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Jungian Theory of the Collective Unconsciousness in the Light of Quantum Psychology

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Abstract

From a biological point of view, a human being is an open system and cannot be considered in isolation from their surroundings, as together with their surroundings they constitute the one whole. Between the individual and their surroundings there is a continuous exchange of information, energy and matter. A person should be treated not only as a single system, but also as a system composed of a whole series of subsystems, between which there is a lot of feedback. The whole world constitutes a unity since all processes taking place in it are interrelated and mutually influence one another, focusing all the power and influence coming from the space that are so strong that they cannot be omitted. The material can be used to run bioelectronic processes that are essential for every organism to function properly. A living organism can be recognized as a complex electronic device, analogous to the technical devices, and biological materials (proteins, DNA, RNA) which are as structural components in electronic devices. This is the basis to establish the thesis that a biological system can act as a quantum computer, functioning on the basis of entangled quantum states and optoelectronic phenomena.

Key words: Consciousness; Collective unconscious; Archetypes; Quantum interaction

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INTRODUCTION

Freud and Jung are two charismatic characters, creators of depth psychology as well as people who have made a breakthrough both in psychology and in the psyche of the twentieth century people. Freud's worldview was shaped within the empirical-rational paradigm that was created by Bacon, Descartes, Newton, and Darwin and in a lesser extent by Schopenhauer and Nietzsche. Freud's lifelong attitude was characterized by naturalistic, materialistic, scientistic, as well as anti-religious opinions. His psychoanalysis can be described as a rationalistic, deterministic, reductionist, and materialistic system fighting with irrationalism, however, it is also defined as psychocentric.

Jungs worldview was shaped by German Protestant theology and idealist philosophy of Kant, Hegel, Scheling, Schopenhauer, Nietzsche and Darwin. He was the protector of religion and Gnostic-alchemical tradition. Jungian psychology can be considered as a transrationalistic system that is the system synthesizing rationalist and irrationalist attitudes. It has both deterministic as indeterminictic character with the elements of synchronization, but it is also dialectical, psychometric, and spiritualistic (Prokopiuk, 2001, p.10).

In depth psychology, Freud put the unconscious that is also called the subconscious in the first place. He distinguished three layers in the human psyche: id--or unconscious, ego—consciousness, and superego. Between these layers there is an ongoing struggle. In the unconscious there are two basic instincts: Eros, or sexual libido and Thanatos (death drive, aggression). In Jungian doctrine the unconscious also plays a fundamental role. Jung presented a more complex structure of the psyche. In topographic terms, the structure of psyche consists of three layers: consciousness, the individual unconscious, and collective unconscious.

- **Consciousness**: all mental contents that are interrelated with the *ego*. This is a general awareness of

one's own body, existence, and data from memory. Ego complex has enormous power of attraction. It attracts the contents of the unconscious as well as those coming from the outside, which, after the junction with the ego become an element of consciousness. If these contents are not joined, they remain unconscious. The purpose of consciousness is to adapt humans to the environment.

- **Personal unconscious**: Repressed, suppressed from consciousness and forgotten contents.
- **Collective unconscious**: Contents that are the common heritage of all people and animals. The purpose of the collective unconscious is adaptation of psyche to the human innate patterns and regularities. Collective unconscious covers the organization of drives on the one hand and the realm of archetypes on the other. This order is invisible and inaccessible to our consciousness. Jung found unconscious processes as a major mental reality, and the history of an individual along with the history of all humankind as the main determinants of human behavior (Jung, 1981, p.21).

1. PSYCHOLOGICAL SCHOOLS OUTLINING THE PHENOMENON OF CONCIOUSNESS

With the development of psychology there appears a need to seek the nature of consciousness. There is an ongoing discussion on the relationship between body and psyche, that is, between the physical brain and consciousness. The duality considers them as separate phenomena whereas monism postulates that they are one and the same and shall be constructed of the same substance. Dualism refers to the duality of human nature; it assumes coexistence of material brain and immaterial spiritual realm. Spiritual substance can affect the substance of the body but does not allow for feedback effects. Religious dualism ascribes beyond physical dimensions to consciousness, whereas scientific dualism implies the coexistence of material brain and an immortal spiritual realm, which have a mutual influence on one another. Eccles (1981) and Walker (1977) are the promoters of this idea.

As a defender of dualism, John Eccles (1992) focused on understanding the consciousness and the soul in such a way as not to disrupt the laws of physics, especially the law of conservation of energy. He proposed a mechanism by which the soul may affect the brain without the exchange of energy. It was based on quantum mechanics.

