

To The Problem of Psychology of Consciousness¹

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ABSTRACT

The paper discusses methodological problems of consciousness research. In spite of the fact that the consciousness is a key problem of philosophy and psychology there is hardly any degree of progress in understanding of its functioning. Nevertheless, psychology within the framework of the Personal Construct Theory and Psycho-semantics moved forward enough in describing the content of an individual's consciousness, his worldview, the others' and himself. In this article the following definition of consciousness is given as a secondary perception of the world in a symbolic form.

Keywords: *consciousness, psycho-semantics, Theory of Personal Constructs, primary and secondary qualities, the quantum theory, causality, synchronicity.*

INTRODUCTION

Consciousness remains to be a pivotal problem in philosophy (B. Spinoza, R. Descartes, I. Kant, I. Fichte, G. Hegel, K. Marx, A. Bergson, E. Mach, A.A. Bogdanov, L. Vitgenstein, Aurobindo, E. Husserl, M. Heidegger, D. Dennett, J. Searle, M. Velmans, M.K. Mamardashvili, V.A. Lektorsky, V.S. Stepin) in Cultural studies (O. Spengler, R.O. Yakobson, M.M. Bakhtin, A.Y. Gurevich) and in Psychology (W. Wundt, E. Titchener, W. James, J. Piaget, G.I. Chelpanov, L.S. Vygotsky, S.L. Rubinshtein, A.N. Leontyev, A.R. Lurya). In Philosophy the subject of consciousness is a binding string connecting together the ancient Greek Philosophy, Buddhism, Medieval Scholasticism, English Empiricism, German Classical Philosophy, Marxism, Russian Orthodox Existentialism, Viennese School of Logics, Analytical Philosophy and Constructivism.

Tons of work is written on consciousness but as A. Leontyev used to say, there is surprisingly a small "dry remainder" left: the consciousness is intentional (i.e. directed to the object), it is culturally and historically determined,

connected to the language and operated by a brain substratum (first of all by neocortex, with participation of other structures of a brain), it is the highest form of mental reflection and self-regulation, consciousness is an internal dialogue, a self-communication. This is actually the brief summary on psychological study of

consciousness. In studies of consciousness the researches are substituted by opinions or opinions on other opinions. The subject of consciousness becomes a self-sufficient area where some researchers' reasoning on the nature of consciousness make basis for others because of an absence of a specific method for its research. It is necessary to mention that consciousness is a poly-semantic term having multiple meanings. Consciousness is defined as an ability to perceive and to feel (compare: "to lose consciousness", "to be out of consciousness") and as a human ability to categorize certain information and to include it to complete notional system (thesaurus) of the world knowledge – "to realize" or "to comprehend".

If the study of consciousness is considered a research of its content, then we have some significant progress: the cultural-historical conception (Vygotsky, Lurya, 1993; Asmolov, 1996), Study of Historical Mentality (School of the Annals; Spengler, 2009; Toynbee, 2003; Lotman, 2000; Gurevich, 1972; Shkuratov, 1997), Analysis of Social Presentations (Berger,

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Lookman, 1995; Moskovici, 1998; Andreeva, 2005; Yemelyanov, 2006), Analysis of Ordinary Consciousness (Kelly, 1963; Kelly, 2000; Petrenko, 1983, 1988, 2005a; Petrenko, Mitin, 1997; Shmelyov, 2002; Ulybina, 2008). There is a number of theoretical works devoted to consciousness (Akopov, 2006, 2007; Zinchenko, 1991, 2007; Hunt, 2004; Dennett, 1996; Searle, 1997; Chalmers, 1995; Velmans, 2000), Russian theoretical works connecting consciousness problems with a problem of comprehension (Znakov, 2007a, b), with a scenario of a person's life (Abulkhanova-Slavskaya, 2009), with choice and selection of the information made by consciousness (Allahverdov, 2000, 2003) and works devoted to interrelations between consciousness and a brain (Chuprikova, 1985).

Somehow standing aloof from Academic Psychology, Transpersonal Psychology gives a rich phenomenological material on the altered states of consciousness (Grof, 2002; Wilber, 2004; Mindell, 2004; Goats, Maykov, 2004; Tart, 2003; Fraiger, Fadiman, 2008; Hunt, 2004). But here the research is done on the consciousness content but its mechanisms still remain unknown. The psychological mechanisms are not determined as neuro-physiological processes investigated by neuro-cognitive sciences. The field of a brain study, a hardware (as a computer metaphor), the invention of a tomography and similar technologies are more or less successful. The research in this field is widely performed. But we are rather focused on the psychological mechanisms within the framework of a computer metaphor, the software (program supplement). A similar is learnt by similar.

In the studies of psychological mechanisms of consciousness there is hardly any conception for understanding consciousness structure and phenomenology description besides A.N. Leontyev's theory of activity (Leontyev, 1975) and C. Fillmore's grammar cases (Fillmore, 1981). The reason of the "stagnation" in Russian psychology (and in the West, it is a result of influence of behaviorism, having stimulus-reaction paradigm, which place consciousness beyond psychology) as I realize, is in inertia of the old methodological attitude, reducing consciousness to simple function of copying (reflecting) so-called "objective reality", i.e. reality existing irrespective of an observer. In Western Philosophy these methodological attitudes are named «correspondent theory of truth" (Kasavin, 2001); in Russian Philosophy -

"the theory of reflection" (sometimes this definition is broader - "Lenin's theory of reflection"). I presented criticism over these methodological attitudes in a number of articles on constructivism (Petrenko, 2002, 2005b, 2008). The subject which the human consciousness deals with (so-called "objective reality") is a complex construction including sign and language constructs, values, transformed outcomes of culturally-specific forms of thinking and so forth. It means that in the model of the world which everyday consciousness, naive realism or orthodox materialism are inclined to consider as the objective reality, also implicitly exist in the features of consciousness that constructs a model. That's why it is necessary to reject a theory of the subject of knowledge existing irrespective of recognizer's consciousness and transfer to quite another system of concepts including an observer's position, his system of categories. "It is impossible to pour young wine in old skin ..." Therefore the resolution of old "eternal problems" to which the subjects of consciousness concerns, demands updating of all system of concepts, all conceptual thesaurus by the language of which this problem sphere is described.

