ABOUT ONTOLOGY, ABSOLUTENESS-RELATIVITY OF SCIENTIFIC COGNITION AND THE UNIFIED METHOD SUBSTANTIATION OF SCIENTIFIC THEORIES

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ABSTRACT

The problem of ontology is inextricably linked with the problem of absoluteness-relativity of scientific knowledge. The article shows the erroneousness of the solution of these problems both in the classical rationalism of Descartes, Pascal, Bacon, Newton, which absolutized scientific knowledge, and in the post-positivism of Quine, Kuhn, Feyerabend, Popper, Lakatos that replaced it, which excessively relativized it. The article proposes a solution to these problems based on the unified method of substantiation of scientific theories developed by the author. When replacing one theory substantiated by a unified method of substantiation with another (Newton - Einstein), although contrary to classical rationalism, the definitions of concepts (that means ontology) and formulas change, but contrary to post-positivists, both theories guarantee the truth of their predictions with a given accuracy and probability in the area of action of each of these theories. Only these areas do not coincide. (The area of action of the theory of relativity is larger than the area of Newton's mechanics and includes it).

KEYWORDS

ontology, concept, theory, truth, cognition

1. INTRODUCTION

Today it's fashionable to talk about ontology and everyone is eager to get to the ontological essence of anything. At the same time, the essence of the term "ontology" itself remains rather vague, which is why conversations about it are not very constructive. This happens because the problem of ontology cannot be solved without resolving the problem of the absoluteness or relativity of scientific knowledge, that means without answering the following questions: Does difference between science and non-science exist in principle and if it does, what is it? Does science possess an unchangeable method of substantiation of its theories and conclusions, and if it does, what is it? To which degree can we rely on scientific knowledge? What is the origin of our concepts and are they connected with experience or are they epistemological substances, connected with experience not more than gods of Homer? If they are connected, what kind of connection is it, taking into account, that science as a rule changes its concepts and conclusions, passing by one scientific paradigm to another (space and time absolute in the Newton's mechanics, and relative in the Einstein's one and so on)?

This kind of questions is placed in center of attention of philosophy for so long as science exists and discussions on this subject doesn't quite down, but grow up corresponding to influence of

science on life of the mankind. It's possible to divide all the philosophers dealing with this subject in two categories: absolutists(classical rationalism) and relativists (post-positivism, ontological relativism and others). Naturally, various philosophers are absolutists or relativists of science to different degree, in different aspects and with different arguments.

2. CLASSICAL RATIONALISM

As a scheme positions of absolutists can be expressed as a following: science absolutely reflects reality and does not change either its ideas (concepts) and beliefs, or substantiation of these beliefs. And that can separate science from non-science and gives science its special epistemological status. More exactly, science up today has been changing its concepts, beliefs and substantiation of them, but after it will have adopted the method of this philosopher, it will change neither concepts, nor conclusions, nor substantiation. Many methods were offered, but basically they were attempting to find out an absolute beginning of cognition and knowledge. Descartes, Kant, Fichte, Husserl and others tried to find absolutely reliable percepts. Each of them had his own receipt, how to convert subjective percept of people to absolutely reliable one. (For example, Kant offered to do that by means of transcendental ego, Husserl - by means of procedures of eidetic reduction and "epohe" and so on.) They believed, that it would be possible to found all science on such absolutely reliable percepts, and after that science would change neither its concepts, nor beliefs, nor substantiation of them. But no one of them tried to build even one concrete scientific theory on these absolutely reliable percepts, because no one succeeded in the previous task: to substantiate reliability of their absolute percept. And today this direction, let's say, is out of fashion.

Another kind of adherents of absolute beginning of knowledge tried to deduce all science from some basic theory, truth of which (of its basic postulates) is well apparent. Peano tried to deduce all mathematics from axiomatically rebuilt arithmetic. Russell and Gilbert - the same, but from some absolutely trivial, self-evident axioms. Frege, Russell, and other analytics (named also logic positivists) tried to deduce all mathematics from logic. The same philosophers (including Carnap), being originating from fact, that rules of logic are formulated by means of words of usual language, which are, as a rule, not single meaning (meaning of them depends on context), had developed semantic and mathematical logic to guarantee single meaning of words. Like in previous case no one of them even began to draw up other sciences from mathematics. Moreover, one of the most devoted supporters of absolute beginning of science in form of system of trivial axioms, Russell, was compelled to own himself beaten on this way [1].

3. POST POSITIVISM

As to relativists of science, I shall confine myself only to their last wave, which had created relativistic attitude to science not only among the philosophers, but also in major part of society. Representatives of this wave are divided in two categories, named social (Quine, Kuhn, Feyerabend) and cognitive post positivists (Popper, Lakatos, Laudan).