In the nineteenth century, when psychology began to develop, awareness was understood as direct knowledge of the phenomena occurring in one's own mind (one's impressions, thoughts, will, emotions, feelings, comments, etc.). These mental phenomena have created the structure of consciousness. Such a concept of consciousness was the basis for the 19th-century psychology based on introspection, which has become synonymous with the awareness of the psyche. Introspective psychologists were represented by Wilhelm Wundt, and in Poland, Mieczysław Kreutz and T. Tyszka. Introspectionism accepts mental states, in particular, the content of the human psyche as a matter of psychology. The tool of recognition is an analysis of one's own understanding of mental states, namely self-awareness and self-observation (Pastuszka, 1971, p.479).

Introspectionists program was in opposition to behaviorism, ignoring the existence of consciousness and proposing to examine the relationship between stimuli and responses instead. Behaviorism represented by Watson and Skiner (Crook, 1980, p.86) initially denied the existence of consciousness considering that there is no objective evidence beyond the subjective introspection. With the development of psychology, behaviorism has lost confidence in academic credit, and therefore changed its position. Currently, behaviorism proposes to consider the brain as a black box with input and output of unknown content and to refrain from talking about consciousness for the time being. Pavlovism, as a moderate form of behaviorism, does not question the existence of consciousness. Pavlov even expressed his hope that mental states can be used to write against the physiological processes of the brain.

Central identism represented by Crick (1979) and some heirs of pavlovism expresses hostility to psychology and defines it as pseudoscience. It is claimed that in the brain specific processes responsible for the emergence of consciousness occur. Neurons generate potential needle with a frequency of 40 Hz, which has led to the creation of awareness information. These oscillations do not carry additional information; they only bring together existing information into a coherent perception. This theory does not explain the nature of consciousness (Crick, 1979, p.89).

An important impetus for discussion about awareness was the emergence of psychoanalysis (Freud-Jung), highlighting the presence of conscious and unconscious experiences, activities, motives, and desires arising from the instincts (Freud, 1940), and forms of collective unconscious, or archetypes (Jung, 1939). Renowned psychologist Carl Gustav Jung assumed that between us and this hypothetical organism there occurs unaware exchange of information. He said that we drew inspiration from the so called collective consciousness--a body of knowledge and experience of the human species, which is the knowledge of our forefathers. Partially we create it, and partly it creates us (Jung, 1939).

Psychoanalysis disputed the belief that consciousness was direct knowledge of the contents of the mind, or the same content, limiting the applicability of the concept at the end of consciousness to the tangible and empirically verifiable referent--the field of consciousness of the individual at the moment (Jung, 1950).

There are also schools that represent a materialist side of consciousness. In the seventeenth century, they were founded by the English philosopher Thomas Hobbes. The basis of Hobbes' philosophy is materialism. He claims that the universe is a set of material bodies and any changes made in it are mechanistic. An individual, as the body is material, their soul is a kind of delicate matter, which does not differ from the body. The sources of human cognition are the senses and all knowledge is brought to them. According to Hobbes, consciousness is created through such brain functions as perception, thinking, imagination, memory, but also from social consciousness that everyone acquires in the process of socialization and language acquisition. Therefore, the awareness of young children and people who are not able to use language (e.g., handicapped people) is identical with the consciousness of animals (Mac, Ross, & Hobbes, 1987, p.38).

The creators of a dynamic modern materialism, which appears as a dialectical and historical materialism, are: Marx, Engels, and Lenin. Dialectical materialism believes that not spirit but the matter is an original real being, and thinking is the product of a particular organic matter, which is the brain. An individual as a social being must interact with other people and social work. Consciousness is a long biological process; it is a function of the brain and it is determined by the force of social consciousness. According to Lenin, consciousness is the highest product of the matter, which task is to reflect the present reality of ideal forms and to process the material world in an ideal one and its translation (Pastuszka, 1971, p.473).

Marx believes that philosophy, science and religion constitute a *material force* in possession of the possibility of being a material impact on social relations. A person is a creature that develops in the social and cultural conditions and has a speech, a thought, and an act purposefully. These steps oblige him or her to do so that they cannot exist without consciousness and self-consciousness. There are many reflex processes in which the brain is involved, but which are not at all, or nearly at all, made aware. All sequences of events involving our impressions, perceptions, and some activities fall out of consciousness when they are often repeated in the same way. They become a new subject of consciousness, if circumstances change. In the area of awareness only those modifications or differences go, which distinguish the new case from the past one, and need to be reconsidered. One might say metaphorically that consciousness is the teacher supervising the training of the living substance. It can be stated that in the realm of consciousness only new situations and reactions imposing themselves on one another persist while those well-trained escape the consciousness. All this state of affairs is well known from the ontogeny of our mental life, and sheds light on the phylogeny of unconscious neural processes. Constantly or regularly recurring responses have been well established and trained (e.g., heart-beat, breathing process, etc.) dropped out of the field of consciousness. Ontogeny of the brain and the soma is a well-remembered repetition of events that occurred thousands of times in the same way. The nervous system is a system which still makes up the phylogenetic transformation of our species. Consciousness is associated with the process of living substance learning and it is an evolutionary phenomenon. United stagnation eludes awareness and it appears only when it falls into the area of evolution. Awareness allows us to respond in a purposeful and flexible way. It allows individuals to construct models of life and societies to create a common culture for the specific representations of reality (Schrodinger, 1998, p.117).