The terms "objective reality", "social reality" are substituted by new terms, such as: "the world" (Rubinstein, 1997; Vasilyuk, 1995), "the possible worlds" (Hintikka, 1980; Asmolov, 1996), "mental spaces" (Velichkovski, 2006), semantic spaces (Kelly, 2000; Osgood, Soozy, Tannenbaum, 1972; Petrenko, 2005a; Shmelev, 2002; Suprun, Yanova, Nosov, 2007), "sense worlds of personality" (Petrovski, 2008) where the position of a biased individual possessing the set of values and personal consciousness is involved in psychological ontology. In this aspect Psychology at this stage of development as never before requires methodological reconsideration of its base and creation of the new models and hypotheses. First of all it concerns a problem of consciousness. Systematic and integrated character of the investigation object- consciousnesses – in my opinion, leads to unproductive way of its empirical – stage-by-stage cognition. With the help of words (terms) we break down integrated consciousness, "we multiply essence without any need" violating a principle of "Okkama's razor" and then we search for correlations for these pseudo-essences (sensation, perception, thinking, memory, etc.). There occur "theoretical" questions like: how the

consciousness is connected with thinking? Or with attention? Scientific development of this area, in my opinion, requires "a consideration from abstract to concrete" (Hegel, 1970-1972; Davydov, 1972), not a verification of the single empirical facts but checking the consequences rising from theoretical constructions. In order to cover the whole investigated super-complex reality we are inevitably engaged in theoretical speculations and apply metaphorical language. I think the naïve questions and shocking hypotheses can happen. Once on a seminar of nuclear physicists in New York, Nils Bohr commented on a report by a young scientist: "Certainly, it's a crazy theory. But is it crazy enough to be true?" When we read the works by physicists studying cosmology or quantum physics we are surprised by their intellectual freedom and courage and also their metaphorical language. "Black holes" and "mole burrows", "dark material", "quarks", "the theory of strings", "symmetry" and "chromaticity" of elementary particles, their "odor" and "strangeness", etc. The psychologists of older generation having a cautious attitude of the past ideology, unlike physicists, look quite loyal stuck to settled views. (I refer to real professional psychologists but not to ill educated, esoteric-mythological typed "psychologists" and other "specialists" of this kind. Indeed indifference and carelessness of the above-mentioned "specialists" makes the professionals alarmed and conservative).

Understanding the world as sensed and realized space of an individual's living, consciousness is considered to play structure generating role. It is rather considered a multidimensional and multi leveled open evolutionary system (perhaps, the most complex of all systems being investigated by science) that creates new semantic worlds than a copying single-dimensional "layer" between the subject and the reality. The consciousness – "the space wanderer" – is at the edge of creative evolution of the Universe. It's quite possible that human consciousness is involved in layers of higher levels of consciousness and we are capable to catch up the space mind. Eventually, our human civilization in comparison with space is younger than a day. The Universe has been existing for billions years. When I lecture on problems of consciousness I remind one impressing fact – our organism contains atoms of carbon and metals which the plasma of the Sun does not have. It only contains hydrogen and helium. All elements heavier than hydrogen are the products

of explosion from the new stars: burnt out, they collapse and compress up to a scope of unthinkable density and conditioned by ultrahigh temperature, eventually burst, to throw out a transformed material into space. The planets of the solar system arose from this star dust. Faded star ashes knock in our heart. And might we be successors of evolutionary Universe not only, so to say, in material aspect?

The hypothesis on previous forms of life and mind existence is as scientifically correct as a hypothesis on uniqueness and singularity of the terrestrial life and civilization. So, with a reference to a problem of occurrence of a life, there exists the "pan-sperm" hypothesis (Huygens (see. Aksenov, 2001); Vernadsky, 1978; Crick, 2002; Panov, 2007) according to which the life transfer in the form of molecular structures on the basis of which its elementary forms occur is carried out by means of wandering space bodies (comets, meteors). Consciousness widely defined as an ability to feel, experience, feel i.e. as the quality inherent to a certain extent for all living beings also considered to have the space origin. If the hypothesis on pre-existence of consciousness is true then it is quite possible to seek "mind brothers" not only by launching radiosondes and telescopes into space but also meditating, getting focused on an insight deep into our own consciousness addressing to archetypes of collective and maybe space unconscious. That was what adepts of Buddhism, Hinduism, Sufism and Sikhism practiced. The differences are only in concepts by which they practiced "the multiplicity of religious experience" (W. James's terminology). Science and religion practices get closer, and religion history is imbued with experiencing of "highest" states of consciousness (Maslow, 2008; Fraiger, Fadiman, 2008; Schlitz, et al., 2007) it is Psychology that does their scientific cognition. According to V. Frankle, it is necessary to assume, that over the human world there is the surpassing and inaccessible world for a human being, a sense, more precisely a "super-sense" that can only give a sense to all human suffering. A human being can comprehend the super-world no more than an animal from the environment can understand wider human world. However, he can catch it in a presentiment – in faith" (2008, p. 42).

