

Archetypes and the Collective Unconscious of Carl G. Jung in the Light of Quantum Psychology

Adam Adamski

Abstract

Classic psychology cannot cope with an explanation of the nature of archetypes and the collective unconscious in terms of Carl G. Jung. In explanation of these phenomena we can use, however, quantum psychology which takes the paradigm of electronic processes of life that accepts quantum processes occurring in the receptor cells and tissues. This model goes back to the Quantum Foundations, and believes that a living system is an electronic device capable of recording information by electronic means. This allows for explaining the mechanism of archetypes' action in a biological system as well as functioning of the collective unconscious. This means that, thanks to the electronic properties of the biological mass, this system has many possibilities of recording information about the experiences of individuals and the environment in which they live, but it has also the ability to record this information throughout ontogeny, and some of the phenomena within the scope of human phylogeny.

Key Words: collective unconscious, archetypes, psychology, quantum psychology

NeuroQuantology 2011; 3: 563-571

Introduction

Ignorance was introduced into the field of psychology by Sigmund Freud and played a very important role in his psychoanalytic theory. However, it was Carl Gustav Jung who recognized the unconscious of individuals, but also, after years of research, he has shown that in every individual there is also a collective unconscious. According to Jung, this collective unconscious is formed by instincts and archetypes that are symbols, signs, patterns of behavior, and thinking and experiencing, that are physically inherited

from our ancestors. Moreover, the collective unconscious consists of mythological themes, as well as original paintings, which projected outside, create myths and symbols. Themes of archetypal images are the same for all cultures, are common to all people of different ages, races, and cultures and correspond to the phylogenetically conditioned part of the human structure (Jung, 1981).

One can understand the collective unconscious only through quantum psychology, which recognizes that quantum processes occur in the biological system and they are capable of recording information about the life of the individual in its ontogeny, but also save life process in the generational dimension.

Corresponding author: Adam Adamski

Address: Uniwersytet Śląski w Katowicach, Wydz. Etnologii i Nauk o Edukacji w Cieszynie, 43-400 Cieszyn, ul Bielska 65

Phone: + 48 512 919 6264

e-mail: a_adamski@go2.pl

Received June 10, 2011. Revised June 30, 2011.

Accepted Sept 4, 2011.

1. Jungian concept of human personality

Carl Gustav Jung was a psychiatrist and founder of analytical psychology. He is one of the most eminent scholars of the twentieth century. His teaching of psychology is not only confined to university lectures. He also led many seminars in their home country – Switzerland, but also beyond the border, especially in England and the U.S. Jung was especially interested in consciousness studies and its phenomenology. Due to this fact, Jung travelled abroad, in order to explore the life of primitive peoples, and to be in direct contact with them. He spent a long time among the Pueblo Indian tribes residing in Arizona and New Mexico (Jung, 1999).

He was also among the inhabitants of Africa, Kenya, Asia, and the tribes that inhabited the islands of Oceania. He conducted various meetings, conversations, and correspondence with various people of science, which filled Jung with wisdom and bore fruit in his research (Jacobi, 1993).

Jung saw three psychic levels in the human personality - the level of conscious and unconscious, but the unconscious was divided into two categories: the personal unconscious and collective unconscious. Moreover, Jung also identified four mental functions: perception, thinking, feeling, and intuition. Perception tells us that something exists; thinking tells us "what" is what that exists; feeling allows us to judge whether something is pleasant or unpleasant; and finally, intuition is the perception of the possibilities contained in a given situation. Jung was of the opinion that our conscious is formed by the content we receive from these four functions, whereas the individual unconscious consists of subliminal and suppressed contents. However, the collective unconscious consists of the instincts (biologically conditioned response patterns), and the archetypes, or symbols, signs, patterns of behavior, thinking and experiencing, physically inherited from our ancestors.

In terms of Jung, archetype is intended to mean the original, main idea, and a certain pattern determining human development and it should also include the law governing this development, which

focuses on three levels: inside the mental, interpersonal, and the law relating to the relationship between the psyche and the outside world (Pascal, 1992).

