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# Consciousness as psychological problem: domestic and foreign approaches

*Last decades, phenomena of consciousness, discussion of which enables to uncover new meanings and senses in the wide system of psychological knowledge, is the unified basis of development of domestic and foreign scientific psychological thought. Taking it into consideration, the different approaches to definition and structuring of consciousness are analyzed in this article, and it is marked that, existing in the Russian psychology, scientific approaches to solution the problem of consciousness group in the directions of natural-science and humanitarian tradition; reconsideration of criteria of scientific character recently is marked. Special attention is given to foreign approaches, differing from Russian one by predominance of the analysis of the appearance causes of consciousness and its connection with a physical world that has been studied enough in domestic psychology from dialectic and historical materialism position.*

***Keywords:*** *consciousness, structure, subject, information, mind, scientific paradigms, theory of consciousness.*

It is possible to suppose that quite conditional temporary border of the centuries change, and in the past historical period – change of millenniums, not only provokes a special pungency of existential experiences of homo sapiens, but invokes, at a great extent, scientific search for the common basis of human life as well.

Such common basis during the last decades of scientific psychological thought development both in domestic and in foreign psychology is phenomena of consciousness, which problems are studied more and more intensively and widely not only in psychology, but also in the whole set of natural, humanitarian, and social sciences.

The experience of reflecting the condition of problem and forming some of its solutions in the domestic psychology are represented in the review-summarizing work of the author (Akopov, 2002).

Existing in Russian psychology, scientific approaches to the problem of consciousness solution are grouped in the directions of natural science and humanitarian tradition. Revision of criteria of scientific character (different types of rationality) during the last decades, necessarily put a thought about the key role of concept, forms, types, and other derivatives of the word

“consciousness” in warning or even overcoming the elements of parascience, propagated in scientific “aspect”. As for the humanitarian tradition, it is rather slightly presented in domestic psychology. Ideas of G.G. Shpet, M.M. Bakhtin, and others have been insufficiently adapted in the theoretical and methodical formations of domestic psychologists.

Modern psychological practice inevitably involves theoretical psychology in the discussion of the existential problems, which solution cannot be worked out outside the category of consciousness.

How is this category presented in domestic psychology? To what extent L.S. Vygotsky’s thesis about centrality of this category for all psychology is realized? Whether the consciousness doctrines of domestic psychologists (S.L. Rubenstein, A.N. Leontiev, B.G. Ananjev, V.N. Myasischev, K.A. Abulkhanova-Slavskaya, V.P. Zinchenko, A.G. Asmolov, F.Y. Vasiljuk, V.F. Petrenko, V.M. Allakhverdov and others) make a definite unity or they are absolutely different consciousness researches programs?

A fair amount of ideas insulated by time and separated by theoretical categories, is concealed from scientific attention, not articulated in the object field of modern psychology. Consciousness category includes a great unifying potential for modern psychology.

It is important to deduce consciousness from “delitescence” condition and to recognize it as a scientific problem at new, pithy, qualitative scope. The problem discussion at the new phase of science development helps to reveal new values and senses in the broad system of psychological knowledge.

Analysis of different approaches to definition and structuring of consciousness can be compared with one or another methodological line (interdisciplinary, unitary, system-defined); it shows connection of different structural schemes of consciousness with two-factor model of infinitely developing consciousness (factor of correlation and contact of individual and environment, person and society, individuality in actual and potential formations of “Self”; factor of creation, freedom and related to it responsibility in the system of interactions - contacts).

Two-factor approach (contacts, their intensity and breadth; the arbitrary, randomness, firmness and variety of objects, forms, etc.) allows contouring the integrated system of consciousness development.

Whether the change of scientific paradigms is related to the changes in the social and economical structure of society or the scientific thought is developing irrespective of doctrines of dialectic and historical materialism, one or another rule of the dialectic philosophy or other philosophical interpretations of science?

Regardless of our answer to this question, post-soviet reality of Russian

scientific, in particular psychological, thought demonstrates synchronically-mated tendencies (or aspirations) to the change of basic characteristics of domestic psychology (Allakhverdov V.M., Bratus B.S., Leontiev D.A., Yurevitch A.V. and others) and to preservation of the system of scientific psychological knowledge, formed during the previous years (Aleksandrov I.O. & Maksimova N.Y., Guseltseva M.S., Martsinkovskaya T.D., Morosanova V.I., and others).