The social post positivists have the most orthodox relativistic position. For example, Feyerabend claimed:"There is no any scientific method, no any simple procedure or set of rules, which forms basis of any study and guarantees that it is scientific and thereby deserves a confidence" [2]

The cognitive post positivists are not so orthodox and some of them, for example Popper, declare themselves as defenders of especial epistemological status of science and pretend to give criterions dividing science from non-science. But gist of matter isn't declarations and self-determinations, but argumentation, and argumentation of Popper and his pupil Lakatos

contradicts to their declarations and converts them into relativists of science. For example, Popper asserts science differs from non-science, since scientific hypotheses must be “falsifiable” [3]. The last is obviously right and hypotheses like “the sea is storming, because Neptune is angry”, which aren’t testable in principle, of course are not scientific. But that, by no means doesn’t save special epistemological status of science, because countless number of hypotheses, which even don’t pretend to be true, but are completely falsifiable, may be proposed for any subject on study. Constructing of such hypotheses with farther falsification of them doesn’t lead to truth and therefore the criterion of Popper doesn’t separate science from non-science.

Also Popper claims, that although science doesn’t give truth (in principle) and doesn’t give substantiation (reliable and unchangeable) of its theories, it differs not withstanding from non-science, because it makes choice between theories (hypotheses), founded on criterion closeness of them to truth:“But although critical reasons can never justify a theory, they can be used to defend (but not to justify) our preference for it: that is, our deciding to use it, rather than some, or all, of the other theories so far proposed.” [4]. But what is this Popper’s reason? His pupil Lakatos writes:“The Popper’s critic fallibilism adopts endless regress in substantiation and in definition with all seriousness, it doesn’t have illusions about stopping of those regresses. In this approach grounding of knowledge is absent as upper, so under theory. We never know, we only guess. Nevertheless, we can turn our surmises into object of critics, to criticize and to improve them.Stubborn skeptic nevertheless could ask else one: “From what do you know, that you improve at your surmises?” But now answer will be simple: “I guess”. There is nothing bad in endless regress of guessing” [5]. So all the grounding to prefer one theory upon another after all turn out to be nothing more than the same guessing. Why it is bad, I think, doesn’t require explanation. So, the fallibilists (the cognitive post positivists), which considerably assisted to relativists of science (due to adopting of the endless regress in substantiation and in definition with all seriousness), by no means hadn’t defend especial epistemological status of it.

As a whole, the position of the post positivists summarized by next assertions:

1) Inevitability of endless process of grounding in science. That is one of main points of Lakatos.

2) Concepts, used by science for description of reality, are not connected with experience (are not reduced to experience). They connected only with the theory and with more fundamental theories and reduced only one to another in infinite regression. That is main point of ontological relativism of Quine, and it adopted by all the post positivists, including cognitive one’s in particular by Popper and Lakatos. Taking in account, that it is central point of all post positivists’ conception, I shall illustrate it by quotation of Quine:“as an empiric, I continue to consider conceptual scheme of science as a tool for forecast future experience being originating from past experience. Physical objects conceptually are involving in this situation not through definition in terms of experience, but simply as no reduced substances epistemologically compared with gods of Homer” [6].

3) Fallibility of scientific theories in principle. It means that there is no difference between scientific theory and hypothesis, and any scientific theory sooner or later will be refuted. And therefore it is impossible to speak about truth of scientific theories - even in probability’s sense, and only thing, about which we can speak here, is preference of one theory upon another (even that without clear sense of what is preference). That is main point of the fallibilism, founded by Popper and developed by Lakatos and other cognitive post positivists.

4) Impossibility, in principle, of substantiation of scientific theories, at least substantiation, which would not be refuted and changed by another after some time. This assertion connected with all previous and is joint position of all the post positivists: Quine, Kuhn, Feyerabend, Popper, Lakatos and others.

5) Incomparability between scientific theories in the same field of knowledge, impossibility of objective, rational choice between them, connected with absence of common language among representatives of different scientific paradigms. That is assertion of Kuhn.

6) Determinative influence of social factor on initial postulates and on conclusions of scientific theories - assertion of Kuhn and Feyerabend.

As indicated, affirmations of the relativists are based on certain phenomena of science. Partly I had mentioned them before. Now I want to recite all of them and to explain, how assertions of the relativists are connected with them. Here they are:

1. Polysemy of words of usual language, with the help of which science express, formulates its beliefs and their substantiation. This fact is used by Quine as one of arguments supporting his ontological relativism. Kuhn uses it, basing impossibility of comparison between scientific theories and absent of common language between scientists[7]. And it is fulcrum for Sepir and Worf in their linguistic relativism.

