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QUANTUM-SYNERGETIC ANTHROPOLOGY: ON THE BORDERS OF THE NEW TECHNOLOGICAL ORDER

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ABSTRACT

The paper enlarges existing anthropological ontologies on the basis of the theory of complexity, self-organization and nonlocal quantum phenomena. Since recently they have been facilitating quantum-synergetic revolution in NBICS technologies, information quantum theory and physics of the living and are considered to be most promising for the development of artificial intelligence and transhumanism. For this purposes it is suggested to introduce ontologies of states and temporal ontologies of generalized corporality that allow for a holistic re-assembling of antroposphere. In particular within the framework of such quantum-synergetic approach the phenomena of physiological, psycho-mental and spiritual spheres are described in a uniform manner, their conflicts are demystified and therefore a more complete understanding of human nature appears, specifically it opens way to the development of harmonized “avatar” concepts in artificial life models.

Keywords: ontologies of state, temporal ontologies, EPR-effect, convergent technologies, quantum-synergetic anthropology, generalized corporality, avatar creation challenges, self-organization, synergetics, information quantum theory, artificial intelligence, transhumanism.

INTRODUCTION

Convergent NBIC technologies, which are the basis of the new VI technological mode, reveal the total spectrum of all scientific domains in the development of modern art of complexity with all its components being interdependent and yielding a common cumulative effect, which in its turn is directed to the creation of media relevant to human being, the society of knowledge, digital economy and human nature extension.

It is basically important that these technologies are based on the re-discovered fundamental quantum phenomena of macro-quantum correlations and self-organization effects. Some may talk about the second quantum revolution in the understanding of the world, but I would rather call it quantum-synergetic revolution. In this paper we continue our discussion of the outlooks of applying this approach to those most sophisticated scientific spheres dealing with life and spirit that are traditionally hard to formalize, and primarily to anthropology and artificial intelligence modeling [1].

Formation of quantum-synergy paradigm in anthropology. First of all, let's outline quantum-synergetic anthropology as a new anthropological compilation of ideas and conceptions of a human being. What can communicative-and-activity-oriented synergetic methodology, soft modeling transfer from self-reference and quantum mechanics, autopoiesis and neurocomputing bring into anthropology? First, a new holistic compilation should not contradict already existing anthropological phenomenology; it should give diverse directions, science branches and cultural traditions an opportunity to interact more freely in a better self-consistent way in a new, quickly changing ontological landscape, thus representing its genesis. Second, it should be able to explain holistic phenomenology of subtle synchronisms in social life, communication and creative work, and it might even be able to elucidate abnormal phenomena in the anthropic sphere, those that are usually difficult to simulate by traditional modeling techniques. It is worth noting that human nature is polyontological, which is caused not only by multiple branch ontologies that investigate a human being, but also by some deeply rooted reason. In his "Dialectics of Myth" A. Losev wrote that each thing is an inverted personality. Remaining what it is, it can manifest its personal nature in an unlimited number of forms, hence, there is corporality of semiosphere and culture.

It is becoming more and more clear that having reductive physical-and-chemical, physiological and neuro-computer approaches alone is not sufficient to build the ontology of anthropic sphere and justify it scientifically. There is also a need to attract up-to-date fundamental holistic scientific principles that will be able to make a sound foundation for the most intricate mental phenomena instead of being their mere illustration. In the XXth century there were several attempts to apply such principles to the anthroposphere, starting from K. Jung's and W. Pauli's pioneer works written in the 30-ties of the last century and devoted to quantum-like interpretation of synchronicity phenomenon with a non-local character. As a result, traditional concepts of coherency (self-organization), EPR-effect, wave function reduction and dynamic chaos turned out to be the most natural ones. Let's look at them more attentively.

Evidently the phenomena of coherency and decoherency, dynamic chaos and quantum EPR-effect form the basement of a new holistic paradigm. The coherency principle as applied to the corporality problem is well manifested in the conception of quantum medicine. This postnonclassical scientific concept originates from H. Fröhlich's theoretical works and experimental works of S. Sitko et. al. and is almost 50 years old [2]. The phenomenon of life is explained in terms of coherent state of the matter of tissues in living beings. In millimeter range they form active laser-like medium that generates self-sustaining electromagnetic frame of an organism. In this way it is possible to account for many phenomena of embryogenesis, oriental medicine and modern integral medicine and to develop effective methods of human organism treatment and harmonization.