Running a few steps forward, we would like to note that creation and dissemination of scientific knowledge as a function of scientific activity subject, being quite conscious, is not identical to the function of realization of scientific knowledge state (its system definition, adequacy to the current task, etc.), i.e. functions of the subject of scientific and methodological activity (introspection), even being often included in the first of the denoted functions.

By the system of scientific knowledge, we imply a hierarchic correlation of the following basic scientific structures: 1. Special language (concepts and categories), used for redaction of time and efforts, spared for receiving, processing, and transmitting the scientific information; 2. Methods of obtaining and forming the new information; 3. Scientific description of empirical factology; 4. Discovering and confirmation of regularities and rules, establishing definite relations and connections between the separate facts, their groups and systems; 5. Definition of the scientific approaches, formation of concepts and theories, allowing revelation of operating mechanisms of regularities and rules, detection of new facts, prediction of dynamic phenomena, etc.; 6. Originating scientifically grounded technologies (various psycho-practices), allowing initiation of purposeful changes of the objects of influence.

In connection with the last point, we see an essential difference in the systems of scientific knowledge about animated and inanimate objects. The animated objects, particularly those, provided with psychics, having primordial activity (presuppositions of subjectivism and subjectivity), prove to be extremely difficult for study, description, systematization and so on, considering an enormous diversity of the possible forms, kinds, and levels of activity; and at certain stages of study they start to show a definite resistance to research efforts from the direction of “stranger”, an “outside” subject.

In these cases become apparent in its entirety a phenomenon non-identity of consciousness of the research program subject with the active creature (responding to external action one or another way), including, as is well known, besides the operational and effective components, also active ones, conditioned by relevant motivation, accepted or rejected by opposed part (active creature).

Hereupon, it is possible to consider the existence of phenomenon of conscious, not realizing (reflecting) subject; and accordingly the questions arise: about the active creature dependence on the operational subject, responsibility of the realizing subject and confidence in it.

In the final analysis, if unsolved, the given problem provokes the question of confidence in scientific psychological knowledge, of dependence on the scientific authority and the scientist's responsibility for the correctness of research procedures at every above mentioned stage of scientific construction.

Because of hierarchy of the system of straightening the scientific knowledge, the work on categorical device takes on a special significance. In the domestic psychology such authors, as B.G. Ananjev, S.L.Rubenstein, A.V. Brushlinsky, Y.M. Zabrodin, V.P. Zinchenko, B.F. Lomov, A.N. Leontiev, A.V. Petrovsky, K.K. Platonov, and others focused their attention on this important work.

In different periods of time size and content of the main categories varied. Some categories have receded into the background (reflection, association, etc.), others turned out to be more claimed (person, activity, and dialogue).

In our opinion, in the actual psychological field all modern psychological problems have gathered in two categories, more interrelated with all the rest. These are categories of subject and consciousness.

A whole set of investigations, conducted in the institute of psychology of Russian Academy of Science during the last years (K.A. Abulkhanova, A.V. Brushlinsky, M.I. Volovikova, A.L. Zhuravlev, V.V. Znakov, V.V. Selivanov, H.A. Sergeyenko, and others) has determined the new content of this category and opportunities of its implementation in applied and practical researches.

Following V.F. Petrenko's pioneer works on psycho-semantics of consciousness, category of consciousness, experiencing today its second (third?) birth, has determined new growing points of domestic psychology (V.M. Allakhverdov, V.P. Zinchenko, O.V. Gordeyeva, Y.V. Subbotsky, Y.M. Shvalb, N.B. Skoporov, H.V. Ulybina, G.V. Akopov, A.Y. Agaphonov, and others), and has allowed formation of new scientific researches area in USA and Western Europe (The Science of Consciousness).

In the author's conceptual and review work on the problem of consciousness in domestic psychology (Problem of consciousness in psychology. The domestic school, Samara, 2002) during the sequential structured examination, *consciousness* is taken outside the bounds of involuntary limitations of the individual subject, within the framework of

general psychology and in the broad totality of theoretical views, applied and empirical surveys of domestic psychologists of different schools and trends of post-revolutionary (1917) epoch, finding its psychological subjectivity, integrity and profundity.

