

The validity of the scientific declaration in experimental social research

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Abstract

This paper has far-reaching consequences, opening up prospects for analyzing the debate about the so-called polyparadigm approach in experimental social research, as well as the conditions for its possibility. It is the multifaceted topic of empirical research that will be the subject of our consideration in subsequent publications. In this paper we find the reliability of the conclusion in experimental social research is related to the typical conditions of scientific production. Only by adhering to the heuristic rules of the corresponding form is it possible to obtain reasonable, correct and accurate knowledge.

Keywords: *experimental, model, research, approaches, possibility, measurement, criterion.*

Introduction:

Most of the authors who work in the field of philosophy and the methodology of science consider that the defining feature of scientific research is its focus on obtaining new real knowledge. This in particular, was taken by P.V. Cupinin [1]. At the level of the analysis of the general cognitive characteristics of scientific research, it is difficult to disagree with this conclusion, but it is insufficient from a methodological point of view. This is due to several reasons: first, the category of truth itself is very abstract, which makes it possible to consider the topic of scientific research only from the perspective of epistemology. Secondly, after a critique of the compatibility theory of truth, which had occupied a dominant position in philosophy since Aristotle's time, this concept lost its uniqueness. Then it turned out that criticism was so strong that today it is absolutely difficult to use the concept of truth without reference to the corresponding concept. This position does not at all mean that the notion of truth should be reduced from systematic discourse. On the contrary, the functioning of the science system itself can only revolve around this category. N. Le Mans very skillfully this point, considering truth as the basic symbol of a particular social system [11], which makes it possible to form a dictionary of science.

The genesis of the social history of science:

In the late 1970s and early 1980s, a new direction arose in the foreign historiography of general history — social history. It was a turn in civic history towards social processes and social structures in historical explanation, a turn that took place in different countries in different ways, with different intensities and, moreover, with diverse research programs. What kind of signs can be recorded as decisive for fixing this kind of rotation? Hasn't civil history revealed various social structures and social processes? What are the features of this turn, which led to the formation of a specific historiographic trend - social history, which then penetrated into other areas of sociocultural life, including the analysis of science and scientific knowledge? What factors influenced the formation of social history as a new historiographic trend with its own specific methodology and identified specific areas of research?

Among the indications that make it possible to speak of social history as a specific historical trend in civil history, one should first of all refer to the cognitive and social institutionalization of this trend. If we recall the characteristics of the cognitive and social institutionalization identified in the sociology of English science: research methodology and methods, the research program, the existence of a model of the thing investigated. Social institutionalization is related to cooperation and division of work within the research group, regularity of communications within the group, the existence of agreement between researchers, the emergence and maintenance of formal structures (associations, societies, and journals) responsible for expanding social resources and recruiting new members [1]. If we consider from this point of view the formation and functioning of social history as a historical trend, it is not difficult to record the existence of mechanisms for the cognitive and social institutionalization of this trend. After all, there are new problematic situations that have become the subject of research by research groups that have consensus about programs, methods and research methods. Moreover, it is not difficult to record the emergence of social institutionalization mechanisms for historians who have adopted a program of social history - in the United

States since 1967, the Journal of Social History was published. In Great Britain since 1976 the magazine "Social History". In addition, National Societies of Social Historians were established in both European countries and the United States. The annual meetings of professionals in the field of social history have met several times. Therefore, we are witnessing the formation of a new historical program of the international scientific community of historians - a program of social history. In order to speak about this with such confidence, one must pay attention not only to the realities of the social institutionalization of civil historians specializing in the field of social history, but also to those problematic situations that led to this trend and the methodological advantages associated with it.

Social and sociological research

In modern science, both social and sociological studies of various problems are widely used. The similar sound of these two terms is the source of their identification, however, the essence of the concepts "social research" and "sociological research" is different and requires clarification.

Empirical studies as the so-called "social facts", which include population density, group perceptions, characteristics of mass behavior, etc., should be considered social. So, for example, lawyers study crime problems, historians - social problems of historical reality, teachers - family social problems, etc. In social research, social facts are not explained by social facts.

Social studies are those that give rise to "social facts" - summarized numerical properties obtained during specially organized mass observation of social phenomena.

There are many differences between social research and sociology, including:

- 1- The concept of "social research" does not reflect the specific science behind it, but "social research" reflects - this is sociology. The concept of "social research" is broader, Instead of the concept of "social research".
2. Social research is defined by topic.
Topic, method of sociology, sociological research - no.
3. Social research has a specific method, while social research is not.
4. Social research is a method of perception within the disciplines, and social research is one of the disciplines.
5. Social research covers any social problems in society, even those that do not necessarily belong to sociology, and social research - a narrow group of problems raised by the subject of sociology.
6. Social research (opinion polls) is conducted by lawyers, doctors, economists, journalists, and personnel officers. Social research is carried out only by professionals. Its defining feature is solidarity

Theory and method.