2. Basic postulates, axioms of any theory, accepted without proof, sooner or later show themselves as conclusions, deduced from postulates of more fundamental theory. Like the differential calculus from the theory of limits, theory of limits from the set theory, the classic theory of gases from the kinetic theory and so on. This phenomenon, named by Lakatos “changing of substantiating layers”, is used by all the post positivists as a sufficient to conclude from it, that science doesn’t have an unified and unchangeable method of substantiation of its theories. (This phenomenon also, as indicated, drove crazy analytics and they tried to eliminate it, but without success).

3. Passing by one fundamental theory to another, theories named according Kuhn paradigms and describing intersecting fields of reality, (like, for instance, the classic mechanics, the theory of relativity, the quantum mechanics and the quantum-relativistic theory), we usually change content of basic concepts. This phenomenon is named by various authors as a changing of ontology or ontological sense of concepts (Quine), changing values of variables (the same), countless regress of values (senses) (Lakatos) and so on. The classic example of this phenomenon is space and time, which are absolute in the classic mechanics of Newton and - relative in the Einstein’s theory. Another example - electron, which from beginning was determined as a charged ball, after that - as the same ball, but also with mass, later - as charged cloud, dispersed on orbit circling around nucleus of atom and finally - as packet of waves. All the post positivists without exception use this phenomenon for substantiation of the above-mentioned central point of the ontological relativism about absence of connection between concepts of science and experience. Logic here is such: if concepts would be connected with experience, they could not change their content passing by paradigm to paradigm.

4. Passing by the same changing of fundamental theories, not only basic concepts are changing, but also conclusions. So in the classic mechanic speeds are summing up according to the rule of Galilee, and in the theory of relativity - according to the formula of Lorenz. The speed of light, according to Newton, depends from speed of source of light, according to Einstein - not. And so on. This phenomenon is used by the fallibilists

and first of all Popper to substantiate assertion that any theory is fallible in principle. Logic here is such: changing of fundamental theories is happened when previous theory meets its "refuting experiment" (the experiment of Michelson for the mechanics of Newton). A new theory, changing axioms and basic concepts ("substantiating layer") of previous one's make up itself in conformity with all previous experience plus "refuting experiment" of previous theory. But sooner or later it also will meet its own "refuting experiment".

5. The fact, that new fundamental theory is correspond to set of facts, describing by previous theory (plus non-described by previous) leads us to next phenomenon: Some concrete set of facts in field, which some theory pretends to describe, potentially countless (due to potential infinity of virtual experiments giving new facts), but actually always limited, can be covered by conclusions of different theories based on different sets of axioms with different concepts.From that Quine, Lakatos and others draw a conclusion, that concepts introducing by science are irreducible substances, epistemologically compared with gods of Homer, and axioms are convenient construct of cognition, aided to forecast future experience originating from past experience. That means, we create convenient constructions, giving logic explanation of observing at the moment things, constructions, which to truth, to reality have the same relation, as the assertion: "a sea is storming, because Neptune is angry" and substantiated neither more than Greek myth. And when such a model will meet "refuting experiment", we build next one, having the same relation to reality, but covering bigger set of facts. (Notably that some representatives of natural sciences also share this position, and in real science we can meet theories built in accordance with this scheme). Parting *science completely from reality, it was not difficult to the social post positivists to come to belief that science* is depended from social factor (According to Kuhn, Einstein made space and time absolute, due to reading Marx).

4. NEW RATIONALISM

In the period after post-positivism and up to the present day, the philosophical arena has been taken over by schools that avoid giving an answer to the fundamental questions of epistemology. Most of them do this under the pretext of delving into more specific problems, the solution of which should help to answer the fundamental question. A wide range of theories deal with the psychological aspect of cognition, in particular the question of how the influences that the external world has on our bodies are transformed into a certain image in our brain. No less extensive group of epistemological theories is concerned with logical problems of cognition, one of them with scientific and one with special problems of scientific cognition. Without denying the independent significance of some of these directions, one cannot but note that the rapid development of them has created a situation in which the fundamental questions mentioned above have become relegated to the background.

This situation is reflected in the fact that recently such a direction as the so-called school of "contemporary theories of knowledge" [8] (foundism, coherence theories, probabilism, reliabilism and direct realism) has developed and taken a fairly dominant position in epistemology. This direction quite clearly opposes the idea that the main object of the theory of knowledge should be the above mentioned questions of the truth of our knowledge, its relationship with objective reality, etc. Instead, they assert that the purpose of epistemology is to establish the justification of the beliefs we accept.

I have shown [9] that, firstly, the representatives of "modern theories of knowledge" cannot agree among themselves on what they understand by justification. And secondly, no matter how this term is defined, there can be no guarantee that, by applying a "justified" theory, we will not obtain a result that is the exact opposite of what we expected. Such a guarantee can only be given by a theory substantiated by a unified method of substantiation, which is part of my new rationalism, to the exposition of which I now proceed.