Archetypes are a bridge to the world of the spirit, whereas instincts connect us with the reality of matter. Their ultimate nature is transcendental and unable to recognize. Themes of the archetypal images are the same for all cultures, are common to all people of different ages, races and cultures and correspond to the phylogenetically conditioned part of the human structure. Myths and fairy tales of world literature contain certain motifs that appear everywhere with similar content. We find the same themes in fantasies and dreams, both in healthy and sick people. For this reason, cultural studies are important in understanding the nature of the unconscious. Jung claimed that to smile, cry, or the ability of sucking in the newborn, is archetypal. Similarly, all repetitive behaviors and gestures which define us as humans are of archetypal form (Jung, 1981).

Some psychological theories recognize that the psychology of a newborn baby is a white card "and claim that personality traits are programmed by experience" (Hall *et al.*, 2004).

According to Jung, each child has the archetypal genetic potential, without which the "programming" would be impossible. Therefore, all rituals associated with the social contacts such as choice of partner, ways of perception and evaluation of the world, attitudes, ideas, and cultural norms, are associated with the role of archetypes, because they are typically and eternally repetitive human behavior. Archetypes are a reflection of instinctive reaction to certain situations and with an innate predisposition can bypass consciousness, to such a course of action, which arises from the need for mental health (Moreno, 1973).

Archetypes are the common heritage of mankind. Not only do they determine human behavior, but they can also transform the human personality, and they can dominate it completely, control and even destroy it, because the archetype is both a factor and the motive which organizes some elements that confers a form of mental images. Archetypes have never had the

beginning of organic life, they appeared along with life and are in themselves the disposition, which at a certain point of development of the human spirit begins to activate, organizing the material gathered in the awareness and giving it the specified form (Pajor, 1992).

Archetypes are the means of action and may take the form of images, dreams, or they are a stimulus to a specific action. Jung says that dreams are archetypal guidance and are the wisdom of past generations. Unaware parts of the psyche are often associated with certain events with an archetypal pattern, with similar events taking place many times in history. Archetypes often carry a strong emotional charge, because relationships with people are the result of differences in the dominant sphere of archetypal feelings. Usual antipathy and sympathy can be regarded as the archetypal conditions. Archetypes form in depth of our ever-changing mental mosaic, which penetrates the mythical imagination. Symbols are combined together with the archetypes and the collective unconscious and they are perceived as the languages of the soul, and their absence may lead to many neuroses. Symbols appear not only in dreams, but also in numerous psychiatric manifestations (Jung, 1881).

The most important of archetypes is the self, which symbolizes the fullness of personality. It is an ideal, which an individual is never able to reach, but toward which he or she directs all his or her life. It is a fusion of all parts of the personality; a condition in which awareness will be expanded and will include elements that were previously unacceptable and displaced. The archetype of the self drives an individual to self-knowledge, to the development of the psyche, to integration of the personality, and to overcome selfishness, arrogance, careerism, and fear.

Another archetype is the ego. It is a factor in which all the contents of consciousness are related - it is a center of the field of consciousness. Field of consciousness cannot be reduced because it is able to broaden its scope. This sphere consists of everything that we do not know. All that's unknown is divided into two groups:

1. Groups of objects belonging to the environment, the external facts, sensory experiences
2. Groups of objects belonging to the inner world, or ignorance, these are internal facts or facts directly experienced

Ego is a complex factor which is based on two grounds - somatic and mental. It is based on the awareness and the total content of the unconscious. Ego is the reference point of consciousness, which has its base and bounds - it is subordinated to the self, and it is a part of it. There are a number of elements which are all the same, but differ, however, among themselves in its clarity and scope. As a result, they are individual and unique. In psychology, ego's freedom is limited (Jung, 1981).

Archetypes that have the strongest impact on the human being are: persona, shadow, and Anima/ Animus. They are so strong that they should be treated as separate and distinct elements of personality. Archetypes of the shadow are a negative aspect of the personality; it has its source in the collective unconscious, and it is derived from instincts. The shadow passes into unconsciousness partnership focusing on the needs of all unacceptable thoughts, feelings and actions. One can be also aware of the contents of the dark side of the psyche. The shadow archetype also includes the concept of original sin, or Satan's idea. The shadow is one of the empirical archetypes that mostly affects ego. The shadow is a moral problem that challenges the whole personality.

