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Psychology

The Principle of Reduction and General Psychological Theory of Set

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This work discusses the problems associated with the reductionistic type of explanation in general, and in particular, the correctness of its application as a methodological principle for cognition of the phenomena of the mental world. In psychology, the implementation of the procedure of reduction to lower ontological levels is complicated by the unresolved "eternal" psychophysical problem, the inability to derive the laws of mental phenomena from the biological substrate. The explanation of the latter, in turn, implies physicochemical reduction. In psychology, two positions initially emerged regarding the possibility of using a reductionist approach. In some theoretical systems of the psychology of the natural science type, this approach is implemented quite boldly (behaviorism, Gestalt psychology, cognitivism, etc.). However, some researchers followed the principle of explaining the psychic through the psychic itself. D. Uznadze's theory of set has all the features of natural science psychology, so, the principle of reduction is quite natural. Explanation, according to Uznadze, means finding the cause of a phenomenon. In his opinion, an explanation of the emergence and peculiarities of the course of phenomena of "internal experience" should be sought outside of it. Rejecting the possibility of direct causal influence of the external world on experiences and mental activity, in the first version of his theory, as a causal system-forming factor generating mental life, Uznadze proposes the so-called "subconscious" or "biosphere" reality. In the final version of the concept, this function was assigned to the set. The set, being a state of readiness of the subject of activity as a whole, is a special genetically primary type of the unconscious psyche, from which all other forms of mental life are derived. Consequently, in the general psychological theory of set, the reductionist principle of explanation is implemented through the reduction of mental formations and behavior to the original, non-phenomenal type of psyche (set). *© 2024 Bull. Georg. Natl. Acad. Sci.*

reductionism, set theory, psychological explanation

In the methodology of science, the problem of reductionism is one of the central ones. It has a long history and is still relevant today [1]. Its origins lead to the first positivists. The linear classifications of fundamental sciences developed there implied the principle of hierarchy from simple to complex, from particular to general, and thus opened the way for the implementation of a reductionist narrative. G. Spencer built sociology on the basis of biology; O. Comte divided the reality studied by psychology between phrenology (biology) and sociology; J. S. Mill reduced logic to psychology, and the latter to biology. Serious study of the problem of reductionism, as the most important methodolo-

gical problem, began already in neopositivism. C. Hempel and E. Nagel especially distinguished themselves in this. The latter even created a "reduction theory", outlining the basic conditions for reducing one theory to another. Ultimately, everything is connected with the question of explanation, which is interpreted as bringing the more complex to the simpler (fundamental) serving as its basis. Reductionism is often counter-productive among the representatives of those disciplines which fear that their science will be absorbed by others. Nevertheless, "reductionism still has an important sense for any science – going beyond the boundaries of the most explained system in the process of explanation" [2]. Science has always moved in this direction with good results. But even here one should not go too far in the desire to create a "theory of everything." Based on the ideal of a unified science, the representatives of the so-called "logical positivism" sought to create a fundamental scientific theory that explains all phenomena of reality. R. Carnap especially insisted on this, believing that the natural and social-humanitarian sciences use the same metho-dological principles for verifying data and testing hypotheses, which makes it possible to unify the language of scientific disciplines, reducing their concepts to basic, physical ones. This position is called physicalism [3]. Naturally, the question arises – what will happen to science, the theoretical basis of which will be completely reduced to the theoretical basis of another science, say biology to chemistry or psychology to biology and, finally, descending to physics? Logically, this is the path to its elimination. At best, this science can remain as a descriptive doctrine. But what to do with the very phenomenon that it is studying? If, say, the phenomena of mental life are completely reduced to physical ones, then, again logically, it turns out that only the latter have real existence, and mental phenomena actually do not exist even as an artifact. This is the so-called "ontological reductionism" [4], which is feared not only by psychology but also by biology [5].

Nevertheless, in the sphere of the same ontology, say, inanimate matter (especially within a specific science), theoretical reduction is a common and necessary method for constructing a theoretical-explanatory procedure. However, the further apart the phenomena are in the ontological series, the more difficult it is to carry out an epistemological reduction between them. Reducing chemistry to physics turned out to be quite simple. Reducing biology to chemistry was much more difficult. The discovery of the molecular mechanism of heredity (DNA) was the greatest breakthrough in biological science and a prime example of a reductionist explanation. However, it is still unable to give an exhaustive explanation of the generating and functioning of biological objects and processes, since their determination is also based on the action of a number of phenotypic factors. Although there are no non-molecular phenomena in living systems, there are also no phenomena in them that are only molecular [6]. This applies even more to phenomena at the psychological level. An illustrative example is the sociogenetic ideas that have developed in evolutionary psychology about the hereditary roots of many psychological properties [7]. They undoubtedly enriched our understanding of the determination of mental life phenomena, but they also met considerable resistance from some specialists who fear biological reductionism. And they would be absolutely right if sociogeneticists argued that heredity completely determines the course of development and manifestation of mental and behavioral phenomena. However, they do not claim this, being fully aware of the complex nature of their determination [8, 9].