Consciousness is inseparable from the subject and cannot exist outside the subject; at the same time, forms of manifestation of consciousness of subject and subject of consciousness are not identical.

Contact (communication, dialogue) and freedom (randomness, creative work, creation) are determined as the factors of consciousness' development and manifestation in work.

Two-factor layout of consciousness summarizes and explains the existing descriptions of functions, structures, forms, types, and other manifestations of consciousness.

The concept "dependence", in particular, can be defined as loss (forced loss) of one or another freedom for the preservation of any contact (minimal form of a feedback) with other people or with oneself; contrary to dependence, "confidence" can be defined as a voluntary, not enforced limitation of own freedom in favour of preservation and enlargement of contacts and their transformation into semantic communication, instead of simple exchange of information; "responsibility" is also connected with the self-restriction of freedom, but not as a result of necessity to solve one's own problems (as in the case of dependence and confidence), but because of the subject orientation to the positive interaction with other people.

Thus, fixing the concept of subject and consciousness as the base categories, it is possible to deduce from them as derivative such important, not only in specific and practical, but also in general scientific meaning, concepts as dependence, confidence, and responsibility.

In contrast to the comprehensive approach (Antonov N.P., Velikhov V.P., Zinchenko V.P., Lektorsky V.A., Galperin P.Y., Luria A.R., Spirkin A.G., Chuprikova N.I., and others), to the unitary concepts of consciousness can be referred the approaches of Allakhverdov V.M. (theoretical and empirical researches on consciousness), Bakhtin M.M. (criticism of the thesis on the unity of consciousness, a polyphonic approach to the problem), Slobodchikova V.I. & Isaeva H.I. (psychological anthropology of consciousness), Lefevra V.A.. (reflexive structures), Shvalba Y.M. (purposeful consciousness), etc.

The comprehensive approach can be separated from the system approach (Barabanschikov V.A., Bratus B.S., Gorbatenko A.S., Lomov B.F., and others).

In domestic psychology, definitions of consciousness are formed with

the help of categories of reflection (Zeygarnik B.V., Platonov K.K., Klimova H.A., and others), self-consciousness (Stolin V.V., Chesnokova I.I., and others); by means of enumeration of certain indications of consciousness (Orlov Y.M., Chuprikova N.I., and others) and integration of mental new formations (Bozhovitch L.I.).

In the number of definitions of consciousness, diversity of consciousness functions is partly reflected: knowledge, attitude, purpose, regulation, etc. in the complex correlation of subject (person, "Self") with surrounding subject-social world. Correlation, separation or designing of new definitions of consciousness, corresponding to the logic of comprehensive (interdisciplinary) or unitary approaches, are not always implemented in the existing definitions of consciousness.

Different approaches to definition and description of consciousness levels are presented in the concepts of Bekhterev V.M., Vygotsky L.S., Leontiev A.N., Zinchenko V.P., Vasiljuk F.Y, and others. During the last years, the concept of Zinchenko V.P. has got a certain propagation, and its schematization is implemented by Slobodchikov V.I. and Isaev Y.I., and also by Petrivnya I.V., Tugushev I.V., and Mankova S.V.

Questions of specific character and correlation of concepts "consciousness" and "reflection" are investigated in the comprehensive paradigm (ecological consciousness, economical consciousness, legal consciousness, political consciousness, etc., i.e. in phenomena of contact and freedom, in communication systems: "I and nature", "I and law", "I and political system of company", etc.), and also within the framework of the unitary approach (ethnic, moral consciousness), i.e. in phenomena of contact and freedom, in the systems "I and others", "I in my community", "I in myself".

The linguistic point of view (consciousness exists solely in the verbal stuff and language) is amplified in the concept of multiplicity of the consciousness languages, where tongue is regarded as any way of the deliberate address of one "creature" to another one (Donskikh O.A., Rozin V.M., Tuller D.M., and others). The contacts of interaction, cooperation and emotional contacts, as the factors of speech and consciousness development (Lisina M.I.), are compared. Visual and effective, figurative, and verbal language components of consciousness (Luria A.R.) are discerned.

There are modal forms (tactile, olfactory, gustatory, visual, etc.) and extramodal forms (space, time, social objects); semantics and mutual projection in the "semantic unity of the subjective world" concept by Artemjeva H.O.