The archetype of a woman in a man is called anima, whereas the archetype of a man in a woman is the animus. Anima and animus are collective notions about femininity and masculinity. They portray characteristics of the opposite sex as well. Jung believed that an individual is inherently bisexual. However, male characteristics in a man are somehow exposed and semiconscious, while the female characteristics are relegated to the unconscious and combined with the archetype of the anima. This analogy applies also to women. Anima is thus part of a woman in a man; the Animus is the male element in a woman. Female Anima

compensates for male consciousness in a man, whereas male animus compensates for female consciousness in a woman. Anima and animus are associated with the shadow, because it includes features not accepted by the ego - qualities, with which the conscious psyche is not identified. If one recognizes Anima or Animus he or she realizes what in our subconscious is of the opposite sex, as well as the realization of our shadow, which allows us to know the dark side of our psyche (Jung, 1981).

The last of the archetypes is the archetype of the persona that is facing outward. It allows us to make contact with the outside world. Adaptation of the persona to external conditions promotes mental health, but it is only possible when we are aware of it. It is very important that the persona is not transformed into a rigid mask, but to be flexible and permeable, fulfilling the role of the regulator between the inner and outer. It is a mask that adjusts to standards, social values, and behavioral patterns, and is an attempt to adapt the individual to these requirements. As an archetype, persona drives each individual to adapt to a society, and as a personality structure, it is the part of the ego which is situated between three factors: the ideal, I, and the social model of human mental and physical conditions limiting these ideals. If there is no balance among these three factors an individual becomes a puppet. A properly formed persona is a flexible structure that mediates between human individuality and social conditions, allowing the contact with society, while protecting human individuality (Prokopniuk, 1998).

2. Myths and Symbols in Jungian psychology

Observing many tribes, Jung noted that the myth can give dignity, meaning, and purpose to life - it has an important and positive role, even if objectively it is not true. Thus, schizophrenic delusions include myths, which obviously do not have a wider impact on him or her, as some schizophrenics have to live in hospitals, rather than in a community of healthy people. Systems may be barren delusional attempts to find new opportunities to adapt and there was no reason to reject them simply as sick only

because they were not true in the conventional sense of the word (Storr, 2000).

Jung discovered among patients with schizophrenia, that beliefs and ideas that were certainly bizarre for modern people, were remarkably similar to the beliefs of antiquity, or presented by people from other cultures. Jung also concluded that there is a mito-creative level of the psyche, common to both the mentally ill people and healthy people and people living in different historical eras and different cultures. This means that there is a common mental substratum, common to all the people which is a source of mythological imagery. Jung concluded that this material meets the mythological positive features, giving significance and meaning to human existence. The myth may be an attempt to promote self-healing of an individual, or promote better adaptation in the future (Jung, 1999)

Jungian concepts of personality allows us to see an individual in a broader aspect, than was presented by Freud. In Freud's theory, the most important period of life is childhood. The lack of a good childhood often leads to various pathological conditions in the child's personality, such as anxiety, hyperactivity, complexes, or mental illness. The unconscious consists of subliminal and suppressed contents, which have a decisive influence on human psychological development and define the structure of personality. According to Jung, the unconscious bodies are important for the development of personality, but the archetypes are the decisive factor for its development. Archetype is a determinant pattern of human development; it contains the laws regulating this development. It is both an element and the motive which organizes the elements giving them a form of mental images. Archetypes form the depths of our ever-changing mosaic of mental health. They appeared together with life and they are in disposition of themselves. They never had a beginning in the field of organic life and they organized the material gathered in the mind and gave it a set figure (Storr, 2000).

Jung's point of view meant that not all dreams, fantasies, and the like material, can

be interpreted in reference to the subject of childhood, as did Freud. Jung saw that in schizophrenia, patients' thoughts and ideas lose their cohesion and the associative level in dealing with the external environment, as well as throughout the psyche, which cannot be observed in neurotic disorders. Jung found that schizophrenic fragmentation and dissociation cannot be the result of purely psychological factors hypothesized to be rooted in organic and physical causes of this disease (Jung, 1960).