From these examples it is clear that the explanation of biological and psychological life naturally leads scientists to reduce to a lower level. In actual research practice, one is usually content to refer to the immediately preceding level of

interpretation. Thus, biology rather turns for an explanation not to physics, but to biochemistry. This is understandable - the path from an atom to a molecule is closer and simpler than from a molecule to a cell. But on the way from the cell (neuron) to consciousness and behavior, i.e. from neurophysiology to psychology, it is the "explanatory gap", which is felt most of all [10]. Nagel, who is considered the author of the most advanced model of epistemological reductionism, spoke of the gap between the subjective and the objective. Defenders of physicalism are obliged to describe from a physical point of view the very phenomenological aspects of consciousness. Any reductionist program must be based on an analysis of what is to be reduced. It is useless to base a defense of materialism on an analysis of the phenomenon of reason that does not take into account its subjective character [11]. And it remains just beyond the reach of any physical and chemical explanation. D. Chalmers calls this a "hard problem" in contrast to the "simple problem" of finding correlational or functional connections between brain and mental processes. Neuroscience does a good job of this. However, even having precisely established which physical and chemical process in the neural system is associated with a certain experience, we remain in the dark as to why and how subjective experience (the so-called "qualia") arises on its basis, why it does not proceed in phenomenological darkness [12]. In other words, there is no answer to the main question of any explanation - why a phenomenon (event) takes place, i.e. why it happens and happens this way and not otherwise. For example, neurobiologists have been able to prove that at least some cases of ecstasy experienced from listening to music are causally determined by the release of the neuromediator dopamine in the striatum of the brain [13]. However, at the same time, it remains completely unclear in what mysterious way musical ecstasy, as a special type of experience, is "recorded" in the chemical formula of this substance and how it is generated by the physical properties of a given brain structure. The same should be said about other mental phenomena that have a semantic aspect. Without this, it is impossible to talk about revealing the final cause of this mental phenomenon from the point of view of a reductionist approach.

Not everyone agrees with this analysis. Here it is completely impossible to even superficially discuss the huge number of opinions surrounding the consciousness-brain problem. Many specialists working in the field of neuropsychology believe that the development of science will eventually make it possible to explain how and why these new, so-called "emergent" properties of the psyche, based on physiology and biochemistry, arise. But even without this, in the field of psychological research, there are more than enough mental and behavioral phenomena, the explanation of which can and should be carried out at the level of less deep ontological reductions, or even generally remaining within the confines of the mental world.

On the whole, about the principle of reduction, the following positions can be distinguished: 1. All scientific explanations are reducible to the level of basic elements of physics; 2. All scientific explanations can be reduced to the level of basic elements of physics, but this is not feasible in practice; 3. Some scientific explanations are even in principle irreducible to the level of basic elements of physics; 4. Each scientific discipline must adhere to its level of analysis and forecasting [14].

The wary attitude towards reductionism on the part of psychologists, which sometimes takes the form of a complex, is largely determined by the historical circumstances of the development of this science. In particular, with the fact that it constantly had to fight the danger of being completely absorbed by other sciences [15]. However, the fundamental difficulty lies in the fact that the higher a phenomenon is located in the hierarchy of phenomena (inanimate nature - living nature - mental life - culture), the more determinative steps

separate it from the most elementary (basic) beginning and the more complex are those real cognitive procedures of reduction to what the so-called "epistemological reductionism" strives. At a certain level and within certain limits, this strategy is implemented quite successfully in psychology. But mental phenomena always have a phenomenal-subjective and semantic characteristic that is not amenable to a complete downward explanation, as mentioned above. Further, due to the undoubted biosocial nature of the phenomena of mental life, their explanation must also be sought in the laws of the socio-cultural sphere; and this is no longer a reduction to the lower level, but rather an "ascension", or, as one might say, a "high-level" explanation. Thus, a reductive explanation does not exhaust or complete any explanation. There are many other types of explanation, and some of them may illuminate the phenomenon better than reductive explanation [12]. Psychology constantly has to resort to explanations of different types and at different levels.