An idea of pre-existence of space consciousness contains in Hinduism. The individual consciousness (Atman) is a part (a divine sparkle) of holistic ocean of space

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consciousness (Brahman) with which it merges after death. Within this theory the entire integrated consciousness precedes the individual one. An integral one acts as some basic background, as "the carrying wave", on the basis of which more differentiated-individual one is being modeled. W. James (James, 1997) compared interrelation of individual consciousnesses with an image of tree roots which are bound in underground darkness or with ocean bottom that connects islands with each other. "In the same way, – he writes, – there also exists a continuum of space consciousness in which like into a material sea our singled minds are being plunged" (Quoted by: Karpenko, 1992). The individual consciousness is limited, apparently, because of a probable overload and nervous failures while adapting to environment. Self-consciousness, mechanisms of self-identity beyond such understanding cut the individual off another's consciousness, another's experiences (sometimes breaking, probably, in phenomena of telepathy, déjà vu, synergies, and synchronicity). Such interpretation of integrated consciousness also coincides B. Porshnev's hypothesis (Porshnev, 1972) about reason of occurrence of natural languages diversity as a consequence of contra-suggestion caused by necessity to get separated by own language' barrier from alien influences.

HISTORY OF METHODOLOGY OF PSYCHOLOGY

Like an old van, slowly and with a scratch, Russian psychology turns towards a road of new post-non-classical methodology (Stepin, 2000, 2003; Lektorsky, 2001; Mikeshina, 2008) foreseeing inclusion of the subject of knowledge (as individual, scientific community and the all society as a whole) through his system of values, motives, cognitive set of tools, language and (I would add seditious judgement on rather difficult operational parameter) through a level of his own energy – in construction of the world image, model or a picture that is actually considered by classical science as ontology.

In classical science methodology of which goes back to Galilee, Newton, Bacon the position of a subject, an observer is beyond the scientific facts and it seems an obvious nonsense to take into account an emotional and motivational condition of an observer in kinematics and mechanics or to assume the distinction of physical laws for researchers having different native languages. In classical science there had

been established a concept of "the objective reality", "a social reality" independent of the subject of knowledge, which should be an object of study in natural and humanitarian sciences.

An ideal of classical science can be Laplacian determinism where proceeding from knowledge of physical laws and the coordinates determined at present to time, a direction of atoms movement vector (understood as mechanical bodies) and their energy (impulse) it is possible to calculate all subsequent and previous states of the Universe and, thus, to describe on any time depth the future and the past. Miracles as physically not determined events or opportunity something to change outside of physical actions in this world (for example, through a pray referred to God and his subsequent intervention in a course of events), are not assumed in classical science. Quite logical is an answer of Pierre-Simon Laplace to Napoleon Bonaparte's question about a place of God in Laplacian cosmology: "Sir, I do not need this hypothesis".

Owing to classical science with its methodology of rationality and determinism, European, Christian civilization and then all the rest of the world made industrial revolution and considerably increased both a number of inhabitants of globe and the population life expectancy having given it an unprecedented standard of living and comfort. In humanitarian area rationalism offered construction of the society based on reasoning mind where objective social laws act where knowledge of those laws and following to them provides guarantee success of development and prosperity of a society and where freedom is understood "as realized necessity" to be up to these objective laws. In Russian Psychological science also, according to classical views, position affirmed that "all history of psychology is a struggle for determinism" (Petrovski, Yaroshevsky, 1994) and that a duty of any science (including psychology) is to study that "whatever exists actually" (Allahverdov, 2005).²

²Having created for myself "an opponent's circle" (term of M.G. Yaroshevsky (Yaroshevsky, 1983)), I choose for discussion the deepest and brightest representatives of psychological science with distinct methodological position that can be disputed but not sluggish "thinkers" whose name is a legion and who haven't got a position but badly realized and weekly reflected sets.

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Let's note, that deterministic models of a classical science appeared rather successful in studying the certain areas of psyches (in the field of psychophysics, studying of processes of perception, partly of memory showing much more modest success in the field of psychology of thinking, i.e. the processes connected with interiorization – assimilation of perceptive standards, stereotypes, cognitive schemes, etc.) by actual refusal of scientific consideration of such phenomena of human psyches as will, imagination, creativity that slipped out of determinism paradigm.

The cognition of what exists "in reality" attaches to consciousness only a role of more or less successful imitator reflecting "objective reality". It's not accidental that in speeches of politicians and in mass consciousness psychology is reminded only in a context of an explanation of certain social or personality anomalies and to it attaches the role of some subjective, distorting factor of an impact of "objective social laws". According to "Lenin's theory of reflection" (correspondent theory of truth) our cognitive constructions are in conformity (i.e. correspond) with the reality that exists irrespective of realizing subject. Such vision of "naïve realism" is shared by the majority of mankind and also the majority of the scientists not much experienced in Philosophy, referring to H. Pathnam's. (2002).

But whether there is this "objective reality" existing irrespective of an individual? Still J. Lock in XVII century introduced a concept of primary and secondary qualities. We perceive sugar to be sweet and white. But whiteness as well as sweetness – are the secondary qualities perceived by specific receptors of our sense. The world is full of colors, sounds, smells but all these qualities are the products of our perceptive organs. Physics does not "use" neither sounds, nor smells and describes corresponding processes as fluctuation of air or distribution of particles of substance. Bishop Berkeley when affirmed Divine's existence by necessity for someone who supports variety of the world colors when a person sleeps as an argument of its existence. And modern psychologist R. Gregory (Gregory, 1970) continuing this idea has drawn a paradoxical picture of a condition of the Earth even before occurrence of life on it. The earth's crust has not cooled down yet. The volcanoes extort huge pieces of a matter from their core. They fly upwards and are overthrown (it would be usual to write: with a roar). But all this occurs in full

silence for there is no a living being capable to hear it (students at my lecture have added it by the remark that all this occurs in full darkness for there is nobody to see all this). But by a large account we cannot draw any picture of the past at all having not included in it the potential observer. "To be – means to be observable", – Bishop Berkeley used to believe.