The basic task of a human being and other animals is to best adapt to the outside world where they live. However, specific and far-reaching human adaptations develop partially indirectly using abstractions, symbols, and conceptual thinking. To find the motivation to adapt, an individual needs the inner world of fantasy, which cannot be easily or directly satisfied by instincts. It is considered that religion, culture, art, education, and all other human-specific ways to adapt to the outside world, come from this source (Jacobi, 1993).

According to Jung, our inner world is three dimensional. It is multi-dimensional and therefore symbols best describe it. The source of symbols is the collective unconscious and its contents and energy derive their nominal nature. Due to the scope of the functions Jung distinguishes between two kinds of symbols: individual, which only concern the individual, and collective, that are essential for social development. Recognition through symbols is only partial and that is why it is necessary to interpret the symbols, which aims to raise awareness of the unconscious content of the symbols and to reach them and use them for further development (Pajor, 1992).

In regards to Jung, it is important to say that Jung worked for many years on the mentality of primitive peoples by studying the importance of religious symbols and ways of representing the world specific to the mystique. Magic and Myths were treated as a universal component of all cultures and eras. Jung believed that human behavior is conditioned by the aims and aspirations of the individual and by his or her own history of the species trapped in the experience - they are imprinted inherited experiences of all mankind. The more an individual drowns

in his or her unconscious, the better it learns the language of archetypes. Archetypes appear consistently in all mythologies, fairy tales, religious traditions, mysteries and rituals. Archetypes have the same psychological content in the East and West, but otherwise express themselves on the social level in a variety of ways (Pascal, 1992).

Archetypes are imprinted in our psyche, they connect us with our ancestors; they are what our kind has learned over the tens of thousands of years of its existence, and that which is inherited from its ancestors in the phylogeny. Considering the different forms of our culture, we will find them without much difficulty, starting our journey from the ancient theater, through literature, to film (Rosińska, 1983).

3. Archetypes on the basis of quantum physics and psychology

In the early twentieth century, psychology explained the characteristics of the individual through its individual behavior. People were perceived as distinct, indivisible wholes similar to the particles in classical physics. Under this approach, the world was understood as the sum of individual parts. However, the development of science and research on the existence of double signals synchronicity and psychosomatic phenomena, indicate that the theory of an individual requires some additions. It must take into account the assumptions of quantum physics and bioelectronics (Adamski, 2006a).

Based on the concept of biophotons, it appears that the search for early biological evolution in the "pure chemistry is not right," Fritz Albert Popp (2003), and Vladimir Sedlak, who developed the electromagnetic theory of life suggests (Sedlak, 1979).

Physical evidence suggests that living matter has a "quantum logic," which enables the optimal use of "information" from the environment to its own stability and to escape from chaos. The matter itself is therefore a logical consequence of the information flowing continuously from the universe and the Earth in the form of coherent light. Biological material grows rapidly in the electromagnetic field, wherein

a result of field coupling and coherent states of matter created in the process of life required. This means that biological matter creates a system that absorbs electromagnetic pulses, and stores and uses them to create permanent psychobiological structures (Popp and Belousoy, 2003).

Albert Popp's research has shown that the DNA of biological cells emits photons which are involved in transmitting information in a cell and between cells. Popp called this phenomenon "biophotons emissions." Biophotons in DNA show a frequency of electromagnetic waves in the range of 200 to 800 nm; their intensity is very small and ranges from one to several hundred photons per second. Biophotons' light is consistent and does not indicate a radiation waste as a byproduct of biological processes. The number of photons shows a coherent state which is characteristic of the coherent laser light (Popp, 1992).

Popp believes that DNA uses different frequencies of waves as a tool of information for the cell. Another exciting feature is the consistency of photons. In a healthy body, a state of emission is more consistent than in a patient and determines everything for health and disease. Healthy cells have greater control over the issuance of biophotons than sick ones; they are able to store these biophotons and should also delay luminescence. For cancer cells, intensity of biophotons' emission is increasing in uncontrolled and indefinite time. Dead matter opposed to living matter, has much delayed light emission (Popp, 2001).