It is worth noting that physical formation mechanisms of quantum macroscopic effects lie in the sphere of nonequilibrium quantum statistical physics on the boundaries of quantum and classical physics; here the ideas and methods are similar to self-organization which takes place when laser is generated, i.e. they belong to the methods of synergy in the way it is understood by H. Haken. We think that such approach should be called *quantum-synergetics*. This approach supplemented with the ideas of macro-quantum correlations is able not only to fit physical corporality in an organism, but also is quite adequate for psyche and spirit phenomena that are, no doubt, subjects of integral medicine and psychology.

Let's clarify what exactly we view as holistic mechanisms. Apparently there should be holistic, space-time laws on macro and mega scales. The possibility of their existence is indicated by the fact that in nature there are two fundamental holistic mechanisms of the Universe coherence [4]. The first one is indirectly demonstrated through dynamic chaos in non-linear systems and lies in the possibility of synergetic synchronization of weakly connected, remote non-linear systems (Y. Pomeau, Ch. Vidal). In particular this mechanism can substantiate the ideas of self-harmonization of space rhythms, as well as of space-terrestrial relations and living system rhythms. The second mechanism is based on macroquantum correlations (effect Einstein-Podolsky-Rosen) that can relate phenomena occurring in different parts of the Universe, or in different localities, in a specific non-causal way, which might change our views on the nature of evolution, life and consciousness radically (R. Penrose, M. Mensky) [3]. In any case future nonlocal laws will be of quantum-synergy nature, yet they will probably be described in terms of information theory. Moreover, nonlocality is demonstrated, in particular, in overcoming the limits of a physical body.

Such spheres as quantum cryptography, quantum teleportation and quantum computing have already become fully scientific; in 2012 the achievements in these areas were marked by the Nobel Prize. It is safe to say that with the discovery of mirror neurons and advances in information quantum theory, the hypothesis about quantum nature of consciousness will soon change its status by leaving the metaphor category and going over to the ontological foundations of reality [4]. Today these conceptions are proactively used in humanities in transpersonal and quantum psychology [5] to explain (though heuristically so far) such phenomena as individual and collective unconsciousness, creativity [6], K. Jung's synchronicity, noosphere effects, nonlocal social field, history [7; 8], many of paranormal occurrences or "quantum voodoo" [9]. Other synergetic hypothesis related with the mechanisms of intuitive thinking and creativity can be found in the works of S.P. Kurdyumov, E.N. Knyazeva [10] and I.A. Evin [11].

Let us outline the area of quantum-synergetic ontologies of the human being. Nevertheless the mentioned difficulties of their description, let us try to make a gentle ontological study of human nature. Let's assume that our target ontology has synergetic and quantum nature, i.e. the human being will be viewed by us as a complex open hierarchical self-developing system that is conjugated with social, cultural and natural environments, that are also self-developing systems, and is co-evolving therewith. It should be noted that we must not belittle the value of structural and functional descriptions of human nature (something which post-structuralisms was quite notorious of). At the same time one should understand the role of processuality and constructive mechanisms of formation and metamorphosis of the structure and function, non-local causality and coherence, which was certainly lacking in structuralism, and which constitutes the main subject for synergetics and modern information quantum theory.

We shall start from the structural-and-functional description of a body as an object, the observable body, and that has been repeatedly dwelled upon within special branches of science, yet we need a pass-through account. For example, Husserl's concept of "dual perception", when the body is viewed as the reality for consciousness, suggests the grounds substantiating the difference between the body as an object and body as the subject, where object-body exists only in conjunction with the external observer (in the ultimate power of the language making this observer real). In this context Husserl

distinguished four strata, four hierarchies in constituting the whole body: body as material object, body as “flesh”, living body, body as living organism, body as meaning representation and component and body as culture element and object. Let us try to reconsider this approach standing on modern synergetic positions, yet with natural research communicative practices used as the foundation for our constructs.