7. The source of social research is scientific literature, vocational training, social-popular literature and everyday experience (private life experience or the experience of this section).
 8. Social research reflects a broad, narrow, specialized sociological view of society.
- There are several types of social research, including: experience (other names are research, survey), descriptive, analytical, continuous, selective, field, operational, etc.

Theories of truth in experimental science

One of the most popular theories of truth in experimental science today is the practical concept. The pragmatists were among the first to distinguish between the notion of epistemic truth and pragmatism, considering the former only as an ideal goal of science. It only sets the general direction of scientific research, but it is fundamentally out of reach for the world. This is a kind of "thing in itself", which is "something for us" exclusively in the form of a factual reality, that is, such knowledge, whose use gives the most reliable and useful results. Moreover, only that knowledge which we "can confirm, consolidate or verify" can be true [14]. Thus, the other aspect of utility as a criterion of truth is the reliability of knowledge. Invalid knowledge cannot lead to beneficial results. This type of conclusion has great theoretical importance for the methodology of scientific research, as it allows researchers to shift the focus of researchers' attention from the concept of truth to the topic of reliability in scientific research.

Most researchers consider the concept of reliability as a feature of knowledge "as well-founded, evidence-based, indisputable, and synonymous with the truth" [12]. From a formal point of view, one can agree with this definition of reliability, but its exploration potential remains highly doubtful. Analyzing the concept of reliability as synonymous with truth introduces additional difficulties in systematic research processes, allowing clarification of

some of the problems of experimental research methodology. That is why the purpose of this paper is to clarify the concept of reliability not formally, but in its epistemological understanding.

It is necessary to define the relationship between the concepts of reliability and probability. In this sense, one can agree with P.V. Cupin. He states that "Reliability and probability are two polar categories, and the difference between them is absolute and relative" [7]. Probability refers to a measure of the possibility of realizing an event or phenomenon, which we do not have sufficient reasons to unambiguously affirm the need for its realization. The conclusions of probabilistic judgments always take a logical meaning, in the language of multi-valued logic, "to infinity". At the same time, certainty implies the extreme necessity of an event. That is, the prerequisites for reliable data allow a person to draw conclusions, the logical value of which is 1.

Knowledge Reliability:

In relation to the reliability properties of knowledge, likelihood and reliability are completely opposing categories. However, their opposition does not mean at all an irresistible abyss, just as it does in the relationship between the categories of truth and falsehood. In the process of enhancing probabilistic knowledge with data that increases the chances of unambiguous conclusions, the degree of probability can change. It must be said that the measure of probability is located on a scale from 0 to 1, where zero indicates the non-likelihood of an event, and 1 - its reliability.

This means that probability can be turned into certainty. The more correct, accurate and complete knowledge about the research topic, the closer the probability score to 1. That is, reliable knowledge can only be obtained if correct methods are used and errors that cause data distortion are eliminated during the implementation of the study. The error value here and during additional rendering, as considered by B.Z. Doktorov is "the difference between the value of the variable obtained during the measurement and its true value" [4].

It should be noted that the researcher will never be able to achieve the absolute level of errors, that is, it is fundamentally impossible to realize the non-probability of their occurrence in the research process. This circumstance is ideal only for social research, related to the object's context, as well as to its dynamic nature [8]. Problems of this kind also occur in the natural sciences. The characteristics of the instrument as well as the personality of the researcher himself, to a greater or lesser degree, distort the measurement results and their complete reduction cannot be achieved. We can only strive through continuous improvement of research methodology to reduce errors to the point that their impact on the outcome will be as close as possible to zero. But even such a minimal error cannot allow us to be convinced of the reliability of the result, systematically demanding that it be revised and rounded to 1. In the process of the transition of probability to reliability, we risk falling into the baldman paradox, known since the time of the ancient Greeks. In order to specifically avoid the ad infinitum movement, it is necessary to conceal the error as a cause of suspicion, that is, to include it in the general strategy of carrying out the search. First of all, it is necessary to carry out a classification of measurement errors, which will clarify how to neutralize them in the process of sociological research. Using metrological terms, B.Z. Doctors distinguish systematic and random errors, and one of the distinguishing features of the first is that they "remain constant or change regularly with repeated measurements" [4], while random errors are distinguished by their diversity in multiple measurements of the same quantity. The topic of classification of methodological errors requires special attention, and therefore we will overlook it with our interest in this paper, as we are planning to devote separate research to this issue. However, we note in this paper that we will adhere to the classification of systematic errors suggested by A.N. Zaidl, who identifies several groups of errors: errors of which nature are known and can be quantified; Errors of known source, but the size of which is unknown; Errors resulting from the properties of the scaled object itself [5]. The meeting expert must take these methodological errors into account in the early stages of the research in order to avoid their negative impact on the entire course of the research project. However, neutralizing the bias in this way does not mean that it is arbitrary. We can say, using L's dictionary. Wittgenstein argued that this is only possible within a specific linguistic game, which is an essential part of forming and operating the corresponding scientific paradigm. Only in this way, and in an objective way, is it possible to lay down the conditions for the possibility of reliability, because we "do not know what we must understand, until we establish ourselves what should be understood as such" [3] In this respect, the method for overcoming the error is not an infinite number of measurements aimed at achieving its non-probability, but rather carrying out research according to mutually established rules. That is, the presence of systematic errors correlates with the validity of the measurements, which are typical in nature.