Popp has adopted the principle that the quantum coherence means that elementary particles are able to work together, know everything about them, and they are related to electromagnetic fields. This researcher argues that it is analogous to an orchestra where all the photons are playing together, as individual instruments, but music is the subject of team games. Therefore biophoton emission is an excellent communication system, transmitting the information to the cells and to the other organs of biosystem (Popp, 1979; 2003).

It is now clear that with all the changes in the nature of the bacterial cell division, fertilization of an egg, and death of a multicellular organism, appears in

emission of light. Photons are a universal medium of information and electromagnetic processes have an impact on the biology of the organism, as the electrical activity of neurons, electrical and magnetic fields of the heart, brain, muscle, transcription of the genetic code, etc. Thus, the dynamic processes of life and light are internally connected with each other (Popp 1979; 1992; Slawinski 1990).

Thanks to these properties of biological structures, intracellular and intercellular communication may be effected by the electronic means on an electromagnetic signal and quantum acoustics (Bistolfi, 1991). In support of this hypothesis, we can cite the concept of the electromagnetic nature of life, developed by Vladimir Sedlak in 1979, and a few years later by David Bulkley (1987) and John Jacobson (1989).

The biochemical model explains the intricate mechanisms of mental life. However, we still cannot explain the transmission from inanimate matter to living matter. Where is the threshold and what is its essence? What role is played by the biochemical processes in the soma of the consistency of consciousness, and what is its influence on the soma, and vice versa? A similar problem occurs with other mental processes - their nature is not within the biochemical model of life and it is inexplicable on the basis of biochemical interactions, again, it is far easier to describe it in the light of quantum processes - including the physics of wave (Baaquie and Martini, 2005; Vannini, 2008).

Human life is not just simply a matter of biology and biochemistry, but it is also bioelectronic structure, which has an impact on health, illness, and human behavior. This bioelectronic structure creates "*homoelectronicus*." 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 (Wnuk, 1995).

A quantum individual is the same individual as an anatomical and physiological one, only living in a 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 (Sedlak, 1994).

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 of electronic material (Sedlak, 1976).

This new bioelectronic model lies in the fact that it takes into account molecular sub levels of organization of living biosystems, and it assumes that the origin of life came into existence during the coupling of chemical reactions with electronic processes in biological structures. This model goes back to quantum basics and shows the material unity of the individual with the natural world, as well as the unity of being, and recognizes that the quantum level is the level to which you can bring the soma and psyche, including their structure and function. Here, at the bottom of the quantum of life, there is no difference between life and consciousness, between the psyche and the BIOS. Here is only a quantum. Here is formed a synergy between the chemical and electronic process. At this level, consciousness and unconsciousness has the energy - informational nature, and it is an activating factor of soma and psyche, which determine the development of personality (Sedlak, 1979).

Electronic interpretation of the living organism turns out to be very inspiring since it takes into account the fact that not only do sensory receptors and perceptual and motor systems receive information from the environment, but also a whole biological mass. More often, the living arrangement begins to be treated as an electronic device. Not only biomolecules (e.g., DNA, RNA, proteins, pigments), but also certain biological structures are treated as natural electronic devices, such as cellular microtubules, cytoskeleton, and neurons as biological microprocessors showing ability of recording information (Hameroff and Rasmussen, 1989; Hameroff, 2007), and enzymes - as a natural diodes or transistors (Cardenans, 1991; Grandson, 1995).

Humankind is facing a new era of biological computers, where the calculations are made by the molecule falling within the different reactions, as in the case of DNA polymerase. Computed molecular territories have more attractive properties than technical computers. They operate on a sequence of bases in DNA, which allows them to an extremely dense packing of information. In 1 cm³ of DNA there can be as much information stored as can be written in a billion CD-ROMs. Molecular computers provide an extremely high degree of parallel processing; they are very energio-efficient (Adelman, 1994; Lipton, 1995).