It's worth noting that there is always a possibility to introduce ontologies of two types, with the ontologies of states (*what* is changing) as the first type, and ontologies of processes (*how* the change is running) as the second one. This subdivision is contextual and any process or state can be defined once again as a state-process band. Thus, psychological state of happiness is physiologically the process of physical and chemical reactions that change the activity of certain brain areas.

Activity-based object-somatic ontologies (ontologies of states) are essential for us to reach our goals. Let's assume some exploratory cognitive situation: some scientists have got a queer object, maybe a living being, even an intelligent being brought from a distant expedition and we are following their consistent investigation strategy. Of course, it starts with a visual inspection, then an attempt to establish a contact and exert some influence in order to reveal its primitive reactions, after that comes an attempt to find out whether it has memory and learning ability, still after we'll try to ascertain its capability for creative work in external environment, then we'll seek for its communicative attitudes in reality, and so on.

We must emphasize that all these are exterior attributes of a body and they can be classified according to the complexity degree of behavioral response and activity type, which is almost a positivistic objectified approach having much in common with behaviorism. We are suggesting one of such description methods. It might be debatable and is certainly not complete, but it is important that the sequence of structural-and-functional bodies logically appears in the process of evolutionary self-organization of the nature that is giving rise to new parameters of order and complexity hierarchal levels, but also is demonstrated in the ontogenesis of the human being and the process of perception-and-recognition of “the Other”.

To a first approximation the strategy of bodies may look as follows:

1. The description of an object when we can get abstracted from its response, i.e. in the situation of minimal irritants' impacts. This is the description of soma, a body with its elements existing in space – material or somatic body.
2. The mobility degree of the body as such, the rate with which its elements can change their mutual positioning, its vibration and tension (i.e. its ability to work) in the absence of external effects, and this is energetic body (the body of ties between elements and the energies of these ties), or vitality in human metaphor.
3. Primitive reactions of a body to its contacts with reality, awareness of the boundary, external stimulations, feelings, the ability of the body to localize energy and act in response to specific stimulation types make up a reflex-and-emotional body. This body can also be called information-energy body because it can relate stimulation type with specific response of material-and-energetic physical body (even in the case of emotions).
4. Reactions of the body to continually repeated impacts, or reactions that are recurring steadily and, which is more important, are emerging in repeated series of contacts with external world and thus are remembered, as well as conditioned reflexes,

logical relations “if-then”, algorithms shaped by the environment. They make up the body of logics or algorithmic body, which in its turn is activated by emotional-and-intentional motivations of the aforesaid body of desires. So the body of logics can be viewed as the body of desires’ wit, or the body of reason, or common sense. This body is developing in the most effective way and is inherited through semiotic systems of human culture and can be efficiently simulated by means of computer-based resources of artificial intelligence. It should be mentioned that until recently the described bodies (1-4) have been sufficiently well modeled by means of modern science and information technology methods that have been supplemented by self-organization and quantum coherency principles only lately. Yet other bodies of highgrade psychological organization can hardly be understood without applying synergetic and quantum holistic principles.

5. Creative or intuitive body manifested in emergent acts of spontaneous generation of valuable information which according to Kastler valuable information is generated as a captured random choice. Such as imagination, recognition, insight and foresight that are not given in the forms of a reflex or logical action are not related with such operations as sorting or mechanical cloning. In particular, the intuitive body is responsible for the change of algorithms without long-running procedures of generating a new conditioned reflex, which is essential for creative work. Sometimes it acts as if reducing lengthy logical stages down to an insight act or prompts a “crazy” hypothesis, and that allows us to talk about a specific type to operate time, memory and forecast by means of transformed knowledge. The presence of this body permits the system to be superadaptive to new circumstances