2. CONCIOUSNESS IN THE PSYCHOLOGICAL TERMS

Consciousness, as seen by Z. Zaborowski, is a process of encoding and processing information about oneself and one's integration with the surrounding world. Psychological ground of the encoding process is attention; information processing relates to memory and thinking whereas the integration of information is related to consciousness. The researcher distinguishes four types of self-awareness: individual, external, defensive, and reflective. Reflective self-consciousness is associated with integrating information about oneself at a higher level based on the concepts, diagrams, and abstract thinking. It provides the highest stage of human mental development; it has a factor that bonds psychic phenomena: memory, attention, thinking, imagination, emotional experiences that have developed in the course of human evolution (Zaborowski, 1998, p.48).

This self-consciousness realizes that the personally experienced events are autobiographical. Self-consciousness gives us a sense of personal history and identity. It is a dynamic process, which can extract the changing content and format. Content of self-consciousness may be created by different phenomena--judgments, emotions, one's own thoughts, ideas, decisions, desires, relationships, and one's own behavior. Content can be encoded and processed in the form of individual, defensive, external, and reflective consciousness. Self-consciousness meets integrating and sorting functions as well as those that reconcile the various kinds of information related to one's own. It does not only cover the actual survival of individuals, but it is able to return to the past, become aware of the course of one's life, his or her difficulties, mistakes, achievements, and plan your life future tasks and goals (Zaborowski, 1998, p.49).

The structure of awareness involves conscious and unconscious processes that regulate the organic functions and perceptual decisions, preconscious memories, and subconscious realization about information that can be extracted from memory (Zimbardo, 1999, p.123).

There are also reviews of the higher regulatory functions of consciousness, which state that consciousness defines the objectives and programs which are subordinated to the mechanisms of regulation and control of the implementation of these programs. Consciousness is responsible for planning, organizing, coordinating and executive control of unconscious cognitive activity (Thargard, 1986, p.312).

The existence and functioning of consciousness in terms of Searle is connected to the electrochemical processes occurring in neurons. Brain and mind are not separate entities as mental phenomena are the property of the brain. Searle is committed to physicalism. He examined physical beings on various macro and micro levels, avoiding the pitfalls of dualism and reductionism, and denying autonomy of psychic phenomena at the same time (Searle 1995, p.16).

In terms of Ostasz (1996) consciousness is neither stable nor constant, but it is a *dynamic* structure, which is gaining a new seat anchor points, and loses some of the old and newly acquired, to get them back again (p.71). In creating awareness, the issues of the greatest importance are the rhythms of the environment that are in a direct contact with the individual and the rhythms of the body that are in contact with the brain. Consciousness is entirely produced by the brain (Ostasz, 1996, p.158).

Ostasz distinguishes perceptual and abstract consciousness. Perceptual consciousness manifests itself in sensory perception, whereas abstract consciousness is a higher form of consciousness and is associated with speech. While learning speech, every individual takes over and assimilates social experience and knowledge established in the speech. This allows individual knowledge and experience to combine in a way close to the knowledge and experience of social and individual reality of its social image. The highest form of consciousness is introspective awareness--formed from the experiences and sensations as well as insight into oneself. Consciousness is shaped in the course of human life and the experience gained during learning experiences is used in personal life (Ostasz, 1996, p.167).

Consciousness is the mental part of the process. The whole range of mind is limited neither to images perceived externally, nor to what we remember and what we see internally, but it also includes self-image as a human being. The body as a unit is mapped in the brain of individuals, in the structures that regulate the life processes and indicate their internal states. The object is also mapped in the brain in sensory and motor structures that are activated by the interaction of the organism with the object. The body and the object are presented in the form of neural patterns. Information enters the brain and creates numerous aspects of the body map. These maps are created at different levels of the central nervous system from neurons, spinal cord, and up to the cortex. For example, the inner ear vestibular system maps the position of the body in space. Our brain has the ability to represent the whole body in the form of maps and plans. Whatever happens in the nonverbal sphere of our mind, it is instantly translated into words and sentences, as it is in the nature of the speaking person (Damasio, 2000, p.199).