Unlike machines which are produced, thanks to mathematical technique, the brain as a biological computer does not need outside software because software has its own built-in cell biology and therefore the structure cannot be separated from the function. The biological computer is working on algorithms where consciousness plays the role of a programmer, which programs in a heuristic way (Adamski, 2006b).

In conclusion, we cannot understand the collective unconscious without quantum psychology. Bioelectronic models show that the biological system not only saves information about the life of the individual in its ontogeny, but also saves lives in the process of generational dimension, which is connected to the phylogenesis. This means that thanks to the electronic properties, a biological system has various opportunities for recording information about the experiences of individuals, the environment in which they live, but also has the ability to transfer this information from generation to generation (Adamski, 2008).

4. Archetypes, myths in modern people's life

Today, in the era of computers, telephones, modern technical equipment, educated people and scientists, the notion of mythical thinking seems to be something not so much obsolete or old-fashioned, but rather "*for small children...*" However, this opinion is erroneous, because nearly all cultures and religions of this day left a world of myths, legends, stories that are the same as a few hundred years ago and have the impact on

our imagination, a way of thinking, the arts and literature. Nineteenth-century rationalism perceived myths as a product of subjective imagination, which expresses the longing, excitement, or fear of the human heart. Moreover, the myth, as a lower degree of spiritual life, should be overcome by modern civilization and science. But scientific studies have shown that myths have very valuable enduring values (Lurker, 1994).

Humankind from the beginning of its existence posed the following questions: how was the world created? What is its nature and destiny, the origin of people and where are they going? What is the origin, purpose and meaning of all things? Myths try to answer these questions. Primitive people did not know the philosophical concepts or scientific answer to these questions so they tried to use the mythical stories, or images, and symbols to explain it. The myth is a symbol of the developed language, a language of primitive peoples. Asking about the reason for the existence of the universe and people, a response was usually found in the world of the gods (Loska, 1989).

Contemporary people pose the same questions and they can find answers to them in philosophy, science, and experimentation, but they are only partial answers, because science discovers that the cause of a secondary type of mythical thinking still belongs to the structure and nature of the human mind, and that is why the myth continues to play a pivotal role in contemporary culture. Mythical stories fascinate not only our imagination, as in antiquity, but they are also an inspiration for writers, painters, and directors (Campbell, 1994).

A small child has a magical relationship with the world. Symbolic function develops in children of the preschool age. They master various symbolic systems and improve their use, which is reflected in the development of symbolic play and drawing. Fun symbolic develops from simple forms of activity of the child and assumes the replacement of some items on another, a prop in a game gets a new meaning. Fun symbolic representation is used to exercise. Figures combine the iconic and symbolic aspects of development of the drawing begins to scribble graphic

symbols. Scribble shows only when the child is able to draw simple geometric shapes and their combinations in the figure are only graphic symbols (Dymara, 1996).

Scientific and technical progress, characteristic for the twenty-first century, has had a huge impact on the development of culture, environment, information, mass media, and the global transmission of information. This happened thanks to the development of new information technologies such as radio, television and the Internet. Information has become available to almost everyone. Mass culture is popularized and delivered to a large audience through technical means of communication. The recipients of the content are all users of the media, people of very diverse education levels, with different needs or different intellectual and social affiliations (Juszczak, 2000).

In Poland and in Europe one can now observe a phenomenon of intense transmission of universal culture associated with the process of globalization. This is not just about globalization in institutional, economic, political, or legal terms, but also about globalization in the cultural sense. Consolidation of culture is easy to be seen in music and film, literature and art, fashion and manners, work and leisure, and even ways of thinking and acting. Scientific technical progress - especially in relation to the mass media - makes the world very globalized where it is easy to get an instant flow of information, values and patterns, and standards of conduct. Thus the Information Society is born (Dylak, 1998).

The revolution in the speed of information transfer has led to decentralization of society in each country and at the same time contributed to the creation of global bonds, led by archetypes, which are imprinted in our psyche and form a pattern, and the law defining human development. Today's world gives us unlimited access and a very limited ability to use different media. Without a doubt, we can conclude that the mass media has become an integral part of the modern world, and cannot imagine the continued existence on earth without their goods, which have great impact on human development.