The opposition of the unitary and comprehensive approaches in the

problem of language and consciousness is ended by the semiotic approach: language is any system of signs (Stepanov Y.S.). The different semiotic systems are reviewed as well (Frege G., Abramyan A.A., Jacobson R., Salmina N.G., and others).

The “children's consciousness” concept is ontogenetically important but scantily explored category of general, and especially age psychology. Child consciousness undergoes the main changes at the age of 6, namely - transition from magic to natural-science explanation of the world, division into physical and mental, etc. (Subbotsky Y.V.).

In the high preschool age the subject specificity of realization is detected (Salmina N.G.). Poddyakova A.N analyzes the exploratory consciousness in the children’s age. The peculiarities of juvenile and youthful consciousness have enough light shed on it in the psychological literature.

However, unlike the problem of psychic’s development in the ontogenesis, the problem of consciousness development in the ontogenesis is not enough conceptualized after the works of B.G. Ananjev.

Reviewing the special states of consciousness, such as disorders, allows better understanding of human consciousness phenomenon. From the classic point of view (Zeygarnik B.V.), various disorders of consciousness are regarded as disorders of separate mental processes, which are included in the multicomponent structure of consciousness, or their complexes, states and individual manifestations of these states (disorders).

Different point of view (Klimov Y.A.) regards disorders as a peculiarity of orientation (in time, place, situation, etc.), including depersonalization and false perception and recollections.

The structural approach to the problem of consciousness disorder fixes these disorders in the picture of consciousness, concerned with the hypertrophy in the development of one or another consciousnesses generator. In the course of the structural approach the psychological (unitary) concepts of consciousness disorders are presented in the works of Myasischev V.N., Vasiljuk F.Y., and others.

In Western Europe and USA the situation with the spectrum of approaches and solutions of consciousness problem is a little bit different. In the comments on M. Velmanz’ book (2000) (in A. Zeman’s opinion, one of the best book about consciousness in the last decade) the reviewer explains the scientists’ sharply increased interest in consciousness by three interrelated causes. The first one is related to essential progress of neuroscience.

Though the picture is not complete yet, neural correlates of such realizing processes as visual perception, emotions, and memory start to become clear owing to the researches on animals and people with brain

damages, and recent researches on healthy people with brain functional reflection use. “At the same time, psychologists - experimenters have overcome their nervousness in the study of consciousness”. Research of such phenomena, as blindness and ability of some people with poor eyesight to guess precisely the characteristics of visual stimulators, having no realized visual experience of these stimulators, can explain the difference between conscious and unconscious processes of brain. The third source of a “wind in the sails of consciousness researches” is connected with the works in the field of artificial intelligence (Zeman).

Other widely known and rather active explorer of consciousness, D. Chalmers distinguished three parts, grouping all multitudes of problems: 1. Philosophy of consciousness; 2. Philosophical theories of mental phenomena (mind, memory, etc.); 3. Consciousness science.

Chalmers’ classification is interesting because of citing the quantitative data (number of publications in parts and headings, forming these parts), as well as qualitative characteristic of various parts (list of the authors and titles of articles). Besides, in each part, the articles are grouped under topics: the concept of consciousness (27 articles), “the explanatory gap” (34), materialism and dualism (30), the knowledge argument (16), materialism and modality (consciousness attributes) (29), metaphysics of consciousness (34), panpsychism (11), “zombies” as a problem of consciousness (19), qualities of consciousness (colour, etc.) (39), content of consciousness (20), “representationalism (18), consciousness as “a higher-order” thought (23), introspection and self-knowledge (28), the unity of consciousness (11), the function of consciousness (18), different philosophical theories of consciousness (23).

The second part includes 20 groups of topics: “the self and personal identity” (37 articles), “ordinary consciousness psychology” (35), “internalism and externalism” (34), “free will” (32), “language and thought” (27), etc.

The third section contains 16 groups: neuroscience of visual consciousness (24), consciousness and neuroscience (34), cognitive models of consciousness (36), unconscious perception (18), “implicit memory (15) and doctrine (10), change blindness and “inattentional blindness” (14), visual consciousness (8), consciousness and psychology (24), consciousness in the history of psychology (30), time and consciousness (7), animal consciousness (13), consciousness and artificial intelligence (11), consciousness and physics (37), phenomenology (38), etc.

D. Chalmers concludes that, despite the plenty of works, “consciousness persistently resists to attempts of scientific solution”, and “some research workers come to conclusion that the problem has no solution at all” (D.