I named my position new rationalism, opposing it as to the classic rationalism of above-mentioned absolutists of science, so and mainly to dominating up today wave of relativists of science. My new rationalism differs from the classic rationalism, because although I recognize all the above-mentioned phenomena of development of science but don't try to repair or to eliminate them. My position nevertheless is rationalistic, because I don't draw up from these phenomena such conclusions as the post positivists do. I show that rational science possesses the unified method of substantiation of its theories, unchangeable in spite of all changes of "grounding layers", sets of axioms, concepts and conclusions and this method just supplies to science its especial epistemological status. This unified method, opposite to the assertion of Kuhn, gives common language to scientists - representatives of different paradigms, and permits them to reach based agreement which theories to accept and which to roll out. Also I show, that concepts and axioms of scientific theory introduced according the unified method of substantiation are connected with experience and despite of their "endless regress" (in terms of Lakatos), that means, changing their content passing by one fundamental theory to another, by no means are not "no reducing substances" or "convenient constructs". After all I show, that scientific theory isn't fallible in principle (the assertion of Popper) and theory substantiated according the unified method will be true also after appearing its "refuting experiment". The last only shows limits of the truth (workability) of this theory.

My point of view on the problem being considering is based on my theory of cognition [10], from which followed the unified method of substantiation [11]. In real science this method exists as stereotype of natural-scientific conscience, like the grammar of usual language exists in it before it (grammar) will be described. The method appeared gradually in process of the evolution of the natural science and had largely taken shape in the classic mechanics of Newton-Lagrange. For, as indicated, this method up today still doesn't express in explicit and exists only as a stereotype of natural scientific conscience, even today its norms from time to time are violated on practice even in field of natural sciences, what as it will be showed below, leads, inevitably, to contradictions and paradoxes in future. In field of humanitarian and social sciences this method steel doesn't known. Like any scientific theory is idealization of reality described by it also this method of substantiation is idealization of real practice of substantiation in science, and therefore it isn't realized on practice with absolute strictness.

The unified method of substantiation consists of next three points: 1) Introducing, building of concepts. Simultaneously fundamental postulate (axioms), concerning these concepts, are formulating. 2) Building conclusions of the theory, being originating from the postulates. 3) Verification of the conclusions.

4.1. Concept as Corner Stone of New Rationalism

Let's begin from concepts. Relation between our concepts and reality, which they describe, is a corner stone of my theory of cognition and basis to answer all the questions at the beginning of the article. That is why I want to consider it here intently. First of all, opposite to ideas of the analytics and the post positivists, which concentrated on words and tried or to achieve single meaning of them or to prove impossibility of that and to deduce from that all kind of relativity of knowledge, not words but concepts are fundamental elements of cognition. But concepts,

although they are expressed in science usually (but not necessarily) by means of words, as I will show, may be determined single meaning. That is why in vain the analytics tried to achieve single meaning of words and the conclusions of the relativists, based on absent of this single meaning, are wrong.

Why concepts, not words, are fundamental elements of cognition? Because concepts appeared before language as historically so morphologically. In morphologic development child occupies concepts before he knows to speak. On base of similar and different visual perceptions, with help of perceptions from other receptors (for example tactile ones), accompanied by moving activity, he forms in mind, firstly subconsciously, and after that consciously, but not yet on linguistic level, the primordial concepts of objects and phenomena, which Piajet[12] named image-etalons. They are really concepts, because with help of them (comparing with them), child makes identification of new objects. In that manner, he distinguishes an apple from a ball with the same dimensions and color without knowing words. Therefore, he already has the concept of apple and with help of it he separates the set of apples from multitude of other objects. By analogy it is easy to see that high animals also possess some concepts (in form of image-etalons). From that it is followed, that historically, during the evolution, predecessors of the human been had possessed concepts before language appeared. Words are only means to transfer information in general and concepts in particular, from one to others. The means, which are very efficient, universal, but still not only possible and even not always the most efficient. Drafts, schemes, formulas and algorithms are much more efficient, each in its field, than words. Science, overcoming ambiguity of words (with help of which it up today usually formulated definitions of its concepts), aids to single meaning of concepts and achieves it practically, using the unified methods of substantiation (how it does that, will be clear further).

Let's consider evolution of concepts in science or more precisely in cognition as at scientific, so at pre-scientific stage. Cognition is form of adaptation to environment and the richer cognition (knowledge) of some community is, the more this community is adapted to environment. But human community accumulates knowledge by means of transfer of information from one to others. The less the transfer is accurate, the less useful it is. But if definition of concepts isn't clear, one, who receives information, can understand it differently from one, who transfers it. This obstacle aims the evolution of cognition in direction of grows of strictness of concept's definition.