The model:

Speaking of the model, we must give some clarification, because in scientific use this concept remains far from ambiguous even today. The term has gained great scientific popularity, modeling via theory and disciplinary matrix [9]. By following T. Kuhn's logic, any general social theory can claim a state of form. Such a broad understanding of the paradigm makes this concept somewhat unstable in systematic discourse, giving rise to all kinds of disagreements, and therefore requiring great clarification.

A more accurate understanding of the paradigm is presented by I. Lakatos, considering it to be a set of some theories, unified by the rules for carrying out scientific research. It is they who determine the permissible and prohibited steps in their implementation process. In the concept of research programs, these rules are classified as positive and negative inference [10]. That is, the rules for implementing scientific research are essential for integrating theories into a single model. They established the general logic of carrying out research as a means of moving from probabilistic knowledge to reliable knowledge. In this regard, the model not only defines a set of methods by which elementary information can be obtained, but also methods for processing and organizing it. Based on this kind of scheme to understand the model, we can say that within the framework of experimental sociology, two research programs were developed, and the intense competition between them lasted for nearly a hundred years. We are talking about quantitative and qualitative methods in social research. It should be noted that the debate around it is rooted in the conceptual disagreements between the representatives of positivism and the neo-Kantianism over the methodological problems of social inquiry. As M. Baumgarten correctly noted, they are associated with opposite approaches to understanding the ontology of social reality [13]. At the time considered by the authors as a positivist. From an objective perspective, scholars belonging to the hermeneutical tradition analyze the social perspective through the perspective of constructivism. Thus, from here we see that the issue of social ontology is that ecological background of scientific production, which is the basis for the formation of two models of experimental social research. The set of methods, as well as the empirical rules inherent in each of them, do not appear ex nihilo on the basis of arbitrary scholarly conventions pertaining to the research program, but are strictly based on existential assumptions that legitimize such conventions as being meaningful. In this respect, opposition to paradigms is not a pragmatic struggle for symbolic hegemony in the field of science, but a struggle of values that underlie the architecture of one or another version of the method of scientific production.

Analyzing the concepts of systematic and random errors

Indeed, the research program, within the framework of which the research is being conducted, predicts possible false errors that prevent the acquisition of reliable knowledge, and identifies methods for their neutralization. This means that obtaining reliable knowledge is possible only if the standard rules of the research program are followed. In the literature, these rules are distinguished in terms of search strategy. The strategy is specific to this research program only, and it indicates the permissible and prohibited steps in implementing the research, and it is implemented by all scholars who are part of it, thus providing consensus on the conditions for the possibility of reliable knowledge. This is a very important point, because in addition to methodological errors affecting the reliability of knowledge, there are also random errors. They should also be removed, and in this regard another criterion for approaching probability to certainty is the acquisition of some constants of knowledge. This is the functional dimension of trust. Such a variable must be obtained as a result of a series of measurements. Its defining feature is repeat knowledge, and this is only possible if the research is conducted using the same strategy. After all, it is possible to fix the recurrence of a particular phenomenon only by comparison, that is, when we have sufficient reasons to compare the results of different studies, reveal their common and distinct features. This is possible when the research was aimed at solving the same problem and was conducted using identical methods of gathering primary information, as well as methods of additional processing and generalization of the primary data obtained. In fact, even formulating a problem based on a conflict condition associated with these rules makes the work of the research program possible, allowing the latter to avoid distractions. It is the repetition of the phenomenon found in previous studies that allows us to talk about a high probability of its occurrence in the future. Also, the receipt of a consistent result by several researchers who independently solved the same scientific problems using identical methods and rules for carrying out the research means that the probability of this knowledge is so close to 1 that we can distinguish it in terms of reliability. We have reason to say that the potential random errors of measurements were so insignificant to the point of it was unable to influence the final outcome of the research project. After all, there is a very small fraction of the possibility that scientists, conducting independently of one another being identical in strategy and topic of research, have made the same random mistakes.

