

The structure of scientific knowledge includes 3 levels: empirical, theoretical and metatheoretical. Finally since the 60-s of the 20th century science goes into the third stage of its historical evolution, getting more new features of new post non-classical (modern) science. It includes: -- the philosophical method of defining the most general regularities of study (dialectical, metaphysical, analytical, phenomenological); -- general scientific approaches and methods of scientific knowledge, the use of which is characteristic for a number of branches of scientific knowledge (axiomatic, deductive methods, experiment, description); -- private scientific methods the use of which does not extend beyond the individual disciplines (quantitative analysis in chemistry, spectral analysis in physics, etc.) The main stages in the development of science are: classical, non-classical and post non-classical. Classical science from XVII – until XIXth – early XXth century is associated with the names of Galileo, Newton, Leibniz, Descartes. On the theoretical level they use such methods as idealization, a landmark modeling formalization, the method of thought experiment, the axiomatic method, the hypothetico-deductive method, a method of mathematical hypothesis, a method of computer simulation, a method from abstract to concrete, etc. Scientific theory is an organic holistic consistent system of knowledge, revealing the essential features and regular connections of some sphere of objects, on the basis of which the explanation and prediction of phenomena is achieved. The scientific world view is formed as a result of the synthesis of the knowledge obtained in various sciences and contains general views of the world, produced on various stages of the historical development of scientific knowledge. The historical foundations of science constitute the fundamental ideas and principles, ideals and standards of research and ontological postulates of scientific world picture, ensuring the inclusion of scientific knowledge in the culture. General logical methods are: generalization, abstraction, modeling, analogy, induction, deduction, analysis and synthesis. Hypothesis is a scientific expectation about significant characteristics and necessary connections of studied phenomena and processes. The empirical study tries to identify and fix relatively shallow external relations and characteristics of the studied objects. The empirical study describes an object, organizes the information gathered about it, but the main task of theoretical cognition is to explain the phenomena. The scientific method is a system of regulatory principles and methods by which the objective knowledge of reality is achieved, and new knowledge is generated. The transition from classical to non-classical science was linked with the need to develop a new type of scientific rationality and in this sense the transition involved the commission of global scientific revolution. Solving the tasks on these levels scientists refer to various methods of research. In this period there is a revolution in the character of scientific activity, associated with radical changes in the means and methods of production, storage, transmission and evaluation of scientific knowledge. Scientific fact is the identification of a certain variant of set of observations or experimental procedures. The methodology of science is a theory of scientific knowledge, which studies the cognitive processes, taking place in science, forms and methods of scientific knowledge. Subject knowledge is no longer treated as an absolutely objective reality, but as an aspect defined through the prism of the forms, methods and means of research used in the process of scientific knowledge. The methods of the empirical level of scientific knowledge include comparison, measurement, observation, experimental description. In the second half of the XX century the problem of the foundations and assumptions of scientific knowledge

was actively discussed. They developed the mechanical picture of the world, which was based on classical mechanics of Newton as the first scientific theory. Theoretical cognition studies internal relations and laws. The results obtained in the course of empirical and theoretical research differ. In the second -- the scientific theories which are the highest achievement of theoretical research. The special level of scientific knowledge appeared which is called metatheoretical foundations of science. The essence of the revolution was that the subject of cognition integrated into the . In non-classical science the relations between the object and the means of knowing it are necessary for the true description of studied reality. In the first case these are the scientific facts, empirical generalizations and laws. In other words in classical science the reality is understood as an objective reality, it doesn't depend on the subject. Non-classical period lasted for about two thirds of the 20th century.