Creation of images during wakefulness never ceases; it continues even during sleep or dreams. Images in the brain can be conscious or unconscious. The brain is a creative system that creates its own map of the environment, using its own parameters and its internal architecture. In the brain, there are over 10 billion neurons and over 10 trillion synapses, but each neuron communicates with only a few neighboring neurons, never with a majority or all of them. So the brain is a system of systems. Each system consists of interconnected regions of cortex and basal ganglia, which in turn are made up of microscopic local circuits, formed by the neurons interconnected through synapses. Images arise from neural patterns, or maps, that are created in the populations of nerve cells that make up the circuits, or networks (Damasio, 2000, p.355).

The issue how the images emerge from the patterns is however unexplained. This is a problem that neurobiology has not solved yet. There is a gap between our knowledge about what is happening in the neurons at the molecular, cellular, and system level, and knowledge of mental images. Mechanisms that control body functions work in brain. Not only do they regulate our lives, but also reflect the ever-changing conditions of the body. The brain therefore has the ability to reflect the structure and condition of the entire body. Strict correlation of physiological processes in the brain and their accompanying mental states are documented by numerous observations. We should mention the differences in the EEG during standby or sleep, during mental work and rest, in health and during attacks of migraine or epilepsy, senile dementia atherosclerosis with brain tumors, and so forth (Moskwa, Ertel, & Adamski, 1998, p.20).

The colorful pictures of brain metabolism recorded through the methods of brain imaging are particularly evocative. We can find among them the most important ones: PET (positron emission tomography), fMRI (functional magnetic resonance imaging), and SPECT (single proton emission computed tomography). They are based on measurements of cerebral blood flow and metabolism measurements (mainly glucose compounds) in different brain structures (Grabowska & Królicki, 1997).

It is assumed that the greater brain activity of a given region, the greater blood flow and oxygen and glucose consumption which is the material energy for the brain. The brain is an extremely energetic body, its mass, which constitutes about 2% of the total body weight, consumes about 20% of energy. The method of measurement and imaging of the brain energy shows photon emission of the ultra-weak registration. This indicates that the brain emits electromagnetic wave, which is a measure of cellular and intercellular communication (Kabayashi et al., 1999, p.109).

It is also proved that deep relaxation and meditation affect the intensity and spectrum of ultra-weak photon emission from the body surface (VanWijk, 2001, p.192).

Methods of brain imaging allow to see on the computer's screen, which part of the brain is the most active in addressing a variety of tasks, traumatic experiences, or when trying to remember something, or think harder. Figuratively speaking, the active parts of the brain illuminate colors in the painting even more when they are more active. Therefore, it can be seen that during mental work metabolism in the frontal lobes is increasing, during a conversation in the temporal lobes, performing any movement--in the parietal lobes, while viewing color images--in the occipital lobes (Grabowska, 1999, p.28).

Cybernetic-philosophical concept of consciousness expressed by Trąbka proclaims an important role for contemplation, for it contributes to the emptying of consciousness of all human thoughts and leads to nirvana, that is, to a state of purification, known as the state of supreme experience. Trąbka presents a school that promoted the isolated mental functions. Representatives of this school are of the view that the brain did not make mental functions, but it only linked them. Mental functions had already been there before the creation of the brain and they were carried into the brain as well as models that have existed since the beginning of the world. According to these assumptions, consciousness is understood to be the combination of memory, ability to learn, exchange of experiences, imagination, and abstract thinking skills, which in the preceding phases of development were created in isolation from each other (Trąbka, 1983, p.83).

In terms of Herbert Mead awareness and self-consciousness are social and communicative processes. The process of education takes place in the consciousness of linguistic communication, mostly by playing a game and a different form of action, while recognizing the symbolic interaction. One learns the world through socially shaped symbols. Consciousness, according to Mead, maintains information that bonds together through the symbolic meanings with particular events, which allows for an explanation of some phenomena, to select a measure or indicate the purpose (Werner, 2007, p.37).

Among the many expressions of the role of consciousness in the mechanisms of human cognition and action, one can notice some repeated basic ideas. Integrative and regulatory functions of the mental processes and behavior, the metacognitive functions of communication in the information system of the mind, the functions of a selective filter for the incoming channels of sensory information and functions of the *mental plate*, which include the content currently being processed, are attributed to consciousness. Specific mechanisms of processing linguistic, cultural, and social information are also connected with consciousness. Integration of information flowing from various external sources and resources contained in the memory of the entity can be done in the field of consciousness. Creating a coherent representation of the unit in response to the impact of multiple and ambiguous information, to which the body is subjected, consciousness conditions the integrated nature of the behavior (Kofta, 1979; Kowalczyk, 1995).