This evolution was going in such a way. At linguistic stage the words labels: "man", "water", "tree" and so on were hanged on convenient concepts, existing already in conscience of people in form of image-etalons. During time due to communication word denominations received more strictness, comparing with image-etalons, but still not completely. For example, one can consider concrete plant as a tree, and another - as bushes, and so on. At early science stage further growth of strictness of concepts goes on due to adding enumeration of properties (qualities) of objects to words-denominations. For instance: deer is animal, mammal, herbivorous and so on. But even that didn't supply completely unambiguity of concepts. The last was achieved only with adopting the unified method of substantiations, in which to determine concept - means to enumerate its properties, to introduce measure of each from these properties and to indicate exactly quantity all of these properties. For example, ideal liquid we determine as an incompressible and absolutely fluid liquid. That means we attach to the concept "ideal liquid" properties of press ability and fluidity, give them measure and establish quantity of press ability - 0 and fluidity - unlimited.

Such method of single meaning definition I call nominal definition. It is not only possible single meaning definition. For instance, the axiomatic method of definition also is single meaning one and, by the way, they are following one from another. For example, the phrase from nominal

definition: “ideal liquid is incompressible one” equivalent to axiom: “ideal liquid doesn’t change its volume under pressure”.

But unambiguity of nominal or axiomatic (or any other) definition doesn’t mean yet unambiguity of connection between this definition and multitude of objects or phenomena, to which we relate this concept. More exactly there are no objects in reality, which exactly correspond to nominal or other kind single meaning definition. Suppose we define straight line as a curve with curvature constant equal to 0. To such a definition no one concrete object of reality corresponds absolutely. For example, rays of light distort in field of gravitation of big masses but since field of gravitation is unequal in vicinity of any point of space, rays, absolutely complying with the above definition of them, are absent. To make reference of concepts’ definitions nonempty, and to determine definitely multitude objects of reality, to which we relate our concept, we must introduce admissible deviations of objects of reality from nominal definition upon measure of property, lying in base of this definition. For example, according to this approach, all the lines, maximal curvature of which doesn’t exceed some value, match the definition of straight line.

Like as the whole general method of substantiation is idealization of real substantiating practice in rational science, so the described above method of concept’s definition is idealization of the real practice of definition in science. In real science not always we meet nominal or axiomatic definitions of concepts, but imperative of science - the demand of unambiguity of definition in possible measure, is obvious. Also not always we see admissible deviation in science practice, but reason for that is deviation of objects from nominal definition in such sciences like physics are usually negligible.

All that still doesn’t drain topic of connection between concepts and reality, but we shall return to it further.

4.2. Conclusions in New Rationalism.

The next point of the unified method of substantiation is building of conclusions. Unambiguity of concepts still doesn’t guarantee unambiguity of scientific theory as a whole and therefore it doesn’t guarantee existing of common language between scientists - representatives of different paradigms. It is also necessary unambiguity of conclusions and “keeping”, retaining of sense of concepts during building theory. The last isn’t guaranteed a priori. For example, it is not difficult to notice that meaning of the concept “freedom” in the Marxism is not the same when it is dealing with freedom in the capitalist and the socialist societies, although Marx uses the same word-denomination “freedom” in both the cases.

As to unambiguity of conclusions it is easy to see difference in this aspect between physics, which is an etalon of rational science, and, let say, astrology, which also pretends to be science, but it is not. All engineers, using physics formulas to solve concrete task, will receive the same result. In the same time astrologic forecasts given by various astrologists in the same case will vary each other. Unambiguity of conclusions and retaining sense of concepts are provided and guaranteed only by using the unified method of substantiation.

According to this method building theory, deducing conclusions from initial postulates must be axiomatically. Since set of axioms in axiomatic theory determines all the conclusions of this theory, independently from concrete way (succession) of conclusion’s building. Also axiomatic way of constructing theory “keeps” initial sense of concept. Because in axiomatic theory set of axioms not only determines completely concepts but also in such a theory we can substitute axioms by some conclusions and such rebuilt theory preserves all the conclusions unchanged. As it is known, we can change the fifth axiom of the planimetry of Euclid with the theorem about

sum of angles of a triangle and to retain all other theorems. Also we can substitute the second law of Newton by the conclusion of his theory about quantity of movement with the same result. And so on. But if conclusions can become axioms and axioms determines concepts including their sense, therefore sense of concepts stay unchangeable from beginning till end of the axiomatic theory.

I must accentuate, that no other method of conclusions' constructing, for example, genetic (or constructive) one, does possess this quality.