The question of a reductive physicalistic explanation of the sociocultural determinants of mental phenomena themselves is even more problematic. Here, there are cases of appeal to explanation on the basis of psychological knowledge. This is called "psychologism", many examples of which we find in the history of sociology [16]. J. Piaget considers the "ascending" type of explanation of mental phenomena on the basis of social laws to be reduction. Along with sociologistic, he distinguishes physicalistic and organistic types of explanatory reduction. All of them, in one way or another, reduce psychic patterns to non-psychic ones. However, he also speaks of the existence of "psychological reductionism", which "consists in the search for an explanation of a certain number of different reactions or actions by reducing them to the same causal principle, which remains unchanged during the transformation" [17: 167]. In essence, this means explanation by finding some general, fundamental psychological mechanism. Sometimes this principle of reductive explanation is called "endogenous", in contrast to "exogenous" [18]. Generally speaking, in psychology there have been two approaches to the principle of reduction, depending on what type of psychology the author belongs to – natural scientific, or humanitarian. The former accepts reductionist methodology, the latter rejects it. This has been the case since the times of W. Wundt and V. Dilthey, and it continues to this day. A typical representative of the first approach is cognitivism, the second is humanistic and, especially, existential psychology. In the latter case, the methodology of understanding (direct empathic comprehension, feeling, interpretation) the subjective world, and not its explanation, is of paramount importance. Dilthey said that we explain nature, but comprehend mental life [15]. This approach is alien to any explanatory, hypothetico-deductive procedures, and, accordingly, reduction. Based on this, E. Spranger insisted on explaining the psychic through the psychic itself ("psychologica-psychological").

What is the situation with D. Uznadze's general psychological theory of set from the point of view of the reduction principle? From the very beginning, let us outline the main thesis: Uznadze's theory of set has all the features of natural science psychology (determinism, nomothetics, experimentttalism, scientism, etc.) [19]. Therefore, the principle of reduction is quite natural for it. In his first methodological treatise, Uznadze clearly outlined his position on this matter. Psychology is obliged to explain the origin and nature of the phenomena under study. Descriptive-understanding psychology is not able to shed light on this issue, since in the immediate experience itself, it is not clear why it is of this kind. "Therefore, psychology is forced to overcome the framework of the immediately given, i. e. the content of consciousness, and look for the meaning of the structures, established here, beyond its boundaries" [20: 58-59]. Peripheral mental phenomena (sensations and simple feelings) are especially closely related

to external objects; therefore, their explanation should be sought in physical and, especially, physiological laws. As for the explanation of more complex, structural phenomena, psychology has to search for it in the sphere of the subconscious. By the latter, in the first version of his theory, Uznadze meant the so-called "biosphere", a certain hypothetical psycho-physically neutral reality that mediates the impact of physical reality on phenomenological mentality. In the course of further development of the theory, Uznadze abandoned the concept of the biosphere in favor of the concept of set. This concept denotes the state of readiness of the subject to carry out mental activity. During the empirical study of the set, many of its characteristics and properties were identified, two of which are fundamental – integrity and non-phenomenality. The first means that the set is a specific state, a mode of an integral subject that determines the occurrence and nature of the course of all particular psychological phenomena, processes and behavior. The second is the unconsciousness of the set. Essentially, the set is a basic, system-forming mechanism of mental life [21]. Hence, the concept of set in Uznadze's theory, appears as the final explanatory one. The set includes information about all the factors and circumstances necessary for the fulfilment of porposeful behavior (motivation, situation and instrumental capabilities of the individual and personality). Thus, it plays the role of the immediate cause of mental activity. Being a genetically primary, unconscious form of the psyche, the set precedes and determines the emergence of mentality in general and consciousness in particular.

For Uznadze, the question of explanation is the most important. In his opinion, explanation can be understood in different ways - as the subordination of a particular phenomenon to a general rule, as the reduction of the unknown to the known, and as finding the cause of the phenomenon under study [20]. The author considers the latter understanding to be the most correct. This reveals his deterministic position. Uznadze was convinced that the calling of science is to explain phenomena, i.e. determine their cause. At the same time, he clearly saw the difficulties of transferring the principle of mechanical causation, widespread in the natural sciences, into the sphere of psychology. Based on this, Uznadze admitted the existence of a specific type of determination in the field of psychology. The model of such determination in his theory is the determination of the psyche by the set. It was as a result of theoretical research in this direction whicg created the idea that the set is a mediating stage where the opposition between subject and object is removed. The set expresses the integral state of a psychophysical being, which has "its own specific quality and its own specific regularitis" [22: 24]. In the set, behavior is modeled in advance. "Consequently, the set acts not only as a true cause but also as a goal: the set, like a goal, has built into it what will occur in the future" [23: 73].