3. CONSCIOUSNESS AND THE SYSTEMIC INTERACTION: BIOPHERE-NOOSPHERE-COSMOSPHERE

Bertalanffy (1976) formulated the concept of a living organism as an open system that collects and gives back the material substance, as well as maintains a constant value of mass relationships within the continuous variation of material components, energy, and information that continuously flow between the body and the surrounding environment.

Therefore, the principal feature of the living world is organization of structures filled with mass and energy into information carrier. The mass, energy, and information interact with one another. Such impact manifests itself particularly in living organisms of which every structure contains some information (Stonier, 1990, p.26).

Information is in fact defined as the ability to organize the system or maintain it in an organized state, while the energy is defined as the ability to perform the work (Kowalczyk, 1981, p.17; Latawiec, 1995, p.38).

In psychology, the term *environment* refers almost exclusively to physical factors received through the sensory organs, as well as to the social forces that are the work of the community. In this relationship between human beings and the natural world, there is a strong relationship. In this unity, people are an integral part of nature; they are not alienated from it and have the ability of mutual communication and interaction (Bel, Greene, Fisher, & Baum, 2004, p.52)

In biology, the term *environment* is used when discussing the phenomena occurring at different levels of organization of living systems and is understood as a whole of material elements, phenomena, energy, and information on which the existence of a living creature depends. The organism and the environment should be recognized as a functional whole. The environment is a dynamic system in which, as a result of the interaction between the components, the specific function that affects the life of the organism arises (Strzałko & Mossor-Pietraszewska 2001, p.43).

Yet another point of view concerning the environment is presented by Sedlak. This researcher sees environment in bioelectronic terms, and he sees clearly the unity of the organism and the environment. In such an approach the boundary between the organism and the environment seems to blur. The organism enters through its field to the environment and vice versa—the environment penetrates the body. Electromagnetic environment does not surround

the body like water or air, it penetrates the body, falls within its internal environment, modifies it electrically and magnetically. For the integrated circuit made of semiconductor and piezoelectric biological protein, the environment is a set of electric, magnetic, gravitational, acoustic, temperature, chemical, and mechanical periodical fields. Living organisms that create the biosphere exist in the environment (Sedlak, 1988, p.517).

The environment does not surround the organism but it is rather its integral part; it is functionally coupled to it (Sedlak, 1979, p.485).

An individual becomes *a citizen of the universe*; he or she is seen as an integral part of the whole. One is also a *detector* and the observer. One's consciousness creates a new realm known as the sphere of thoughts, or noosphere, which emerged from the biosphere in the evolution of life as a self-organizing process, and it is submerged in the biosphere. Noosphere has the ability to cross it; in fact it extends with understanding of the universe, that is, with learning about its features and laws governing it. The biosphere, as a sphere of life and the noosphere as a sphere of thoughts, are in a sense a part of the cosmosphere (Sedlak, 1994, p.142).

A prominent Russian scientist Vladimir Wiernadski living in the years 1863 to 1945 had a very interesting view of the biosphere and the noosphere. He assumed that the biosphere is the geological sphere of life that was created with the help of living organisms inhabiting it. It is therefore a physical-chemical structure of the planet; it is associated with the life and affects it, but it is not the life itself (Wiernadski, 1967, p.23).

This researcher considered the argument that the law of evolution of species affects the functioning of the whole earth *monolith of life*; he thought there is also another *law* telling about sustainable development of the brain and being so widespread among animals cerebralization growth. This law means directional development of animals in phylogenetic process, and it gives possibility to transform from *monolithic life* to a whole new level of existence and creation of a new sphere Earth—Noosphere (Wiernadski, 1945).

Cerebralization Growth as a solid, directional, and inevitable phenomenon led to the emergence of a thinking species in the biosphere, which are the human species. Following the law of evolution, the development has introduced a new mechanism and new geological force in the biosphere. Human thought became this force, which today encompasses the entire Earth. The noosphere is the result of work of all people involved in the multicomplex and collective process of transformation of the planet. As life once led to the emergence of the biosphere, so the human mind has created noosphere. Both living matter and humankind have a dominant influence on the biosphere and the noosphere (Wiernadski, 1967, p.344).

In Vernadsky's terms, the whole world is a unity, and all the processes occurring in it are interrelated and mutually influence each other. This unity is not just about Earth and organisms inhabiting it, but also the entire cosmos. Influences coming from the universe are too strong to be omitted (Wiernadski, 1965, p.134).