References

- Adamski A. Rola Procesów Bioelektronicznych w Kształtowaniu Percepcji. Katowice: Uniwersytet Śląski, 2006a.
- Adamski A. Układ Biologiczny Jako Urządzenie Elektroniczne w Poznawaniu Środowiska i Samego Siebie. Człowiek-Jego Bioelektroniczna Konstrukcja a percepcja muzyki Ed. Adam Adamski. Kęty: Drukarnia Propak, 2006b. 9-19.
- Adamski A. Zmysłowa i Melatoninowa Percepcja w Układzie Biologicznym Człowieka. Człowiek- Jego Bioelektroniczna Konstrukcja a Percepcja Muzyki. Ed. Adam Adamski. Kęty: Drukarnia Propak, 2006c. 20-31.
- Adamski A. Percepcja Muzyki, Jej Wymiar W Sztuce I Psychologii Kwantowej. Bielsko-Biała: Compal, 2008.
- Adamski A. Biocomputer Support in Education and Medicine. Theoretical and Practical Aspects of Distance Learning. Ed. Eugenia Smyrnowa- Trybulska. Bytom: Studio TK Graphics, 2009. 287-95.
- Adamski A. States of Consciousness and Learning. Use of E-learning in the Training of Professionals in the Knowledge Society. Katowice- Rybnik: Studio NOA, 2010. 261-74.
- Adelman L. Molecular computation of solutions to combinatorial problems. *Science* 1994; 266: 1021-1024.
- Baaquie B and Martin F. Quantum Psyche, Quantum Field Theory of the Human Psyche. *NeuroQuantology* 2005; 3 (1): 7-42.
- Bistolfi F. Biostructures and Radiation. Order Disorder. Torino: Edizioni Minerva Medica, 1991.
- Bulkley DH. An electromagnetic theory of life. *Medical Hypotheses* 1987; 30: 281-285.
- Burker M. Przesłanie Symboli w Mitach, Kulturach i Religiach. Trans. R. Wojnarowski. Kraków: Impuls, 1994.
- Campell J. Potega Mitu. Trans. I. Kania. Kraków: Impuls, 1994.
- Cardenas ML. Are the Transitory Enzyme - Complexes Found in Vitro Also Transitory in Vivo? If So, Are They Physiologically Important. *Journal of Theoretical Biology* 1991; 152(1): 111-13.
- Dylak S. Media a edukacja. Poznań: Marszałek E.- Drukarnia, 1998.
- Dymara B. Dziecko w świecie marzeń. Kraków: Impuls, 1996.
- Hall CS, Lindzey G and JB. Campbell. *Teorie Osobowości*. Trans. Joanna Kowalczyńska, Józef Radzicki, Michał Zagrodzki. Warszawa: PWN, 2004.
- Hameroff SR, Rasmussen S. Information Processing in Microtubules: Biomolecular Automata and Nanocomputers. *Molecular Electronics, Biosensors and Biocomputers*. New York -London: Plenum Press, 2006; 243-57.
- Hameroff SR. Consciousness, neurobiology and quantum mechanics. *The Emerging Physics of Consciousness*, Ed. J. Tuszynski. Arizona, 2006. 34-49.
- Hameroff SR. The Brain Is Both Neural Computer and Quantum Computer. *Cognitive Science* 2006; 31: 1035-1045.
- Jacobi J. *Psychologia Carla Gustawa Junga*. Trans. Stanisław Łypacewicz. Warszawa: Wodnik, 1993.
- Jacobson J. On the electromagnetic nature of life. *Pan Minerva Medicine* 1989; 31: 151-165.
- Jung CG. Archetypy i symbole. Trans. Jerzy Prokopiuk. Warszawa: PWN, 1981.
- Jung CG. Modern man in search of a soul. London: Routledge & Kegan Paul, Reik, Theodor: Masochism in modern man. New York: Grove Press Inc., 1941.
- Jung CG. *Gesammelte Werke*. Tom XII. Zürich: Über die Entwicklung der Persönlichkeit, 1960.
- Jung C.G. *Rozmowy, wywiady, spotkania*. Warszawa: McGuire, 1999.