Chalmers, 1995).

D. Chalmers divides all problems of consciousness into two groups by criterion of solution difficulty. To the first group he relates rather simple problems, connected with the problem, to the second - the very problem, presenting a great difficulty, and he explains the causes and nature of these difficulties.

It is necessary to note that a lot of "reductionist" solutions Chalmer refers to the false solutions and considers that it is possible to find a "naturalistic" nonreductive explanation of consciousnesses, based on the principles of structural coherence, organizational invariance and two-aspect consideration of the information.

According to Chalmers, there is not only problem of consciousness. "Consciousness" is an ambiguous term, relating to a great number of various phenomena. It is necessary to explain each of these phenomena.

However, some of them are easier for explanation, than others. To the easy tasks of problem of consciousness Chalmers attributes those, which can be solved by standard methods of cognitive science, by means of which the phenomenon is explained in the concepts of cognitive logic ("calculation") or neuron mechanisms. Difficult tasks cannot be solved by means of these methods.

The easy tasks of the problem include, in particular, explanations of such phenomena as ability to distinguish, categorize, and react to external stimulants; generalization of cognitive information; capacity to inform about one's own internal state; ability to focus attention; deliberate behaviour control; distinction between wake and sleep, etc.

All these phenomena are related to the concept of consciousness and can be successfully explained from the point of view of cognitive science and neuro-science.

The problem of subjective experience is really difficult for consciousness explanation. When we think and perceive, there is a "whir" of informational process, but there is also a subjective aspect - something similar to conscious organism. This subjective aspect (experience) consists of various sensations, perceptions, emotions, thoughts, etc. Is doubtless that some organisms are the subjects of "experience", but how it is implemented – is the question, bringing to a nonplus.

It is widely accepted that "experience" arises from the physical basis, but we do not have a good explanation, why and how it happens. Why physical processes result in the rich internal life arising?

Chalmers suggests differentiating conceptually the terms of "qualia", "awareness", "conscious", "experience", and "consciousness", to which is

very difficult to find equivalents in Russian.

To avoid confusion (according to Chalmers), it is necessary to reserve the meaning of "phenomena of experience" for the term "consciousness"; using the less busy term "awareness" for more "open" (well-known, explained?) phenomenon, described earlier as functionality.

However, in the majority of works, the mentioned concepts are used as synonyms.

According to Chalmers, functionality, in the final analysis, is reduced to capacity for the verbal report on the internal information; to perception of the information from the surroundings and ability to use it for behaviour control correspondingly.

Discussing the widespread method of explanation of one or another function (mechanism), Chalmers calls it reductionistic. For example, for a doctrine explanation, it is necessary to explain, how the systems of behavioral capacities are modified in the light of the information from surroundings; and also explain the methods, by which the new information can be obtained for adaptation of the system actions to its environment. If we demonstrate how the neural or "calculating" mechanism makes it, we thereby explain the doctrine, as well as for the other cognitive phenomena (perception, memory, and language).

According to Chalmers, this kind of explanation is not good for a case of conscious experience. What makes a difficult problem difficult is far beyond the concept of functions. Even when we explain the actions of cognitive and behavioural functions in approaching to the experience of consciousness (perception, categorization, and verbal report), there is still an obscure question: Why implementation of these functions is accompanied by conscious? The simple functional explanation leaves this question open.

According to Chalmers, the key question of the problem of consciousness is "Why the information processes of distinguishing, summarizing, etc. are not free from internal sensitivity (subjective experience, consciousness)?

The absence of the answer to this question is marked as "an explanatory gap" between the functions and experience of consciousness; there is a need for an "explanatory bridge", the stuffs for which still should be found. According to Chalmers, to explain the consciousness we need a new approach. The customary explanatory methods of cognitive science and neuro-science are insufficient.

Estimating reductionistic methods (methods of explanation of high level phenomena entirely in the terms of fundamental physical processes) Chalmers concludes that they work well in many areas of scientific knowledge since the

structures and functions, explained in these areas, are consequent to the physical system. These methods are powerless for nonphysical structures and functions when they are used for the explanation of "superstructural" and "superfunctional" formations.