4. QUANTUM INTERACTION BETWEEN CONSCIOUSNESS AND JUNG'S COLLECTIVE UNCONSCIOUS

Human life is not just a matter of biology and biochemistry, but also providing the structure cybernetic-information and bioelectronic, which has an impact on health, disease, and human behavior. This bioelectronic structure creates *homoelectronicus* with its electronic personality. In this new bioelectronic paradigm one can notice quantum psychology and human cognition in terms of quantum processes occurring in the biological system, which is understood as a bioelectronic device that processes, stores, and manages information. Quantum individual is the same individual as the anatomical and physiological one, only living in the world of quantum dimension. In addition to the traditional, well-known biochemical reactions occurring in living organisms, a new reality is opened for science that functions on the basis of a model of bioelectronic life This model shows that the same particles that constitute the molecular substrate of biochemical reactions are also a manufacturer of biological structures, such as proteins, melanin, nucleic acids, bones, etc., which are an electronic material having piezoelectric, pyroelectric, ferroelectric, and semiconductor properties (Sedlak, 1977, p.156).

In order to transfer information, human biological system uses electromagnetic, acustic, and soliton waves and electric, electromagnetic, and torsion fields as well as bioplasma. Apart from the bioelectronics system above we also recognize biochemical channels conveying ions Na and K. This communication does not only apply in biological processes, but also apply in all mental functions. Control of the human biological system is accomplished by a grid of information channels: electron, photon, phonons, soliton, spin, ionic, and bioplasma. Each of these channels may in itself be a carrier of information to a biological system, or it can function as a team in the bioplasma system (Sedlak, 1980).

The biochemical model that explains the complex mechanisms of mental life seems to be correct. The transmission from inanimate matter to living matter cannot be explained. He still cannot explain the nature of consciousness and the transition from inanimate matter to living one. Where is the threshold and what is the role of biochemical processes in consistency of soma and consciousness as well as in building a mental structure? The author supports the thesis that the nature of mental processes is inexplicable as far as interactions of biochemical processes are concerned and it is much easier

to describe it in the light of quantum processes (Adamski, 2006, p.70). Cybernetic and information processes occur on the level of a single cell. These processes need the following elements to be involved in them: single molecules, protein structure that is a carrier of information, DNA and RNA acids and melanin. In medicine, a human being is usually viewed through the prism of the 19th-century biochemistry. The body is treated as an object, in which one can observe the chemical processes neglecting the computer processes occurring in it. Tadeusiewicz is a leader researcher in the field of neural networks (since 1970s), artificial intelligence, learning processes, and their applications in medicine and biology. As far as bioinformatics is concerned, he suggested a new approach of automatic understanding of images that took into account the psychology of visual perception. He proved that in the image analysis systems, amount of information equaled tens of millions of bits per second which could clog memory of a large computer. This information is recorded by retina and it is immediately subjected to treatment and reduction. It turns out that from those many millions bit of information only a dozen per second reaches the decision-making zone. Processing of information occurs beyond the level of our consciousness. It can be stated that some kind of automatism works there, which can be reconstructed in artificial control systems. The processing of this information may be effected by means of biocomputers mounted in the biological cell's structure. Professor Tadeusiewicz is a recognized authority and widely respected specialist in biocybernetics, automation and robotics, and computer science. His interests are expressed in the huge contribution of publications in various fields of modern science. Scientific achievements of Tadeusiewicz are impressive and varied. His publication list includes over 800 works published in reputed national and international scientific journals and in the materials of the world congresses and conferences. This is more than 70 monographs, books, valued textbooks, and translated books (Tadeusiewicz, 1989, 2004; Tadeusiewicz & Ogiela, 2006).

Melanin and lens' cells can be seen from the perspective of the waveguides. The light in the waveguides would be used to switch to a different light and could replace electrons, which are used in transistors. In the sense of sight there are optoelectronic biocomputers using solitons as well as quantum computers directed by the principles of quantum computing. Solition biocomputer is responsible for processing the solition material taken from the cosmos and transmitting it to bioplasma giving it a high density of information (Adamski, 2013, p.473).

Bioplasma adopts different values of concentration in different parts of the body, because the particles forming bioplasma can move through the entire biological system. However, bioplasma's task is to maintain a balance of concentration of a carrier in specific proportions for the individual components. The largest concentration of electron-hole and electron-proton bioplasma, as well as saturation of wave processes is found in the brain, spinal cord, peripheral nerves, and receptor cells (Iniuszin, 1971, p 35).

Bioplasma integrates, stores, and governs energetic-informative processes in the human biological system. According to Sedlak bioplasma "knows" everything what is happening in and around it; it informs about energetic situation of the whole and of the parts. Bioplasma creates a state of matter, which is unity in its diversity. It is the center of life and the material substrate of consciousness (Sedlak, 1979, p.265).