From the primary qualities distinguished by J. Lock there remained only a pair by I. Kant: extent (space) and duration (time), both not as characteristics of object but as aprioristic categories of the subject's consciousness. Nevertheless, Classical Physics (in particular, in the form of universal ether) kept a notion about time and space as objective, i.e. independent of the observer, primary qualities of the reality. However with creation of the theory of a relativity of A. Einstein this bastion of objectivity (Born, 2000) has also collapsed. It became obvious that the size of observable object depends on speed of movement of object in relation to readout system in which an observer stays. And the closer speed of object to speed of light then the more shortly object (or reference meter) for the observer (measurer). Time also appeared to be not absolute but quantity that depends on the observer. Moreover, the sequence of two events on a time axis (a time axis – the concept of classical physics) appeared to be inverted also for different observers cause the time sequence of two events can be diametrically opposite depending on a position of the observer. These phenomena breaking a picture of the habitual, stable, "classical" world manifest themselves at spaces of cosmic scales at huge energies and speeds.

But also the microcosm of sub-nuclear, infinitesimal sizes has revealed in process of its comprehension not the lesser paradoxes which are knocking out ground of naïve realist who believes in "objective reality" independent of the subject of cognition. At the beginning of the last century physicists discussed an issue whether the micro-particle (for example, electron) is a particle or a wave. In favor of a particle spoke in particular the photo-effect (described by Einstein) when hit of light on metal's surface caused occurrence of an electric current in discrete (quantum) portions. In favor of a wave witnessed effects of diffraction when the stream of micro-particles (for example, electron) passing through a number of apertures in a barrier (diffraction trellis) formed a picture of waves imposing (so-called interference picture).

On the base of interference pictures with the help of laser radiation it became possible further to create holographic photos and then by grounding on this metaphor the holographic model of memory (Pribram, 1980; Talbot, 2008) has been put forward. The discussion about the nature of micro-particles has been completed when E. Shroedinger has published his famous equation that describes electron's position in space as density of probability of its distribution in this or that place of space. That is instead of distinct localization of researched micro-particle the probability of its occurrence in this or that area of space was offered and the particle (or a wave) acted as an original centaur formation possessing properties of a wave and a particle as well. Thus, the basis of our material world is grounded on unsteady probability core. For example, the concrete time of radioactive substance single atom disintegration essentially is not predicted principally in a wide time range, though it is always possible to define precisely (probability model works) a half-life time period (half of mass) of this substance.

Thereby from the sphere of classical science with a rigid determinism concerning display and prediction of individual event the nuclear physics has passed to studying laws of processes' current for the big ensembles of homogeneous elements or probability models of individual object (particle) states. Thus a position of the observer within the framework of quantum physics turned to be a position of co-participant to the processes. "If to be limited by very brief formulation feature of quantum mechanics (more exactly, quantum physics, including relativistic) singling it out from all other physics consists in that, that a process of measurement in it cannot be presented as quite objective, absolutely not dependent on the observer who perceives the result of these measurements. More simplifying, let us say, while describing quantum measurements (at least, in attempts to make such description logically full and closed) it's necessary to enter in such not only measured system and the device but also the observer, more exact, his consciousness in which the result of measurement is fixed" (Mensky, 2005, p. 414).

Let us make this idea clear by an example of so-called reduction of the wave function connected with transition from potentially possible trajectories of a particle (to "still not becoming being" in language of Buddhist philosophy) set with probability to concrete realization as a form of final coordinate. As an outstanding physicist,

Nobel prize winner V.L. Ginzburg writes in the foreword to M.B. Mensky's article: " In well known diffraction experience an electron passes through cracks and then on the screen (photographic plate) occurs a "point", i.e. it becomes known, where has got an electron. Occurrence of a "point" is, obviously, a result of interaction falling an electron with a material of a photographic plate. The main feature of quantum mechanics consists in that it predicts, generally speaking, only probable events. Particularly in diffraction experience the quantum mechanics predicts distribution of the "points" on the screen or probability of electron's hit (i.e. occurrence of the "point" in any place of the screen). Such situation is a reflection of corpuscular-wave dualism, i.e. of the fact that an electron (or, certainly, any other micro-particle) is not a "material point" of the classical physics moving on any certain trajectory. If to describe an electron's condition after its interaction with atoms in a photographic plate with the help of wave function this function would be obviously different from initial one and indeed is located in the "point" on the screen. Usually this is noted as a reduction of the wave function" (Mensky, 2005, p. 414). One of the features of quantum measurement consists in that it's impossible to measure quantum system, i.e. to get any information about it not having exasperated its condition and any more stronger how any more information is being extracted during measurement. Up from the so-called Bell's theorem and Aspect's experiences on the material of phenomena of Einstein – Podolsky-Rosen experiment (content of which we'll consider below) follows that "it turns out to be incorrect usual (and obligatory in classical physics) representation that the properties observable at measurement really exist even before measurement follows and measurement just liquidates our ignorance of what property takes place. During quantum measurements i.e. by rather precise measurements of quantum systems this is not so: the properties which have been revealed during measurement cannot exist before measurement at all" (Mensky, 2005, p. 418). "Usual for classical physics comprehension of reality which is realized during measurements has no place in quantum physics. In some sense during quantum measurement reality is created instead of being simply realized! As a matter of fact, it means that classical comprehension of a reality in general never turns out to be correct though in some cases during enough rough measurements

classical comprehension of reality does not result in appreciable mistakes i.e. it's a rather good approximation" (in the same place, p. 419).

Fundamental feature of the world described by quantum physics is its integrity and coherence withdrawing out of the frames of classical determinism. "More deeply we penetrate into a sub-microcosm, - writes F. Kapra (2008, p. 30), - then more we get convinced that the modern physicist as well as eastern mystic should consider the world as the system consisting of components indivisible, interrelating and staying in incessant movement thereby as an integral part of this system also is the observer himself". It's possible to illustrate this idea of integrity and interrelation of the universal world by an example of already mentioned above phenomenon of Einstein – Podolsky-Rosen concluding that characteristics of pair particles (for example, spin) arisen at disintegration of one particle (and having been spread in space on any distance) at essentially not certain measurements of their conditions are interconnected in such a manner that the definition of a spin direction of one of the particles results that synchronously spin of other particle appears to be opposite by its directness. Let's emphasize: out of dependence from distance between these particles! Thus Einstein – Podolsky-Rosen phenomenon breaks a physical principle of localness (and causality) according to which the events that occur in one part of the Universe cannot immediately influence upon events in another part of the Universe.