Chalmers suggests the following nonreductive explanation. There are some basic characteristics (weight, space, and time) in the physical science, which are not explained by simpler essence. When the physicists did not manage to explain electromagnetic waves by mechanical phenomena, they also postulated electromagnetism as the fundamental characteristic. By analogy with the physical science, Chalmers supposes, that nonreductive theory takes consciousness as a fundamental characteristic not only of the known series: weight, charge, and space-time, but of the outward things as well.

It is known that, where the fundamental property is, there are also the fundamental laws. The nonreductive theory of consciousness supplements compatibility of organic law of nature with the new principles, making thereby possible the explanation of consciousness.

Chalmers admits that in this case we do not receive an answer to the question "why". But it is analogously to any fundamental theory. Nothing in physics shows that substance is primary, but we do not consider it as an argument against the theory of substance, which can explain all the types of material phenomena, demonstrating them deduced from the base laws.

Chalmer assumes that, the same happens to the conscious awareness. Such stand is determined as a type of dualism. But it is an innoxious version of dualism, wholly compatible with scientific world outlook. Such approach does not contradict the physical theory; we just need the further connective principles for explanation of how consciousness arises from the physical processes. There is nothing mystical in such theory. Chalmers calls this stand a "natural (scientific) dualism".

If this point of view is correct, the theory of consciousness should have more in common with the theory in physics, rather than in biology. Biological theories do not contain similar fundamental principles; therefore the biological theory is remarkable for the definite complexity and is not quite well ordered. The physical theories, dealing with the fundamental principles, aim at simplicity and elegance. In Chalmers' opinion, theory of consciousness should also be notable for simplicity, elegance, and beauty.

The nonreductive theory of consciousness includes the psychophysical principles, connecting properties of physical processes with the properties of mental experience. Chalmers mentions the following principles:

Structural coherency principle.

It is a principle of communication (conformity) between the structure of consciousness and the structure of processes, located in the cognitive basis of subjective awareness. According to Chalmers, the concept "awareness" is directly accessible (attainable) and potentially reportable, i.e. realized in the system, using the language.

Thus, awareness is purely functional concept, but, nevertheless, it is concerned with consciousness. In certain cases, with consciousness and awareness (a realized experience), there is always some conforming information in the cognitive system, which is controlled by behaviour and reportable.

And vice versa, when the information is reportable and under control, there is conforming realized experience. Thus, there is a direct conformity between consciousness and awareness. This conformity can be spread further.

The central fact of experienced awareness is its composite (complex) structure. There are also the terms of resemblance and distinction between experiences (one or another feeling), and terms of such things as relative intensity.

Each of experience subjects can be partially characterized and separated into its constituent parts in the terms of the following structural properties: resemblance and distinction between experiences, perceived position, relative intensity, geometrical structure, etc. The central fact is that for each of these structural characteristics there is a corresponding characteristic in the informational and procedural structure of awareness.

Chalmers regards the color perception as an example. Each distinction of colour experience has a conforming distinction in the process. Different phenomenal colours that we perceive form a system - three-dimensional space, based on differentials in hue, saturation, and brightness. This space's properties can be obtained also from the informational and procedural view: check of visual systems demonstrates that light waves are discerned and analyzed by three different axes, and this is the three-dimensional information, which is relevant to the subsequent process. Thus, the three-dimensional structure of phenomenal colour space corresponds directly with the three-dimensional structure of the visual awareness. It is analogous to the other modalities.

In general, any information, which is accepted knowingly, is also cognitively presented.

The principle of structural coherency has appeared to be rather useful in the indirect explanation of subjective experience in the terms of physical processes. For example, we can use the facts of nervous processes of the visual information for the indirect explanation of the colour space structure.

This principle provides a natural explanation of many works on the problem of consciousness.

Organizational stability principle.

This principle means that any two systems with identical functional organization will have qualitatively identical experience.

According to this principle, experience is caused not by the specific physical product of the system, but by the abstract model of causal interaction between the components of a system. Chalmers considers that the principle is rather debatable and uses a mental experiment for this principle proof.

Two-aspects information theory.

Two previous principles have no basic (fundamental) character. They include the concepts of high level: "awareness" and "organization". The base principles are further indispensable.

The main principle, which Chalmer offers as a central one, includes the concept of the information, comprehended in Shannon's sense. Information space has the basic structure from the different relations between its elements, describing the paths, by which the different elements in the space are similar or various.