Quantum biocomputer that is powered by the electric field resulting from the photoconductivity, piezo, and pyroelectric properties of biological structures as well as from the quantum entangled states processes and organizes the perceptual image and then transmits it to bioplasma. In bioplasma, the perceptual image is skinned by soliton content giving it a pattern of behavior or a way of thinking and of emotional responsiveness.

Soliton image from the space acquired by bioplasma is evaluated and compared with its own pattern. Then, bioplasma corrects this image and creates a uniqueness of the organism with its energetic and informative balance, which is responsible for the structure of personality. Bioplasma determines the age, state of health, disease, and ways of thinking and human behavior. Human biological system has the ability not only to adopt the solitons from the cosmos, but also to produce them thanks to free radicals, spin fields, and bioplasma. Solitons generated from the human body are transferred to the cosmos, as well as to the brains of different people in the form of messages or directives. In psychology, this phenomenon is known and referred to as telepathy. It is also noticeable in everyday life when one speaks of someone and that person at that time appears in the group of people that talk about them (Adamski, 2013, p.474).

Soliton image of the Cosmos has a huge impact on the development of human mental processes and their social life. Solitons as independent entities form the structure of the unconscious, which includes patterns of human actions and life programs, as well as that it is the center of human emotional life. Unconsciousness is irrational; it is guided by the instinct and shows no rules of logic; it is known as a kingdom of nonsense. It has the characteristics of the imminence archaic deity who absolutely and severely punishes all forms of disobedience (Freud, 1976, p.173).

The purpose of consciousness is to rationally recognize the reality as well as to control thoughts and emotions. Consciousness affects the soliton states, especially in the altered states of consciousness. The unconscious does not distinguish between good and evil; everything is done as a request of heart. The entire universe is filled with solitions. Unconsciousness transmits its content with the help of images, symbols, and characters by means of dreams, ascetic treatments such as starvation

and sensory deprivation, dances that induce states of ecstasy, the drum, rattle, flute, and plucked instruments music often used in Africa. In quantum psychology, solitons play the same value as the archetypes in Jung's approach. Archetypal contents apart from their cultural or individual *make-up* by which they are expressed, are the same everywhere, regardless of the place and people that are being studied. Science does not give an answer to the question why the same content of a given myth is cultivated among indigenous peoples on many continents, assuming that those people have never had any contact with themselves and they were not able to pass such information to themselves. It can be concluded that these processes are guided by solitons, which are filled with different meanings, codes, categories of various scope, social relations, and patterns of thoughts and behavior. Human life is largely unconscious and people execute preprogrammed roles. People are not usually aware of the way unconsciousness works. People do not wonder why in a given situation they behave in the way they do. They assume it just as it is, and that is how the world works. However, all the situations and patterns of behavior are governed by the team of programs. The programs of cosmos directives influenced the unconsciousness and behavior as well as perception. It's a huge and inexhaustible source of the ancient knowledge of the deepest relationships between God, humans, and the cosmos (Jung, 1981).

Levine believes that the unconscious contains timeless and indestructible processes and the idea of time does not apply to the unconsciousness. In the unconsciousness time cannot be compared to the one people experience in daily life. People are accustomed to the linear arrangement of events whereas in the unconsciousness it is not possible since everything can happen there at the same time and everywhere. Moreover, in the unconsciousness nothing can be destroyed, finished, or forgotten. It has an archaic, sexual, and infantile character. It has no logic (Levine, 1923).

Basing his observations on the results of studies on the phenomenon of genius of numbers and chess championship, Vedfelt states that the masters of these phenomena use the consciousness of a very high-performance of information. Moreover they have a well-developed inner imagination and feelings of the whole, which are the attributes of the different states of consciousness. This assumption can be found in the works of Mozart or Rodin since they attempted to find the priority of the harmony and the whole in a given work as well as in the creative process (Vedfelt, 2001, p.279; Ostasz, 2011, p.107).

