WHAT IS THE DIFFERENCE BETWEEN THEORY AND PRACTICE OF PHYSICAL EXPERIMENT?

Each content line of a scientific theory is related to research and experimental work in at least three ways:

- ✓ verification of the existing theoretical facts under the real-existing reality, which is realized through the involvement of research tools (observation, measurement, and processing of results);
- ✓ involvement in the process of planning and further interpretation of data obtained in the process of observations, measurements, or experiments;
- ✓ application of available theoretical potential for practical purposes in such a way as to achieve certain changes regarding the previous state.

To reveal the historiosophical depth of the above trio, it is necessary to reflect the significance of the first two cases through the prism of general methodological provisions, without resorting to the technical details of statistical conclusions and experimental ideas of the average researcher.

Since the above task will be based on the content of historiosophical determinants, we will proceed to outline the internal connections of theory and experience, without rejecting the advantages of one of these poles.

From a practical point of view, the verification of scientific theory is a rather complex and time-consuming process. There are the following distinguished stages, which involve the involvement with the working "canvas" of the theory, which:

- is subject to a preliminary, non-epic check for compatibility with the established knowledge construct;

- supplemented by the involvement of aids that allow the implementation of the tasks of theoretical modeling and hypothesis construction on the expected, as well as unobserved objects of study;

- by involving additional theoretical "details" of formalized content, produces the need to search for new data and their subsequent comparison with the outline of prognostic material. Under such conditions, it is possible to conduct evaluation activities at the level of available activity steps, thereby producing knowledge of the features of the surrounding world.

At the scientific level, the objective need to find levels of correspondence of the formulated facts to the real ones is not only a guarantee of scientific success but also a prerequisite for "true" formulation of concepts of scientific theory, reproduced by data, as well as their codification with available lines of weak modifications and extrapolations.

Given such a range of activity variations, we can conclude that our theoretical prediction can directly "come into conflict" with fragmentary empirical facts. In this case, the representatives of prominent scientific circles are sure to accuse the unreliability and inadmissibility of the theory itself, and without the right to unsubstantiated appellate steps, as under such conditions, the only experience is the highest instance. The latter factuality is not justified today from both methodological and historiosophical points of view, which is proved by the list of the following facts. First, at the level of general physical practice, as a rule, facts that come into conflict with established theories are immediately rejected and do not fall under reflection.

Second, the pure facts themselves reliable data, as they are produced and interpreted by drawing on the scientific potential of existing theories.

Third, the vast majority of theories do not concern observations and measurements (not to mention in this case the facts of perception) of idealized models, but primarily real objects, which explains the proximity to real existence.

Fourth, hypothetical assumptions that can be tested often mostly crystallize theoretically at the level of the conjunction of theory and additional predictions, as well as a volumetric block of informative data that differ from each other and serve as an informal “equivalent” for testing the proposed theory.