4.3. The Relationship of Concepts and Conclusions of Theory with Reality. The Question of Truth

Introducing concepts according to the unified method of substantiation and using axiomatic (deductive) construction of conclusions provides unambiguity of theories and therefore common language for scientists (in opposite to the assertion of the relativists). But unambiguity of conclusions doesn't mean yet their truth and from unambiguity of concepts correspondence of them to reality, connection to experience, reflecting by them ontological substance still doesn't follow. It is possible to complete the theory: "a sea is storming, because Neptune is angry" by determining definitely the concept "Neptune" and by indicating reasons of his anger, and in such a way to provide unambiguity of conclusions of this theory. How it will relate to truth, doesn't require explanation. Therefore, the assertions of the ontological relativism still are not refuted.

In opposite to the ontological relativism I claim that concepts and axioms of theory may be connected with experience and that it is a demand of the unified method of substantiation. Like in case with definition of concepts according the unified method of substantiation and with axiomatic constructing of theory, this demand also sometimes is violated in real practice of science and that leads to penetration in to science all kinds of "Neptuns" and "phlogistons". My argumentation is such:

Primordial, pre-science and pre-linguistic concepts, image-etalons are connected with experience due to their origin. They cannot be expressed through other concepts, because there is no language at this stage. They cannot be connected to any theory - there are no theories still. As was shown they are origin only from sensual percept. But that doesn't guarantee such connection at scientific stage, especially if we shall take into account the above mentioned phenomena of science, which the post positivists build their assertions on. Bellow I shall give a few examples from physics, which will illustrate my assertion that, normally, connection of concepts (and axioms) with experience takes place, and in cases, when this norm is violated, science betrays its method and "convenient constructs of cognition", "phlogistons" and so on are appearing.

At first let's consider the wave theory of light. How did it appear historically? There were experiments with diffraction and interference. Let's restrict ourselves for simplicity only by interference. Is it possible in accordance with the unified method of substantiation on base of only visible interference to determine light as a wave phenomenon? No, it isn't. Because interference showed only, that light possesses the property to bend around obstacles on its way. When under waves we understand not only the property to bent around obstacles, but also properties of periodicity, of frequency, of amplitude, of phase, property of summing with resonance and so on. The fact, that light similarly to mechanical waves bends round obstacles doesn't mean yet, that it possesses all others properties of mechanical waves. Particularly it isn't obliged (still) to possess periodicity, sinusoidality and so on. What does "isn't obliged" means? It means that properties of periodicity, sinusoidality and others still are hypothetical, by no way don't connected still to experience and according the unified methods of substantiation light still isn't waves. But the theory of light at the time of the discovery of interference was at the stage of

genesis, and not at the stage of substantiation. At this stage it is justified to make genetic supposition, that light is waves with all their properties. Such a supposition has might heuristic capacity, because aims new experiments to test possessing by light other waves' properties. And such experiments are realizing. And it appears that light has length of waves and frequency, and phase, and so on. Only after that it is possible to consider light as a wave phenomenon, understanding by that concrete set of wave properties appeared already in all these experiments. But even now it is forbidden to call light simply "waves". Because we can't guarantee, that in such a way we will not attribute to light some properties, which usual, known and studied waves possess, but light doesn't possess. And really, as we know, light isn't usual waves, but possess some waves' and some corpuscles' properties. And what is important, it doesn't possess the property of continuity, which we attribute to usual waves, and which didn't appear in any experiments with light.

But adherents of the wave theory of light, which didn't know the unified method of substantiation, thought that light not only possesses concrete waves' properties, but it is simply waves with all their properties including continuity. And that is why they thought that contradiction between the wave and the corpuscle theories of light is insurmountable. Continuity of light's waves, if it would be, contradicts to corpuscular nature of light. But because light's waves don't possess continuity, there is no contradiction. The idea about continuity of light's waves, stealing non-evidently in the wave theory, breaks rules of the unified method of substantiation, because property of continuity, which didn't appear in any experiment and therefore disconnected with experiment, is ascribed to the concept "light". And as we see, it leads to contradiction.

The second example is history of definition of mass by Newton in his mechanics. Although Newton had played exceptional role in creating of the unified method, but at his times the method was not completed yet even on level of model, and what is more, it was not described in explicit form. That is why Newton defined mass as quantity of corpuscles although, naturally, he didn't count any corpuscles in any objects. It was violation of the unified method of substantiation and at the same time it contradicts to the second law of Newton, from which follows the definition of mass as measures of proportionality between force and acceleration. This contradiction was discovered by Eiler, and after that we know only the last definition of mass.