Internal development possible to archetypal experience can be achieved indirectly through the contact with symbols--by means of art, religion, customs, and interpersonal relationships, as well as directly by means of the creations of one's own imagination, dreams, inner conflicts, dramatic emotions, and situations that excess the existing possibilities of adaptation. Contact with art and other symbols sensitizes consciousness to the inner images, the subtle emotions, and richness of thoughts, but it also allows to better and more fully understand one's own self. In every culture there are current symbols that prepare the human psyche to maturity, temporarily protect human against anxiety as well as play a cleansing and protective role. The figure of a dragon is an example of such an archetype. As it is presented in the tales from different cultures, the dragon destroys the most beautiful creatures, those with the most beautiful possibilities--adult boys and beautiful girls on the threshold of their adult life. One of the methods of dragon's work is to attempt superficial gentleness, which purpose is to cheat the naive creatures, maintain the control, and manipulation over them. If the dragon notices any forms of resistance from his or her victims' side, he or she uses terrible threats and hysterical blackmail. One way to defeat the dragon is a feat. A hero confronts with the dragon, saving himself and liberating society from the eternal danger and fear. The mythical struggles of Hercules, Minotaur or a courageous battle of David and Goliath are the examples of such an attitude. The hero destroys the existing order of submission and consciously enters into the situation that breaks the whims of a tyrant dragon. The hero knows that life under the power of the dragon is a misfortune, so he rejects the blind fate that leads into captivity and death; he or she is no longer afraid of uncertain future and does not wait for the mercy of the dragon (Dudek & Pankalla, 2008, p.400).

Consciousness involves conscious and unconscious processes that regulate the functions of organic and perceptual decisions, preconscious memories and subconscious realization of information that can be extracted from the memory, as well as conscious realization of a given situation (Zimbardo, 1999, p.144).

Consciousness develops through the senses, feelings, imagination, and reason before it can become fully aware of this essence, which is the source of the matter, life, and consciousness itself. Similarly as attention, consciousness is a phenomenon of many shades, qualities, levels, intensities, and degrees. If we allow consciousness to remain in the same channel, through its learned experience it will create restrictions (Ostach, 2011, p.124).

Personality disorders are a result of the suppression of the complexity of one's self-awareness. People suffering from such disorders narrow their world to some part of it, or in more extreme cases, they cerate this part from the very beginning. In this situation there occurs the lack of sufficient information capacity and adjustability complexity (Vedfelt, 2001, p.148).

Transferring these processes into bioplasma, we can say that consciousness and bioplasma create such a state, which is a unity in its diversity. This unity is reflected in the team control system, which is possible thanks to the

grid of informative channels: electron, photon, phonon, soliton spin, and free radical--each of these channels may be a carrier of information for itself or for a biological system, or function as a team in the bioplasma system. Consciousness has different degrees of information processing efficiency, and this efficiency depends on its state. Each degree of efficiency is correlated with a given state; it fulfills a specific function. Therefore, the states of low information capacity relieve in some way the complexity from consciousness. The states of high information capacity, on the other hand, operate under the high levels of control, where they initiate the creative integrating processes.

In quantum psychology, consciousness would be understood as an energetic-informative state of bioplasma, resulting from the team operation of the quantum systems in the brain and powered by the spin transfer of the angular momentum from neuromelanin.

Collective unconsciousness should be understood as a compacted soliton state in bioplasma, made of interactions among nonlocal quantum processes in melanin, protein, and neuromelanin. There is a wave process of bioplasma.

Individual subconsciousness would create its structure as a result of the functioning of the team system of quantum states in the whole human biological system, giving an energy and information state to bioplasma. In the team system the control is accomplished by the grid of electron, photon, phonon, soliton, spin, and free radical channels where each of these channels may be a carrier of information for a biological system or it can function as a team in a bioplasma system. Bioplasma concept is understood as a dynamic system made up of fields and particles with a negative and positive charge mutually interacting in a piezoelectric organic semiconductor.

Bioplasma changes its electrical state under the influence of electromagnetic, acoustic, soliton waves, as well as gravitational, electromagnetic, and spin fields. The result of bioplasma's existence is a biofield. Bioplasma can also occur outside the body. Its presence outside the physical body can be seen in the form of a biological field which is a carrier of information for the noosphere, biosphere, and cosmosphere (Sedlak, 1967).

Bioplasma has lots of properties which are not visible in other states of matter. One of its most important features is the team reaction of the particles to the disturbance of its balance. The interaction of particles in bioplasma does not only lead to the change of speed direction, but also lead to the exchange of energy between the particles. Bioplasma has not only the electric and magnetic symmetry in its nature, but also the symmetry of duration and destruction as well as the symmetry of degradation and regeneration. Bioplasma does not last; it is created and then it disappears. In this process, an important role is played by energetic factors from the outside. The reception of information from the outside (the information is understood as the reception of energetic transmission) forces the organism to change its own energy industry. In old age pathological changes in the biostructures of human biological system appear that cause the impairment of consciousness (Sedlak, 1975; 1976).

The death of the organism leads to the degradation of bioplasma that dynamic system made of fields and particles decays. The fields and particles return to the biosphere, whereas solitons whitewashed by one's system of thinking, emotional states, patterns of behavior, and reception of the world return to the neosphere where the collective unconscious is located.

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