Today’s science is just making some attempts to simulate intuition processes within the framework of neuronet theories and information dynamic theory. Synergy proves that new information is born in the intermixing layer at the edge of order and chaos [12], in the situation of instability and system supersensitivity. Thus the intuitive body is a peculiar window into the world, when the system is capable of perceiving indefinitely small (information) exposures, including those of quantum nature, that can have a radical effect on information generation act, so the intuitive body may also be called as information resonance body. Sometimes a complex system of interacting emotional, logical and intuitive bodies is also called psychomental body (sphere). It is this sphere that accounts for the perception and realization of our internal corporality, for the formation of the image of the remote body of culture and body of meanings. Here the central comprehension body, the screen of objective reality is the logic body, where comprehension codes are collected, and the body of meanings, or subject-body according to Husserl. Evidently, as follows from the said above, the intuitive body is able to “mix”, to communicate with other systems to tune in with them, and in doing so it becomes somewhat de-localized; its ambit is indefinitely great compared with the limits of the physical body, and that enables reading specific, or noospheric information potential [13].

6. Coherency body. It is responsible for the states of superopenness and cohesion with other bodies, phenomena, reality parts and the universe. These states are the states of love towards one own self, to fellow creatures, finishing with an “oceanic” love to the whole world, the feeling inherent in sacred people, the saints. Such scale specifies the measure of coherency. It is also the state of getting into an object or a human being, of empathy, which has always been the foundation of religion, arts, scientific creative work, innermost communication, psychotherapy, concentration, hypnosis and magic technologies. The mechanisms of this body substantiation are, apparently, the same as

those of the intuitive body, i.e. holistic phenomena of dynamic chaos and Eistein-Podolsky-Rozen paradox, however, they are manifested in quantity and very powerfully and take place not only on information-resonance body, but also on emotion and energy bodies. On the contrary, evidently, the body of logic is completely immune to the coherency body.

7. Volition body. To wish, to desire is to aspire after something or to achieve the aim by subjugating other bodies, for example to strive for meaning. Volition body can be manifested in all bodies as aspiration to reach the aim (probably with the exception of the physical body), i.e. beginning from the body of flesh. Conation degree depends on the coherency degree and volition subbodies in other bodies that is why the volition body is as delocalized as the intuitive and coherency bodies and is described through similar superconscious holistic mechanisms. It is revealed in the inflexibility of negative feedback relations in aim achieving: in the reflex body – the will to live; in the emotion body – the desire to get pleasure; in the logic body – the will to explain. In the ultimate sense in the 5-7th bodies this is the wish to know, unite and accomplish the Global purpose (design of God). This body in its higher manifestations tells about metaphysical substances that can hardly be explained by modern science.

It should be noted that the intuition, coherency and volition bodies are transpersonal, superpersonal and superconscious to a great extend. Quite often they are termed as the spiritual body of the human being. In western tradition they are studied within the scope of Stanislav Grof's transpersonal psychology [14].

When dealing with the problem "Bodies and subbodies: recovering the integrity of object-corporal ontology" we proceed from the statement that the idea of the plurality of bodies creates an illusion of incoherence of the object-centered ontology of the human being. This problem can be solved by recovering structural-and-function integrity, and to do so let's assume that each body interacts with another body through its representative, its subbody that belongs to another body. For example, the energy body can be manifested in all other bodies (as physical, emotional, mental or some other energy type), i.e. it consists of energy subbodies of all other bodies, while emotion can be experienced because of the freedom of motion, intellectual activity or surmounting an obstacle; components of a physical body, for example, pharmaceutical compositions, are able to influence higher spiritual states of human beings, which, in its turn, can bring them into a healthy state.

Thus, within this interactive ontology the opposition of psychic and spiritual in the body can be relieved to a certain extent, though the dominant functions of bodies are preserved. The constructed structural-functional ontology seems static and so far it is not clear how it can develop. More likely that it should be accepted as given. Let us call it the ontology of states. In order to understand the causes and trends of changes in states it is necessary to study the life processes involving human beings and their changes in time may eventually result in the changes of ontological states, i.e. it is important to consider activity-and-environment factor of human development.