Information space is an abstract object, but, following Shannon, we can regard the information as physically built-in, when there is a space of different physical states, distinction between which can be transmitted by some causal pathway.

The transmitted state can be regarded as self-designed in the information space. For explanation, Chalmers borrows a phrase of Bateson (1972) "physical information is a difference that makes a difference".

Two-aspect principle is based on the observation that there is a direct isomorphism between the definite physically built-in information space and definite phenomenal information spaces.

Then Chelmers assumes that information has two main aspects - physical aspect and phenomenal aspect that explains descendance of the mental from the physical. The mental comes up due to its status of one of the information aspects, when the other aspect is appeared to be built-in in the physical process.

In this connection, the author recognizes the speculativeness of the given principle and a quantity of unsolved problems.

Chalmers' works have evoked both critical and supportive comments. So, the well-known research worker of the problem D. Dennett has disputed Chalmers' idea to "divide problems of consciousness into simple and hard, considering such approach distracts the researchers' attention (D. Dennett, 1996).

E.J. Lowe also opposed the division of problem of consciousness into simple and hard too. He considers that it is illusion to think there is any simple problem, which can be solved by computing (cognitivism) or neuronic paradigms (E.J. Lowe, 1995).

D. Hodgson proves that some simple problems of consciousness cannot be solved before the hard ones (D. Hodgson). Using the system of logically bound statements S. Horst proves that if the hard problem of consciousness cannot be solved physically, then it cannot be solved evolutionary either. (S. Horst).

W. Seager, agreeing with Chalmers that there is not a different solution of the problem of explanation than "the material processes that can generate consciousness", at the same time comes to conclusion that Chalmers' supposition about consciousness as a fundamental characteristic of the world invokes an association with some form of panipsychism (W. Seager).

Analyzing the difficult problem (why the physical processes result in the realized phenomenal experience) E. Mills comes to conclusion that Chalmers' theoretical construction cannot help in its solution (E. Mills).

B. Libbet also finds defects in Chalmers' theory and resting upon his own experimental researches of the mental processes, explains consciousness as an emergent property of neuron activity.

J. Shear considers that it is necessary to study "the difficult problem" as systematically as the phenomenon of substance, attracting, particularly, the data of correlation of mental and physical development in early childhood, and also the system of representations of Eastern culture and experience of "clean consciousness" study.

F.J. Varela, calling in question the basic position of Chalmers, develops the author's approach, inspired by the style of phenomenological analyses, which are called "neurophenomenology".

T.W. Clark criticizes the view on consciousness as something accompanying or produced by states of neurons, something exceeding the limits of functioning of the cognitive processes, realizable in brain. In the author's opinion, such point of view creates the situation of "an explanatory hole" between the function and phenomenology, which cannot be overcome by the functional theory of psychics.

The author examines the hypothesis of identity of the subjective experience of the definite information, generated by control and behaviour function.

T.W. Clark assumes that this hypothesis explains the isomorphism between the frame of experience and the neuron organization, giving a natural explanation of consciousness as the relative properties of information states,

not as a separate ontology of phenomenal essences.

Combining the set of researches on the problem of consciousness into the concept "The Science of Consciousness", M. Velmans discusses in detail the questions on definition and location of consciousness. The author establishes the availability of a great number of definitions and common terms "consciousness", "awareness", "conscious awareness" (sometimes "phenomenal awareness") as synonyms.

As M. Velmans marks (1996), in some works "consciousness" is synonymous with "mind", that, in the author's opinion, broadens the definition of consciousness too much, including unconscious mental processes in it.

In other works consciousness is synonymous with the "self-consciousness". Such definition, according to M. Velmans, is too narrow, since the person can also realize the other things (other people, outer world, etc.) besides himself.

In the dispute Dualism - Reductionism M. Velmans takes a special stand, developing his own theory of "reflexive consciousness".

Analyzing positions of dualism and reductionism in the solution of the problem of consciousness localization, M. Velmans comes to conclusion that "classic dualists and reductionists, ardently differ on the problem of where it is - somewhere in mind" (M. Velmans, 1996), are quite at one in the solution of question of the definition and functions of consciousness.

M. Velmans regards as quite reductive the thesis that the scientific investigations will lead to discovering of the neuron fundamentals of consciousness and to explanation of phenomena of consciousness in the terms of neuroscience, and, thereby, it will be proved that consciousness is no more than a state of mind.