"Since quantum cohesion does not collapse strictly speaking we cannot suppose any object in the Universe to be separate and independent. The state of affairs being formed as a result in physical theory is appeared for me rather far from satisfactory. Nobody can explain really not withdrawing beyond the standard theory ... why it is not so necessary for us to represent the Universe as a single, whole, this incredibly complex tangled ball that has no anything in common with that classical by its sight the world that we observe" (Penrose, 2008, p. 464). Einstein has expressed a problem of integrity and coherence of the Universe in metaphorically grotesque question: does influence on the Universe, on processes of cosmos-genesis a fact that a mouse looks at it? A notion about integrity of the Universe that is one big system where an event that occurred in one part of the Universe can make influence (not in the aspect

of classical causality but as the simultaneous synchronous response) on an event in its other part gives a hint on the probable principles lying in the base of mechanisms of such mysterious psychological phenomena (about which and to speak in a decent academic society it is not accepted) as telepathy, clairvoyance (Bogdanov, 2002; Shapar, 2008), a phenomenon of synchrony (Yung, 2003).

The well-known physicist and mathematician Roger Penrose in his book that gained global recognition "King's New World. About Computers, Thinking and Laws of Physics" (2008) describes research-studies of an American scientist Stuart Hameroff about an opportunity of computations that occur in microtubules of a cell's cytoskeleton. By R. Penrose's opinion the phenomenon of consciousness is tightly connected with physical processes that occur at a quantum level and released by these microtubules which act as "cellular automatic devices" at microscopic level. Outstanding physicist R. Feynman due to his time has proved that Hamilton's "cellular automatic devices" under characteristics of which S. Hameroff's microtubules fall can carry out computations of any complexity (Malinetsky, 2008). But it's important to emphasize that Penrose does not reduce consciousness to computing procedures and explains uncertainty and the spontaneity investigated as insight phenomenon in gestalt-psychology through the reduction of wave function that is carried out by Hameroff's microtubules. The future of science would show whether fidelity or inaccuracy of searching physical correlatives of consciousnesses in functioning cellular cytoskeletons. It's quite possible that notions of Hameroff and Penrose would have fate of Descartes' "animal spirits" (that were running in his model of a reflex through hollow nerves and carrying out commands transfer from a brain to efferent organs) and they would remain in history of science of consciousness as an example of myth-creation. But in any case likewise Descartes' model had set correct scientific paradigm where the modern science just replaced "animal spirits" by electric impulses-joints so that and reasons of Penrose about the quantum nature of physical correlatives of consciousnesses and a phenomenon of reduction of the wave function considered as the mechanism of spontaneity and randomness would remain as a basic paradigm of notions

about physical foundations of the mechanism of consciousness.

The problem of the wave function reduction i.e. bringing together host of potential conditions to the sole and unique one has no explanation immediately in quantum physics but represents statement of a certain immediate reality (Belokurov, etc., 2000). Which is similar to that's why gravitational forces or weak interactions of particles exist. Such is the nature of the Universe. An explanation of the mechanism of reduction, by opinion of rather big number of physicists (D. Devitt, D. Willer and many others), lays outside of quantum physics' limits. And one of the versions directly concerning psychological science H. Everett (Everett, 1983) had suggested. Everett named it as an interpretation of the quantum mechanics based on concept of a relative state (relative state interpretation), however after works of Willer and Devitt it was named many-worlds interpretation (Many-worlds interpretation). This name is connected by a reason that the concept of Everett supposes existence of multiple classical realities or classical worlds derived of the observer's states of consciousness. It means that a problem of explanation of the wave function's reduction as transition from potential plurality of probable states (trajectories) to concrete meaning taken from considered totality Everett sees in influence of the observer's (interpreter) consciousness which carries out transition from the potential reality described by wave function to one of the possible "classical worlds". Each classical world (a world of classical physics – V.P.) represents only one projection of the quantum world. « These various projections are created by the observer's consciousness whereas the quantum world itself (to my mind, something like the Kantian "things-in-itself" – V.P.) exists irrespective of any observer whatsoever" (Mensky, 2005, p. 424).

Presentation of consciousness as the factor realizing transition from plurality of potential opportunities of "still not becoming being" to immediately observable reality offered in quantum physics by H. Everett, R. Penrose, M. Mensky's, can be generalized on the problem sphere of psychological science and can be applied to human life and fate where the status of a reality is achieved only after categorization and interpretation. Since both the life and its interpretation are continuous (non-disjunct) and sometimes less predictable and contradictable

the comprehensible complete story about personality's fate – narrative – is possible only after the death of its prototype³. Still we are alive the Life, the Fate continuously deliver new meetings, variants of different plots the minimal number of those possible variants we do live. Our life, as writer A. Maurois supposes, is continuous scraps of plots without outcomes, culminations without ending, incomplete or at all not started novels. But, nevertheless, the life is not a heap of casual events on type of Brown's movements in the world of chaos. Possessing freedom of will and consciousness a person partly by himself forms, chooses and designs the vital space choosing friends and enemies, profession and place of residence, sphere of interests and forms of self-realization, area of spiritual search and faith. As in a branching model of Markov's circuits each choice at the point of bifurcation of this or that vital way changes our vital space (the vital world) and leads to that instance that by the world, by fate or by the Holy God we are offered new potential opportunities inherent just to this vital world. As the saying goes no one cannot vow himself not to be imprison and carrying beggar's bag but, nevertheless, the probability of such vital script is higher, say, for a criminal leader or the dissident who protects human rights than for a reliable philistine. The consciousness while carrying out unfaltering choice from potentially probable variants is capable to create chains of scarcely probable events leading to results probability of which