Thus, it should be stated that in the general psychological theory of set an explanatory reduction occurs. The set acts as an instance that is beyond the boundaries of ordinary mental phenomena and processes and gives rise to them. In a certain sense, this can be understood as the reduction of the higher to the lower, genetically primary, more primitive. At the same time, we remain within the bounds of psychological science. Consequently, this theoretical system implements the methodological principle designated above as "endogenous reduction" or "psychological reductionism". Uznadze considered it extremely important to reveal the physiological and neuronic foundations of the psyche, but rejected the possibility of a full explanation of mental phenomena in terms of biology. The specificity of psychological phenomena remains elusive for biological, just as for sociological analysis. However, data from these disciplines are extremely useful as an aid to full-fledged reductive psychological analysis.

ფსიქოლოგია

რედუქციის პრინციპი და განწყობის ზოგადფსიქოლოგიური თეორია

ი. იმედაძე

აკადემიის წევრი, საქართველოს მეცნიერებათა ეროვნული აკადემია, ივანე ჯავახიშვილის სახელობის თბილისის სახელმწიფო უნივერსიტეტი, თბილისი, საქართველო

ნაშრომში განხილულია რედუქციონისტული ტიპის ახსნასთან დაკავშირებული პრობლემები საზოგადოდ, და, კერძოდ, მისი, როგორც ფსიქიკური სამყაროს შემეცნების მეთოდოლოგიური პრინციპის გამოყენების შესაძლებლობები. ფსიქოლოგიაში ქვემდებარე ონტოლოგიურ დონეებზე დაყვანის პროცედურა გართულებულია „მუდმივი" ფსიქოფიზიკური პრობლემის გადაუწყვეტლობის, ფსიქიკური მოვლენების კანონზომიერებათა ბიოლოგიური სუბსტრატიდან გამოუყვანლობის გამო. ამ უკანასკნელის ახსნა, თავის მხრივ, ფიზიკურ-ქიმიურ რედუქციას გულისხმობს. რედუქციონისტული მიდგომის შესაძლებლობის გარშემო ფსიქოლოგიაში თავიდანვე ორი პოზიცია ჩამოყალიბდა. საბუნებისმეტყველო ტიპის ფსიქოლოგიის ზოგიერთ თეორიულ სისტემაში ეს მიდგომა საკმაოდ თამამად გამოიყენება (ბიჰევიორიზმი, გეშტალტფსიქოლოგია, კოგნიტივიზმი და სხვა), თუმცა იყვნენ და რჩებიან მეცნიერები, რომლებიც მისდევენ ფსიქიკურის საკუთრივ ფსიქიკურით ახსნის პრინციპს. დ. უზნაძის განწყობის თეორიას საბუნებისმეტყველო ფსიქოლოგიის ყველა ნიშანი ახასიათებს, ამიტომ რედუქციის პრინციპი მისთვის ბუნებრივია. უზნაძის მიხედვით, ახსნა მოვლენის მიზეზის პოვნას გულისხმობს. მისი აზრით, „შინაგანი გამოცდილების" ფენომენების აღმოცენებისა და მიმდინარეობის თავისებურებათა ახსნა მათ გარეთ უნდა ვეძებოთ. უზნაძე უარყოფს განცდებსა და ფსიქიკურ აქტივობაზე გარე სამყაროს უშუალო მიზეზობრივი ზემოქმედების შესაძლებლობას. ამის გათვალისწინებით, თავისი თეორიის პირველ ვერსიაში, ფსიქიკური ცხოვრების განმაპირობებელი სისტემის მაფორმირებელი ფაქტორის სახით გვთავაზობს ფსიქოფიზიკურად ნეიტრალურ „ქვეცნობიერი სფეროს" ან „ბიოსფეროს". კონცეფციის უკანასკნელ ვარიანტში ეს ფუნქცია მიეკუთვნა განწყობას. განწყობა აქტივობის სუბიექტის მთლიანობითი მზაობის მდგომარეობაა. იგი ფსიქიკის თავისებურ, გენეტიკურად პირველად არაცნობიერ სახეობას წარმოადგენს, რომლიდანაც გამომდინარეობს ფსიქიკური ცხოვრების ყველა დანარჩენი ფორმა. მაშასადამე, განწყობის ზოგადფსიქოლოგიურ თეორიაში ხორციელდება როგორც მენტალური წარმონაქმნების, ასევე ქცევის, არაფენომენალურ ფსიქიკაზე (განწყობაზე) დაყვანის რედუქციონისტული ახსნის პრინციპი.

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