- Comte's stages were (1) the theological, (2) the metaphysical, and (3) the positive. The theological phase of man was based on whole-hearted belief in all things with reference to God. Comte describes the metaphysical phase of humanity as the time since the Enlightenment, a time steeped in logical rationalism, to the time right after the French Revolution. The final stage of the trilogy of Comte's universal law is the scientific, or positive, stage. The central idea of this phase is that individual rights are more important than the rule of any one person.

Postpositivism

- The main problem in the post-positivism - an explanation of the development of science, the study of logic and the growth of scientific knowledge. Its representatives are interested, first of all, the following questions: How does a new theory of how it is stated in the new community, what are the criteria for selection of competing scientific theories, etc.

- 1) postpositivists analyze the history of science (logical reconstruction of the history of science), there is a desire to find the universe - the foundation of the human mind through the history of science;
- 2) within the framework of post-positivism raises the question - what are the main factors of the development of science: internal or external?
- 3) postpositivists analyzes the dynamics rather than static science. If neopositivists raised the question of how to distinguish between philosophy and science, the postpositivists interested in the question of the real movement of science, what factors affect the science.

Karl Raimund Popper

- the founder of post-positivism.

Famous work "The Logic of Scientific Discovery."

The basic concepts of his conception of scientific knowledge are the following:

- problem of demarcation;
- principle of falsification;
- principle of fallibilism;
- theory of "three worlds".

Karl Raimund Popper

- The problem of demarcation - one of the main tasks of philosophy is to separate scientific knowledge from unscientific. Method of demarcation, Popper, is the principle of falsification.
- This principle requires falsifiability principle (falsifiability) any claim attributable to science.

Karl Raimund Popper

- Fallibilism principle asserts that any scientific knowledge is only hypothetical and error-prone. The growth of scientific knowledge, Popper is a nomination bold hypotheses and implementing their refutation.

Karl Raimund Popper

- The theory of "three worlds" - the theory of the philosophical concept of Karl Popper, asserting the existence of the first world - the world of objects, the second world - the world of subjects and the third world - the world of objective knowledge that is generated by the first and second worlds, but exists independently of them. Analysis of the growth and development of knowledge in this independent third world and is, according to Popper, the subject of the philosophy of science.

Thomas Kuhn

- Author of the famous book "The Structure of Scientific Revolutions."
- The most important concept of Kuhn's conception is the notion of paradigm.
- Paradigm is a set of scientific achievements recognized by the entire scientific community in a certain period of time.

Thomas Kuhn

- ***The scientific community*** - a group of people united by the belief in one paradigm. Become a member of the scientific community can only accept and internalize its paradigm.
- Science, developing within the framework of the modern paradigm, Kuhn calls ***"normal"***, believing that it is a state of science in the usual and most characteristic.

Thomas Kuhn

- To emphasize the special nature of the problems, developed by scientists at the normal period of the development of science, Kuhn calls them ***"puzzles".*** Until the puzzle-solving is successful, the paradigm serves as a reliable tool for learning.

Thomas Kuhn

- Some problems of puzzle, despite the best efforts of scientists, and not amenable to solution.
- If the means of the existing paradigm of the problem can not be solved, Kuhn calls this problem ***an anomaly***.
- When anomalies becomes very much there is ***a crisis in science***.

Thomas Kuhn

- Scientists are beginning to formulate hypotheses, claiming to be the new paradigm.
- During the crisis is over when one of the proposed hypotheses has proved its ability to cope with the existing problems. There is a change paradigm, which Kuhn calls and the ***scientific revolution***.