M. Velmans' objection is that "ontologically the causes are not identical to the produced effects", that is illustrated on the example of phenomena of electricity and magnetism (the motion of a wire through the magnetic field evokes an electric current, running in the wire, but it does not mean that the electro-current is ontologically identical to the motion of the wire; it is also incorrectly to say, if reversing this experiment, that the current, running in the wire is ontologically identical to the magnetic field, surrounding the wire).

As M. Velmans marks, almost all theories examining relations "consciousness – brain", suppose that the preceding neuron causes evoking the given conscious awareness, theoretically can be found, besides, there are very different points of view on the nature of effect yet.

So, "the interactional dualism" supposes two ways of causal interaction between consciousness and mind; epiphenomenalism supposes that the state

of mind evokes a conscious awareness, not vice versa; emergent interactionalism supposes that consciousness comes from the mind activity and then surpasses this activity, which it has descended from.

Reflexive model, suggested by M. Velmans, in the author's opinion, also stimulates the scientific researches on the neuron and psychological causes of conscious awareness, but only from the stands that sensation, experience, etc. are localized not in mind, but in the point of contact (finger or any other part of body in case of pin prick) by means of the mechanism, called by M. Velmans "perceptual projection". For the mechanism illustration, M. Velmans adverts to the examples of imaginary extremity (arm, leg). The author assumes that "perceptual projection" is a general mechanism of consciousness activity and in other modalities (hearing, eyesight) as well.

"Reflexive model" allows determining how consciousness relates to mind and physical world, without going to dualism and rolling down to reductionism.

Experiences arise from the reflected interaction of initiating stimulant with perceptual process. This interaction results in conscious phenomenal world, which includes what we usually think about as a "physical world". What we usually accept as a physical world is a part of what we is consciously experience. If so, there cannot be not "bridged" contents of consciousness separated from the experienced physical phenomenon.

Summing up this rather incomplete review of philosophical and psychological works on the problem of consciousness in USA and Europe, we shall mark the most noticeable differences in the problem working out.

While in Russian psychology the research attention concentrates mainly on the problems of definition and structure of consciousness, in foreign science, they paid more attention to so-called "difficult problem of consciousness", i.e. on the question: "Why does consciousness emerge and how it is connected to the physical world?" (B. Baars, D. Chalmers, D. Dennett, J. Searle, J. Shear, F. Varela, M. Velmans, and others), worked over enough in the Russian psychology from the philosophical positions of dialectic and historical materialism.

At the same time, it is necessary to note that the word combination "Russian psychology" is conceptually heterogeneous in the space-time attitude. Pre-revolutionary, soviet, and post-soviet periods, essentially differing by the territorial-political and socio- economic mechanism of the government, certainly, have had an effect on the tendencies of development of Russian psychological science, specially considerably in the connection with the ideological imposed settlement during the Soviet period, which is nevertheless characterized by considerable achievements in the theoretical

psychology.

And, though from the retrospective point of view it is important to consider the type of "consciousness of psychologists" (V.P. Zinchenko) of the Soviet period (who "with total deduction" practiced Marxist philosophy. See V.P. Zinchenko "Thought and word of Gustav Spett", Moscow, 2000. page 128), in prospective appraisal we can state that an harmonious enough system of scientific psychological knowledge, which have been organically preceded by a number of works of the pre-revolutionary period was set up by common efforts; and "reconstruction" period has not changed much except for the reduced plenty of references and quotations from the classics of Marxism - Leninism.

One can regret, criticize, or even discard the philosophical dialectical-materialistic fundamentals of domestic psychology, but it is impossible not to admit as a historical fact that that very methodology has determined a face of the Russian psychology. So, the changes, perfection, and development - are quite possible and correct, but the flat refusal is equal to the loss of face.

Besides, it is impossible not to note the pluses of the chosen methodology. It is, in particular, removal of the Dekarovsky problem of dualism or different kind of reductionism of the consciousness explanation.

As for the complete solution of the problem of body-mind interactions, or, stretching the meaning, material and ideal (mental, conscientious), i.e. answers to the question: Why and how does consciousness emerge and interact with mind and neurophysiological processes, development of the unitary and interdisciplinary approaches will promote a counter motion in the problem solution. (Akopov, 2002).

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