- Juszczyk S. Człowiek w świecie elektronicznych mediów - szanse i zagrożenia. Katowice: Uniwersytet Śląski, 2000.
- Lepton R.J. DNA Solution of Hard Computational Problems. *Science* 1995; 268: 542-45.
- Loska T, Zuberbier A. *Bóg, człowiek, świat*. Katowice: Uniwersytet Śląski, 1989.
- Mindell A. *The quantum mind and healing: how to listen and respond to your body's symptoms*. Charlottesville VA: Hampton Roads, 2004.
- Moreno A. and Jung CG. *Bogowie i człowiek współczesny*. Trans. Stanisław Ławicki. Warszawa: PWN, 1973.
- Pajor K. Rola archetypów w analitycznej psychologii C.G. Junga. Warszawa : PWN, 1992
- Pascal E. *Psychologia jungowska teoria i praktyka*. Poznań: Zysk i S-ka, 1992.
- Popp FA. Photon storage in biological systems. *Electromagnetic Bio-Information. Proceedings of the Symposium*, Ed. E.A. Popp, G. Becker, H.L. König and W. Peschka, München: Urban Schwzenberg, 1979: 123-149.
- Popp FA. *Biologia światła*. trans. J. Kyrłowicz, Warszawa: Wiedza Powszechna, 1992.
- Popp FA. *Biophotonik - Experimentelle und theoretische Grundlagen Nichtthermische Lichtemission aus lebenden Organismen, sowie Möglichkeiten der Anwendung*, Bundesamt Für. Naturschutz, Schriftenreihe. H.67, 2001; 171-186.
- Popp FA, Chang JJ, Herzog A, Yan Z and Yan Y. Evidence of non-classical (squeezed) Light in biological systems. *Phys Lett A* 2002; 29: 98- 102.
- Popp FA. *Lebensmittelqualitätsanalysen mithilfe der Biophotonik*. *Lebensmittel-Technologie* 2003; 7-8: 134-146.
- Popp FA, Belousoy L. *Biophotonics*. London-Dordrecht - Boston: Kluwer Academic Publishers, 2003.
- Popp FA. Consciousness as Evolutionary Process based on Coherent States. *NeuroQuantology* 2008; 6(4): 431-439.
- Prokopiuk J. *Carl Gustav Jung*. Wrocław: Ossolineum, 1998.
- Rosińska Z. *Jung*. Warszawa: Wiedza Powszechna, 1992.
- Rosińska Z. *Myśli i ludzie*. Warszawa: PWN, 1983.
- Sedlak W. *Bioelektronika - Bioplazma - Antropologia Przyszłości*. *Zeszyty Naukowe KUL* 1976; 19: 3-10.
- Sedlak W. *Bioelektronika 1967-1977*. Warszawa: IW PAX, 1979.
- Sedlak W. *Inną drogą*. Warszawa: I W PAX, 1988.
- Sedlak W. *Homo electronicus*. Opole: Ekomed, 1994.
- Sławiński J. Necrotic photon emission in stress and lethal interactions. *Curr Topics Biophys* 1990; 8: 27-38.
- Sławiński J. Photon emission from perturbed and dying organisms - the concept of photon cycling in biological systems. *Integrative Biophysics Biophotonics*. Ed. FA. Popp and L. Belousoy. Dordrecht, Boston, London: Kluwer Academic Publishers, 2003; 307-328.
- Stonier T. Information and the internal structure of the universe. *An Exploration into information Physics*. London - New York: Springer Verlag, 1990.
- Storr A. *Jung*. Trans. Agnieszka Grzybek. Warszawa: Prószyński i S-ka, 2000.
- Vannini A. *Quantum Models of Consciousness*. *Quantum Biosystems* 2008; 2: 165-184.
- Wnuk M. *Enzymy Jako Nanoprocesory - Perspektywa Bioelektroniczna*. *Roczniki Filozoficzne* 2008; 43(3): 127.
- Wnuk M. *Istota procesów życiowych w świetle koncepcji elektromagnetycznej natury życia*. Lublin: KUL, 1996.