¹I can not stand from inserting into article's text citation interesting for psychologist. "As Plinius Senior (23–79 a.d.) writes in "Historia naturalis" people in huge majority are fussy and credulous, inventive in means of self-deceive likewise Frakians who put into urn small stones differed by color conformingly to luck or failure for each day and at a moment of death conclude, make account calculating what color stones were more and then come to a general conclusion. Is there any sense in such a practice? Who knows whether this very day marked by a white stone wouldn't be a start of misfortune for a person?.. One must come sometime to his sense, it's necessary to realize that an each day can be judged only by following day and to all days lived through can pronounce a verdict only the latter of them" (Cited by: Trubnikov, 1987, p. 46).

also is infinitesimal and in consequence – to formation of complex nego-entropic systems. In this aspect the consciousness emerges as a functional organ of freedom and creativity.

For realization of nego-entropic processes energy is required and creative process is possible only at sufficiently high energetic levels of consciousness. What the mental energy is – special, extremely important and poorly developed question (Jung, 2008). Nevertheless a lot of researchers build up levels of consciousness proceeding from degree of reticular formation's activation. Emphasizing the importance of power aspect V. Kozlov denotes consciousness as "an active, open space of energy that fills the reality with sense, attitude and experiencing" (2005, p. 7). V. Bogdanov writes that besides people possessing high mental energy "observations also have fixed psycho-type of people with high sensitivity to extraordinary events ("walking seismographs") though they still cannot possess strong psi-energy. This number is supplemented by well known to psychologists type of people "condensing" the probability of accidents and failures around themselves. Recent events are perceived as quite natural and only special analysis can reveal their synchronicity" (Bogdanov, 2002, p. 43). As an illustration of these notions I give an example from my own life. In the summer of 1996 I studied yoga in Crimea, on Kazantip cape, under the guidance of the well-known trainer, the translator and writer Andrei Sidersky. The seacoast deserted and covered by all sorts of grass as well as possible suited to yoga training and meditation that were masterfully conducted by Sidersky and the night sky with a path of the Milky Way and bright stars created a feeling of eternity co-attendance. The group was well selected and the professional astronomer read lectures to us at night-time under a dome of this natural planetarium. I felt how internal force accrues in me and it was a great pity to leave early not yet having finished the whole training cycle. The matter was that I would get over to Taganrog where I would have presented a plenary report at the conference. I wouldn't like to leave very much – I physically felt incompleteness of my training – but I wouldn't let the colleagues down.

So I was going to leave and got out of the steppe to the nearest city in order to reach a railway station. On a way to auto-station I have gone on a telephone exchange and for some reasons I phoned to my laboratory in Moscow. It was

summer vacation and there was hardly any probability to find somebody in there. Nevertheless, the phone was answered by my employee who occasionally appeared in laboratory and informed me that he ran across another colleague who told that the conference in Taganrog was cancelled because railroad men had gone on strike. (Now, comprehending this case I regret that I hadn't checked the information after all railroad men are on strike not for every day.) Nevertheless, I returned satisfied to our steppe base and told about what happened to Andrei Sidersky. He was not surprised and told that it was typical enough when a person full of energy capable to make events favorable for himself. That was not a miracle of course. The fact that I found my colleague at the office and that another colleague told about the conference cancellation was not extraordinary. And railroad men very seldom, but happen to go on strike. "A mere coincidence" a thoughtful reader would say. And he will be right. Nothing miraculous happen that breaks physical or social law. But still! But still! Why I see here a foresight? The justification of this story will be, at least, a fixation (on my example) that in human consciousness there is a certain mechanism selectively makes some events important and meaningful.

WORLD AS THE FORM OF HUMAN BEING

People from various worlds can meet or interact just partially. Measurement of world, dimension of semantic space of one person can considerably surpass cognitive complexity of another and spiritual realities of the first simply wouldn't exist for the second though these people can interact on a level of physical bodies (having collided with each other), get interact as biological organisms (having transferred to each other, say, the flu viruses), get interact as the social beings realizing social roles (for example, the dealer and the customer), etc. The world as a category of human being includes also a concept of psychological time. It's an illusion that we live in entire space-time. "Neither year nor month, neither hour nor second of one person are never equal to year, month, hour, second of another if this is real time as there are not equal the beginning and the end, hour of a human youth and hour of a human old age. It is always varied, in different ways connected, both differently defined and distributed time, differently filled and differently devastated" (Trubnikov, 1987, p. 21).

Spaces of animal and human differ even more strikingly. An animal is plunged into immediate surrounding natural ecosystem and if it is a gregarious animal – into its "social environment". Timely depth of individual memory of an animal is rather limited (it doesn't reflect the past and does not foresee the future). An animal is a slave of the present and exists "here and now". But, nevertheless, I am not a supporter of explaining animal behavior by congenital reflexes. This is a concept of physiology of the higher nervous activity explaining mechanisms of behavior within a level of physiological substratum. If we remain within the framework of psychology (or zoopsychology) then we should understand (get experienced) an animal's "consciousness", "a picture of the world" - those emotional states, those psychological sets, it can be even said those "archetypes of collective unconscious" inherent to biological species that stimulate an animal to act anyhow.

A man at expense of language, sign representations, cinema, TV, the Internet extremely expands his vital world. As A.R. Lurya writes in the book "Language and consciousness" at the language expense the world is doubled. With the help of language that designates things a man "can deal with things that are not perceived immediately and which are not included in composition of his own experience ... A man owns the double world that is composed of world of immediately reflected things and the world of images, objects, attitudes and qualities which are designated by words... A man can freely denote these images irrespective of their real presence... can freely rule this second world" (Luria, 1979, p. 37). Thus different languages – are "not various designations of one and the same thing but its different visions", – supposes W. Humboldt (1984, p. 9) including in this context an important concept of nation's language consciousness. A position of Humboldt is shared by outstanding linguist I.A. Baudouin de Courtenau who agrees with Humboldt's opinion that "each language is an original world-vision" (1963). Further these ideas were poured out in the theory of linguistic relativity Sapir-Wurth (Brutyan, 1969; Vasilyev, 1974; Cole, Scribner, 1977; Slobin, Green, 1976). It can be said that people speaking the same language possess certain invariants of world-view, invariants of the forms of world categorization, of themselves and other people though systems of values of these people can strikingly differ.