Next example is the history with paradox of Landau-Peierls and its solution by Bohr and Rosenfeld. The paradox appeared at building the quantum-relativistic theory of electromagnetic field. Equations of the classic theory of electromagnetic field (equations of Maxwell) relating to E and H (electric and magnetic potentials) couldn't be abolished also in the quantum-relativistic theory. But in the classic theory E and H were continued functions determined at each point of space, what couldn't take place at quantum-relativistic describing of it due to quantum ability of this field. Bohr and Rosenfeld had solved this problem, determining variable E and H in Maxwell's equations in the quantum-relativistic theory as new concepts. Of course, they were the same potentials with all their properties except one: now they were not determined in each point of space, but only in some vicinity of point. In the vicinity, in which E and H obtained sense as integral characteristic of micro processes of disintegrating and appearing particles, and could be, in principle, measured. (Like pressure and temperature of gas are integral characteristics of molecules' moving process and have sense only in volume of vicinity larger in a few times dimensions of molecule). In such a way concepts of new theory anew were connected to experience. Here the questions: where property of continuity of function E and H in the classic theory have appeared from, is aroused. It is easy to see, it was violation of norms of the unified method of substantiation, because no experiment in infinitely small vicinity of point we can't realize in principle and therefore, we can't observe any identity of properties in that vicinity.

But it is not enough for rational explanation of above-mentioned phenomena of science only to establish the fact in itself of connection concepts with experience. It is necessary also to clear character of this connection, permitting to describe the same ontological substance by various concepts (with various properties) and to receive the same conclusions from different sets of axioms, not converting them into "convenient constructs of cognition". For that let's consider from point of view of connection to experience, what happens with closed concepts through substitution one fundamental theory by another. For example, let's take the transition from the Newton's mechanics to the Einstein's theory of relativity. At first glance it could seem that such a transition refutes any possible attempt to tie concepts and their properties to experience. Really, close concepts of Newton and Einstein (time, space and so on) possess not simply different properties. The last would mean only, that in each case we choose for definition from countless number of properties of this objects different properties (Like in the classic model of gases we chose for definition such properties as temperature and pressure and in the kinetic theory - speed of molecules and their quantity per volume). It is normal from any point of view and doesn't contradict to connection with experience. But in cases like the transition Newton - Einstein these concepts seemingly possess contradicting properties. At first glance it seems that time can't be simultaneously absolute and relative. And therefore, as time of Newton so time of Einstein (or at least one of them) doesn't tie to experience.

But really they both are tied to experience. Really one object "time" can possess boss the properties: absoluteness and relativity simultaneously. I shall begin explanation from analogy. Let's imagine that we have a piece of sickle and we try to describe geometry of its edge. Our receptors (eyes) send to mind signals, which automatically compared it with image-etalons and our mind gives us the percept: it is similar to circle. But we don't trust the simple visual percept and measure curvature of edge in various points with help of instruments. It shows itself not exactly constant, but for all that very close to that. Remembering, that real objects may correspond to our concepts (to nominal definition of them) only due to admissible deviations from them, we conclude, that the form of sickle's edge is circle. After that we found whole sickle, made on the same plant, according to the same standard (that means belonging to the multitude of objects, defined by our concept "sickle") and convince ourselves that its form is not a circle but some other curve, suppose, parabola. Does it mean that our previous definition was wrong, gave us faulty or, in terms of Quine, relative ontology, was tied not to experience but to theory? No, it means only, that ontology and theory as a whole relates to some concrete field of reality, which (and only which) this theory, describes. Not ontology is tied to theory but both: the theory and the ontology tied to described reality. What does happen when we switch to reality, which include previous one or is an expansion of it (Einstein for Newton), or is deepening of it (micro world for macro)?

It would be wanted to say, that in this case new theory is generalization of previous one and new ontology - generalization of previous ontology. And previous theory and ontology are peculiar case of new one, and even may be obtained from new theory and ontology by means of the limit's transformation, as that happens in the case of Newton and Einstein (Einstein's time is expressed through Newton's one by formula in which there is an additive term with coefficient v^2/c^2, where v - speed of inertial system, and c - speed of light. When v rushes to 0, Einstein's time becomes Newton's one, and for v - small relative to c, they coincide practically). But the story with Newton and Einstein is only peculiar case of including fields of reality each by other. The example with sickles nevertheless its conditionality and primitiveness describes more universally the character of interrelationship of such theories, more exactly, interrelationship of ontology in such cases.

To understand that better, one shall remember, that in axiomatically constructed theory concepts are determined by axioms. Axioms are nothing more, nor less than assertions about relations

between objects, which we are describing in concepts. These relations are called functions in other words. (For example according to low-postulate of Ampere, electric current is proportional to electrical voltage and inversely proportional to resistance). It is possible to express these functions by formulas or by graphs. Graphs led us to nerve of the problem.