Process-based or temporal-activity ontologies of the human being are determined by the fact that humans are social beings, but one hand they are of natural, animal origin, on the other, they have cultural, communicative-activity basis. Today the presence of a human being can be traced in all disciplines, whether natural scientific, or social and humanitarian. It permits us to build up temporal scales of world development

projected onto human corporality. Let's treat a person as a multitemporal being that is simultaneously living in the plurality of ontological times, hierarchal levels diminishing in accordance with typical scale of running processes: 1. Bio-cosmic body. Cosmological anthropic principle and helio-geobiological anthropology say that the co-evolution of the human being and our Universe as a part of space are conjugated by the environment. 2. Bio-sociological body. These are animal psychological grounds of human nature demonstrated in the majority of forms of behavioral culture and social self-organization. 3. Historical body. These are the fundamentals of human identity with species, ethnos or family. Collective archetypes of unconsciousness. 4. Body of culture, tradition, etc. 5. Body of activity, practice, knowledge and competences. 6. Body of action, habitus, styles, skills and temperament. 7. Body of consciousness – reactions, psychokinetics, scope of reflexion control. 8. Atemporal body that resides in eternity, altered states of consciousness, affects.

Synergy is especially well manifested at the transition boundaries between bodies, where the living give birth to the social, or where practice, that has originated in the action body, generates a cultural tradition. These junctions-transitions can be explained only through synergy by means of the phenomena of formation self-organization; moreover, homeostatic processes of norm in temporal bodies are dissipative structures in the flows of substance, energy or information, i.e. they are described by the phenomena of the self-organization of existence [15].

Thus, there is a possibility to take simultaneous multitemporal scale to represent human existence, the culture body naturally will be present in the process-based ontology, but just as an important central fragment. Introduction of such large-scale activity-based ontology can help to harmonize the dialogue and communications between hardly compatible culture and individuals. It should be marked that the culture body of temporal ontologies has the psycho-mental body as its analogue in the ontology of states, it is the one through which a human being becomes aware of his/her existence and develops as a personality. It is important to understand that all process bodies are fractal, because they are similarly interconnected through their subbodies representing them in other bodies. For instance, both the culture body and bio-social body are openly displayed by the body of actions through personal habits and style.

Synthetic ontology is suggested as the one that agrees with postnonclassical science. Here the question may arise how the above ontologies of state and temporal ontologies of process correlate with each other. Our idea is that these ontologies conjugate and supplement each other according to the quantum-mechanical principle "state-operator". Let's remember that in quantum mechanics neither wave function (a state) nor the operator (a physical value) can be observed in principle. Actual observation takes place in the act of measurement, a reduction when the state and the operator merge (the mean value of the operator in the given state is found) and this is reflected in the readings of physical instruments. In this connection it's worth noting that in Schrödinger's quantum picture operators are time-dependent. This is exactly what we suggest doing. Actually, the description of human actions or activity the picture will never be complete unless *we clearly define the current state of the person*.

Thus, a most **complete corporal-object-based ontology** is the direct product of (ontology of states) \times (temporal activity-based ontology). Here, the use of synthetic ontology is similar to playing a musical instrument. Indeed, the ontologies of states are

like a musical instrument with bodies like notes and subbodies like subtones. A specific state of a person defines the landscape and the activation pattern of his/her bodies (ontological profile of states), which correspond to a chord, while the changes of the state in time, or the evolution of the landscape, correspond to the score written by life. The suggested language is good to describe things in the applied anthropology, it suits well for a comparative analysis of ontological patterns of different historical periods, cultures, ages or social groups.

CONCLUSION

To conclude let's highlight some obvious prospects and challenges connected with the application of new quantum-synergetic ontologies for the modeling of "avatars" in intellectual media; the very last three delocalized bodies are most difficult to be implemented and quite often anthropomorphous cybers drive people to a shock by their falseness as there is no empathic component (the sixth body of coherence). Next step is to understand the nature of transpersonal network EPR coherence of mankind noosphere, in the sort of a quantum supercomputer where q-bit elements will be replaced by individual consciousnesses. As the result in this case artificial intelligence has to be associated into such quantum supercomputer. These problems seem to be key challenges and largely are hardly soluble; to realize how insoluble they are time is needed.

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