Various languages create different vital worlds of various cultures but by works of G. Kelly (Kelly, 1963; Kelly, 2000) and his followers it was convincingly shown that besides nationally specific forms of categorization there are also exist individual forms of categorization in the form of "personality constructs" that specify individual's consciousness and his vital world. Near-by notions about intermediate role of meaning within perception and comprehension of the world were developed by L. Vygotsky, A. Leontyev, A. Lurya. Works of our teachers are well-known to domestic psychologist. I also want to emphasize here in a context of a problem of construction of the vital world only one A. Leontyev's basic researches about so-called skin sensitivity (Leontyev, 2000). Leontyev had shown that beforehand not felt (I interpret sensation as one of consciousness' forms inherent both to animals and human as well. - V.P.) biologically neutral, or as Leontyev names it, a-biological irritant (in Leontyev's research it is light that falls on a palm of the examinee and that is not felt by him) starts to cause sensations ("as though a butterfly has touched by wings") if it carries signal function for the examinee. Such signal function in Leontyev's experiment was that the light stimulus preceded by time to electric current's strike. The examinee having felt an influence could draw aside a hand having been avoided of painful strike.

The major theoretical and methodological result of this research was the standpoint that subjective representation of the irritant (light) and activity of the subject of influence (the knowledge the examinee that strike of current is preceded with a certain influence and is possible to avoid it having felt this influence and having drawn aside a hand) is a necessary condition of conditioned reflex formation. A. Leontyev's experiment had in the fiftieth of the last century tremendous methodological significance in dispute with physiologists who study the higher nervous activity proving that consciousness is not epiphenomenon. In fact, as Leontyev experiments have shown that formation of their basic object of studying (conditioned reflex) necessarily demands subjective experiencing of stimulus and its phenomenal representation to the subject⁴.

⁴Another matter that there exists a phenomenon of stimulus sub-threshold summation but also in this case summation of weak irritants whether

A. Leontyev's experiments have the important consequence also in another aspect – in the aspect of the world image construction. Neutral a-biotic irritants not carrying signal function are not simply perceived by an organism and accordingly they are not included into the world picture of the subject. The vital world of an animal is limited by its needs but it is more complex how much diverse and complex its vital activity.

The human world besides natural environment includes also the world of human culture intermediated by lingual consciousness. I. Pavlov wrote about the first and the second signal systems, L. Vygotsky in his early works defined consciousness as "a reflex of reflexes". Without criticizing of these notions, it can be said, that in notion of a signal (by Pavlov) or a sign as a tool (by Vygotsky) there's emphasized the signal itself or a sign's body (its plan of expression, in terms of F. de Saussure) while by Vygotsky's later works there is intermediated role of its meaning (plan of the content, in terms of F. de Saussure). Meanings exist in the system of meanings and activate the whole system of consciousness of a human being. Talking about a sign as an individual stimulus is not absolutely correct and term of reflex, even in its psychological interpretation, is substantially too narrow. But in above mentioned experimental-theoretical elaborations of I. Pavlov and L. Vygotsky there contains an important idea of consciousness' levelness: this is availability of the first and the second signal system by Pavlov (1951) and of natural and highest psychical functions by Vygotsky (2005). Thus both authors characterize the second level of consciousness as connected with language, with lingual meanings.

In our joint researches with V.V. Kucherenko had been discovered interesting phenomenon of generalization of "the prohibition to see an object" on other objects semantically connected with forbidden. Examinees who were in the third stage of hypnosis (when examinee can move with open eyes in a room and talk not leaving a hypnotic trance) there was given a command-suggestion that after leaving hypnosis they wouldn't remember anything that happened to them and they wouldn't see a certain "prohibited" object. In our studies these were, for example, cigarettes and then examinee on the request of the experimenter to count up things laying on a table "didn't see" not only cigarettes but also didn't notice an ashtray full of stubs, matches or a lighter. In the latter case

the examinee could see a lighter and play with it speaking: "Somewhat small cylinder, probably, a tube of valium". That is in some cases the examinee saw a lighter, but forgot its subject function connected to smoking. We take words "doesn't see" in inverted commas so that if the "prohibited" thing was rather bulky (as, for example, skis in one of series) examinee listing things laying on a table bypassed the ends of skis sticking out of a table. Experimenter's request to describe the prohibited object caused difficulty in examinees. For example, when I have asked examinee (the most smoking one): "And what to smoke is?", - then he started to recollect autumn trip "on potato" (autumn field works) where students had been sent in Soviet time to help to village. "There were peasants, - he explained, - who chewed something and spat. Probably, they smoked it". The request to imagine a tobacco booth and stuff that is sold there had caused in examinee difficulty to make it: "News-stand I can imagine, also vegetable-shop I can, but tobacco booth is impossible". In reply to experimenter's direct suggestion: "You can imagine it, then what is sold there?", the examinee had recollected hairbrushes, gasoline cards, etc., but still hadn't recollected cigarettes and tobacco. After immediate addressing him with a cigarette stretched in hand: "Hold it! Take a cigarette", the examinee had sunk into a deep trance. It was the same effect of entering to trance state that was observed at not solved or paradoxical situations used for prompting a trance in NLP (neuro-linguistic programming), Buddhist koans or in Christian parables that was investigated, for instance, in N.L. Mushelishvili's dissertation (1994). The phenomenon of generalization of the prohibited instruction towards objects semantically connected with prohibited object is similar to a phenomenon underlying semantic radical technique of A.R. Luria and O.S. Vinogradova (Luria, Vinogradova, 1971) where generalization of defensive reaction to objects semantically connected with reinforcing strike of electric current by the object (as such object in Luria and Vinogradova research it was "violin" concept) allows to exclude semantic fields of certain substantial area. Up to A. Luria's idea dynamic processes which occur in these semantic fields on the basis of meanings' connections initiate thinking process that is carried out for ninety percent on subconscious level.