After analyzing the concepts of systematic and random errors, as well as general principles for their elimination, we can agree with E. Borel, who believes that reliability occurs when it is possible to establish the "minimum probability of the opposite statement" [1] that is, the case in which reliability is Equal to one, it is an ideal state, this is formal reliability, which in practice is impossible to achieve in principle. It performs an organizational function in research. Cognitive reliability such a high level means bringing knowledge closer to unity so that its tolerance can be neglected. However, the achievement of cognitive reliability is related to the implementation of the search strategy, which is characterized by the corresponding research program. Notice to. Wittgenstein deftly presented this circumstance, saying that "confidence in the essence of the language game" [2], could not be achieved outside of the latter. The game of language, on the one hand, creates conditions for neutralizing systematic errors thanks to the rules that define positive and negative inference, and on the other hand, allows dealing with random errors by finding a constant of knowledge that can be obtained in the context of a series that is identical in strategy but independent in research.

Speaking of cognitive reliability, we are dealing with an approximation of probability to reliability. That is, reliability does not fundamentally exclude the possibility, which means that it can be falsified. In this respect, the systematic confirmation of knowledge increases the chances of its validity. However, the confirmation procedure has to be implemented within a specific model of experimental research. It is impossible to talk about reliability outside of the context of likelihood terms, because on the other side of the language game we can only speak of probabilities that are at a greater or lesser distance from the unit.

Results:

From here we see that the reliability of the conclusion in experimental social research is related to the typical conditions of scientific production. Only by adhering to the heuristic rules of the corresponding form is it possible to obtain reasonable, correct and accurate knowledge. Ignoring the paradigmatic context of research, and the chaotic combination of individual elements of scholarly research inherent in the various research programs, not only broaden the completeness of knowledge about the research topic, but also endanger authenticity.

The conclusion:

This conclusion has far-reaching consequences, opening up prospects for analyzing the debate about the so-called polyparadigm approach in experimental social research, as well as the conditions for its possibility. It is the multifaceted topic of empirical research that will be the subject of our consideration in subsequent publications.

References:

- [1] Borel E. Probability and reliability / E. Borel; per. with fr. I. B. Pogrebissky. - M.: Nauka, 1969. -- 110 p.
- [2] Doctors B.Z. On the reliability of measurement in sociological research / B.Z. Doktorov. - L.: Nauka, 1979. -- 127 p.
- [3] Zaidel A. N. Errors in measurements of physical quantities / A. N. Zaidel. - L.: Nauka, 1974. -- 108 p.
- [4] Kopnin P.V. Introduction to Marxist epistemology / P.V. Kopnin // Gnosological and logical foundations of science. - M.: Mysl, 1974. -- S. 9-280.
- [5] .Kopnin P.V. The transition from probable knowledge to reliable / P.V. Kopnin // Logic of scientific research. - M.: Nauka, 1965. -- S. 177-197.
- [6] Kun T. Structure of scientific revolutions / T. Kuhn; per. from English. OF. Naletova. - M.: Progress, 1977. -- 300 p.
- [7] Lakatos I. Falsification and methodology of research programs / I. Lakatos; per. from English. VN Porusa // Selected works on philosophy and methodology of science. - M.: Academic project; Tricksta, 2008. -- S. 281-463.
- [8] Luhman N. Incredibility of communication / N. Luhman; per. with him. A.M. Lozhenitsin, ed. N. A. Golovina // Problems of theoretical sociology. - 2000. - No. 3. - S. 43-54.
- [9] Philosophical Encyclopedic Dictionary. - M.: Soviet Encyclopedia, 1983. -- 840 p.
- [10] Baumgarten M. Paradigm Wars - Validity and Reliability in Qualitative Research / M. Baumgarten. - M.: GRIN Verlag, 2013. - 52 p.
- [11] James W. The Meaning of Truth / W. James. - H.: Harward University Press, 1975. -- 328 p.
- [12] Munoz, C. & Tower, T (2009) . Opening Facebook. How to use Facebook in the college classroom. presentation prepared for the social for information Technology and Education conference, Charleston , S.C

- [13] Akyld,M& ,Argan . M (2010) using online social networking: student purposes of Facebook usage at the University of Turkey. Journal of Technology Research.
- [14] Available social Networking Demographic hanges-2007 vs. 2010.
- [15] Safwan Al Salaimenh, // Quality Assurance of Logistics Information System. American Journal of Scientific Research (AJSR)./ Issue 1, Jan, pp 34-36. UK.
- [16] Safwan Al Salaimenh, Amer Abu Zaher // Developing Enterprise system with CORBA and JAVA integrated Technologies, Journal annals computer Science Series, Vol 9. No1, 2011. Romania.
- [17] Safwan AlSalaimenh, KhaldounAlbesuol, Khaled Batiha, Combined method of routing multimedia data in computer networks, International Journal of Advanced Research in Computer Science, vol.2, No.5, sep. – oct., 2011, India.