Axioms-postulates appear at stage of substantiation of theory and substantiation is preceded by the setting up an experiment at stage of genesis of theory. Result of each experiment gives us point on a graph. With help of these points we build at curve on graph, which afterwards will be converted into axiom. Graph is our sensitive percept of property (relation), axiom (formula) - its definition in theory. But as we know, experimental points on such graphs never lay exactly on these straight and curve lines, which are converted afterwards in formulas-postulates. Our formulas-postulates, our concepts and axioms, ontology, which science gives us - are only approximation of really existing properties of nature. Approximation isn't, indeed, absolute reflection of natural properties, but it isn't the ontological relativity, which Quine speaks about. I should say that approximation by no means is the ontological relativity. It is simply not complete accuracy, limited exactness of science. But approximation explains essence of relations between such the theories, like Newton's and Einstein's, in common case. Just when our experience limited by some part of reality (a bit of sickle), more rough approximation of real property satisfies us, providing enough exactness (circle). When we receive access to wider part of reality (whole circle or bigger piece of it), this rough approximation becomes not enough exact, the new approximation, providing enough exactness not only in the previous part of reality but in new, wider one, is required. As it appears in the case with sickle, qualitatively approximations aren't obliged to be converted one into another through the limit transformation. Nevertheless, they both will reflect with some exactness the property of real objects, that means the real ontology, but one will do it in smaller part of reality, and another - in wider, including the previous one. And each of them will be tied to reality by means of experience, (through points on a chart).

I suspect that even after this explanation some psychological discomfort is still remained at the reader: some approximation against the obvious ontological contradiction between absoluteness and relativity of "time". But let's remember that "absolute" and "relative" - are only words of language, which aren't exact and have many meanings, in principle. But cognition is based not on words but on concepts. In language words "absolute" and "relative" have very wide and vague set of meanings and for many people "relative" associates with "voluntary". But absoluteness of time according to Newton has the concrete functional sense: $t_2 = t_1$ - time flows equally in different systems. And the same strictness and functionality has the Einstein's relative time, but in this case function is another: $t_2 = t_1 \cdot \sqrt{(1 - \upsilon^2/c^2)}$. (This Einstein's relativity, as we see, has no common with relativity of usual conversation according to which "all is relative"). These are different functions, but they like circle and parabola in the case with sickle give equally acceptable approximation of the real ontology (properties) of time in sphere of workability of the Newton's model. Beyond these boundaries only the Einstein's model gives acceptable approximation. And it is clear, that sooner or later we will meet an experience (according to astrophysics' data we already met), which will require repairing also the Einstein's approximation of time. In other words, real time appears to be both absolute and relative simultaneously. More exactly it flows (in inertial system) according some law, which in sphere workability of the Newton's model is approximated good enough by Newton's absolute time and in wider sphere - by Einstein's relative one.

5. CONCLUSION

The connection of concepts (and axioms) with experience refutes the ontological relativism and the assertion of the social post positivists about influence of social factor on initial premises and

conclusions of scientific theories. Einstein couldn't make time relative under anybody influence, but only by tie his relativity to experience.

After all, approximate character of connection between concepts and experience refutes also Popper's "fallibility". Not entering in requirements of the unified method concerning conclusions' verification and connected with it correction of truth's sense, it is possible only on base of above consideration to say that not only concepts (their properties) are approximations of real ontology, but also scientific theory as a whole, including its conclusions, is approximation of described reality. And as any approximation it is true (workable) only in concrete limited sphere. So-called "refuting experiment" is not evidence of fallibility of correspondent theory and doesn't abolish its truth, but only establishes limits of field, in which this theory gives acceptable approximation. Not only previous theory remains true, but also its substantiation. As a new theory doesn't cancel previous one, so new substantiation doesn't cancel previous one. As a new, so an old substantiation is made according the same method, namely according the unified method of substantiation. In one case concepts are tied to one data set and in other case - to another (although these sets have a common part, more exactly new set includes the previous one as a part).

Here the relativists can object: if we don't know limits of truth of our theory before the "refuting experiment" takes place, does it mean relativity of truth of this theory? But it is not correct, because even if we don't know exact limits of workability of our theories, we know limits of some decreased field, in which this truth (workability) is guaranteed. These are the limits of already existing experience. If, let's say, at moment of creation of the classic mechanics the mankind already had an experience with speeds up to 20 km/sec., and the Newton's "absolute" approximation of time was tied to this experience, that means all Newton's mechanics was accepted true and giving acceptable approximation of reality in the field determined by existing experience, namely for speeds smaller than 20 km/sec. All that in condition that this mechanics was built according to unified method of substantiation (axiomatically and so on), and all so-called "normal" conditions were preserved (for example, if annihilation of substance had occurred, that means "normal" condition didn't preserve, and the Newton's theory isn't workable in this situation). At the same time non-science, let's say astrology, even without the annihilation of substance, can't guarantee truth of its conclusions in any limits.

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