While carrying our researches of the influence of posthypnotic instruction on examinee's world

picture we have faced the bright individual occasion (or a case study) in the course of an experiment. At winter psychological school where students of the Scientific student's society spent their winter vacation resting and working together with teachers we with V. Kucherenko conducted an experiment with the use of hypnosis. Students lived by two persons in a room and when we have agreed with one of the students about his participation in experiment his room-mate has asked for permission to be present and observe what is happening. Having agreed on presence of this student as the observer we have made him (having given in hypnosis the corresponding instruction to the examinee) to be "invisible" for the examinee. The experiment where the examinee in trance state filled in data matrix last for rather long time and the student-observer get tired to wait for its finishing. Having decided that he is invisible and he can engage in his own affairs not preventing a course of experiment the student has switched on the electric razor and began shaving preparing for student's evening discotheque. Our examinee who till that time easy filled in data matrix has got absolutely exhausted. He couldn't understand a source of these jingling sounds. (In fact, having made with the help of the hypnotic instruction room-mate to be "invisible" we haven't made him to be "not heard".) He made some half steps to a source of a sound. The room-mate in scare had jumped from a bed where he seated. However the examinee didn't try to pass through the "invisible" room-mate. He had stopped in several centimeters from him and came in deeper trance state than it was beforehand. This bright occasion urged us to think over deeply of what the examinee sees. If he simply saw "prohibited for vision" mate with electric razor in hands then its sounds hardly would cause in him such a strong bewilderment. That kind of thing cannot be performed specially. But if he didn't see the room-mate why he had stopped and hadn't tried to pass through him?

The analysis of examinees' behavior who "do not see" the prohibited object, but bypass it "not piercing" it, pointing by gesture on other things, allowed us to put forward a hypothesis that examinees perceive the "prohibited" object on a level of the first signal system but do not realize it cause their systems of meanings connected to prohibited semantic area are being blocked. That is they see, but do not realize. Associative experiment conducted with an examinee on problems connected with taboo theme had

shown that lexical layers immediately connected with the meaning of the "prohibited for vision" object drop out of an associative stream. So, then when "to see cigarettes" was interdicted in associative experiment on "student's party" theme nobody noted associations connected to smoking and in associative experiment on "winter walk" theme no one of examinees noted associations connected with "prohibited" object "ski". In other words the hypnotic instruction as if temporarily cut out (or blocked) from verbal consciousness meanings semantically connected with "prohibited" object.

Living organism psyches is arranged systemically and hierarchically. And the work of later evolutionary centers does not abolish but supplements the work of evolutionary earlier centers, later centers are built on above more ancient ones (Bernstein, 1990). As for instance protopathic sensitivity of the finger in D. Hebb's experiment (see Luria, 1969) still remained after his cutting of himself a corresponding nerve, i.e. on infringement of more later and ingenious nervous sensitivity then remained in safety more ancient and less differentiated protopathic sensitivity.

Similar leveled relations, probably, are inherent also to mechanism of consciousness. It is possible to look (not realizing), to feel (to perceive something) and to be ready to a certain behavioral reaction to perceived object – is one level of reflection (in this case this term is quite pertinent). Also it is possible to realize perceived, intermediating what is being perceived by its system of meanings completely included in the thesaurus of lingual consciousness – is another level. By L. Vygotsky's idea sign intermediation, freeness and awareness are closely interconnected and in his works act actually as different aspects of entire process of consciousness. So in the book "Thinking and Speech" as a criterion of recognition of meaning (notion) he takes examinee's ability to define – to include analyzed word into a system of relations, into a context of other meanings. Due to activation of the complete language thesaurus, we can potentially perceive (realize) an object on any depth of consciousness accessible to certain language culture or producing analysis and synthesis of elements of an image, generate images of fantasy (Chuprikova, 1985).

The idea of that consciousness is intermediated by sign ascends still to Hegel and can be manifested as is follows. In sensation,

experiencing, emotions there is no gnosiological distinction, there is no object and subject, they are merged in entire experiencing. For example, when I'm passing my hand over surface of a table and feeling its smoothness – it's simultaneously both the characteristic of table's texture and my experiencing. And only when I denote sensation, emotion, experiencing by a word (in our case by the word "smooth") I make process of their estrangement from my intermediate sensuality. In this opposed, estranged from the subject sign form, my sensation, experiencing, emotion become accessible for communication (both, external and internal – auto-communication (Lotman, 2000) and by that they are being realized.⁵

Counting up all aforesaid it's possible to give an operative definition of consciousness, understanding, that we are in condition to mention only one, suppose even a prominent aspect of this open, multidimensional and super-complex system. The consciousness can be treated as process of the object's secondary perception in transformed sign form and including of the meaning corresponding to object into system of relations with other meanings of language thesaurus. The greater number of connections and intermediations a being perceived object-meaning is included – the higher its awareness.⁶

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⁵As initiated by A.N. Leontyev numerous experiments of V.V. Stolin, A.D. Logvinenko, A.A. Puzyrei, V.F. Petrenko on vision's pseudoscopy and inversion demonstrated, the meanings intermediating perception are immediately entwined and involved to actual-genesis of the forming image.

⁶Let us stipulate that we understand language in a wide semiotic aspect including into it also language of symbols, expressive motions, mimic, rituals, architecture and etc., that is those forms of iconic signs which have stable conventional meaning.

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