

## **TESLA AND QUANTUM-COHERENT STATES OF CONSCIOUSNESS: CASE STUDY FOR UNDERSTANDING QUANTUM-HOLOGRAPHIC NATURE OF CREATIVITY**

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**Abstract.** Nikola Tesla is undoubtedly the greatest inventor in the history of electrical engineering, and what makes him especially fascinating was his unusual mental control of creative visions which might serve as an extraordinary case study for understanding the very biophysical nature of creativity. In this regard, quantum bases of consciousness and creativity are considered in the framework of two cognitive modes of consciousness (direct religious-creative one, characteristic of quantum-coherent transitional and altered states of individual consciousness, and indirect sensory/rationally mediated one, characteristic of classically-reduced normal states of individual consciousness) - together with conditions of transforming one mode into another - using classical-electrochemical hierarchical brain neural networks and quantum-holographic microwave Hopfield-like acupuncture neural networks modulated by ultralowfrequency electromagnetic fields of brainwaves, combined with quantum decoherence theory. It seems that such theoretical analysis offers extraordinary biophysical basis for traditional psychology of transitional and altered states of consciousness, and enables understanding and control of cognitive-creative processes, both in waking and sleep states. It was also pointed out that secret of Tesla's creativity is presumably related to the waking meditative control of transitional and altered states of consciousness.

**Keywords:** *Nikola Tesla, Creativity, States of consciousness, Meditation, Sleep, Hopfield-like neural networks, Quantum neural holography, Quantum decoherence.*

*When we start to study non-physical phenomena,  
We will progress more in ten years than we have for centuries.*  
Nikola Tesla

### **INTRODUCTION**

Phenomenon of *deep creative insights* is known to many creators in the fields of science and art. Most frequently, after significant effort to resolve some problem, the solution suddenly appears. However, the very act of creation is going on at subconscious level, escaping from rational scientific analysis to date. That is why *Tesla's introspective analyses* of his creative phases are so precious *case study* [1,2] for understanding the very *biophysical nature of creativity* elaborated in this paper.

**\*Presented in the Meetings:** *Nikola Tesla: Contributions to the World Science and Development*, University 'Braca Karic', Belgrade, 2006; *III Holopentiada: Life and Works of Nikola Tesla*, Faculty of Mechanical Engineering, Belgrade, 2006; *Ideas of Nikola Tesla*, ASA RS, Banja Luka, 2006.

During his stay in Budapest (1881/1882), in looking for employment after leaving his engineering studies, Tesla was beset by his need to detach ... *'the commutator from the machine'* ... He had made a ... *'decided advance'* ... in Prague (1880/1881), but knew he had to reach higher, break new ground: *'I started by first picturing in my mind a direct current machine, running it and following the changing flow ... Next I would visualize systems comprised of motors and generators and operate them in various ways. The images I saw were perfectly real and tangible'*. His entire life force, all impulses and urges, were directed toward the solution, demanding more and more, always with him, present even in his sleep, closer to him than anything else: he had to press his thoughts to their limits, had no patience, and within weeks of starting his employment, succumbed to his ... *'incessant thinking'* ... and had *'a complete nervous breakdown'* ... His physical state had completely deteriorated. The breakdown *quicken and sharpened his perspective a hundredfold, so that he ... 'could hear the ticking of a watch with three rooms between me and the time-piece. A fly alighting on a table in the room would cause a dull thud in my ear. The whistle of a locomotive ... made the chair on which I sat vibrate ... in the dark I ... could detect the presence of an object at a distance of twelve feet by a peculiar creepy sensation on the forehead ... In some instances, I have seen all the air around me filled with tongues of living flame.'* He stayed indoors, sunk in his night shirt and beddings, shivering continually under the thunder of cart wheels and horses, organ grinders, bells, and the sound of voices, incomprehensible and foreign. The air itself hurt ... His pulse fluctuated from very low to 260 beats per minute ...

One day, a co-worker, Antal Szigeti, came to his lodging, and said that, while he had no clue as to what was ailing him, knew that a walk in the fresh air and light never harmed anyone, and pointed toward the City park, *Varosliget*, and invited him to come for a *stroll* ... *'We exercised every day and I gained rapidly in strength. My mind also seemed to grow more vigorous and as my thoughts turned to the subject that absorbed me I was surprised at my confidence of success. On one occasion, ever present in my recollection'*... during a walk in the park toward the end of February, Tesla looked at the setting sun, and began to recite *the glorious passage* from Goethe's *Faust*:

*The sun god's glow retreats, the day is outlived,  
He hastens onward, new life to awaken.  
Oh, for light wings to lift me from the earth,  
That I may strive on, follow on his course,  
The heavens above me, and billows beneath.  
A splendid dream, meanwhile the sunlight vanishes,  
For wings, alas, that quicken the spirit,  
Will not bequeath us earthly rack and pinion.*  
(1084-92)

*'As I uttered these words, the idea came like a flash of lightning ... and in an instant the truth was revealed. I drew with a stick on the sand the diagram of my motor ... secrets of nature which ... I had wrested from her against all odds and at the peril of my existence ... See, how smoothly it runs. No commutator, no brushes, no sparking. As the current in one coil decays, in the adjacent coil it increases, coil after coil, creating new magnetic rotating fields and pushing the shaft continually.'* ...

He had been right in Graz (1875/1877). The fire, the wheel, and now the electro-magnetic field ... *Perhaps the disarrangement of his senses had been necessary.* His life had been preserved for a purpose ... He had entered a treasure house of electricity, and window upon window opened before him, each window, and each discovery, containing in itself something of the entire flowing world of electricity. *It was all new, and yet, he felt as if had always known it ... 'Electrical power was present everywhere in unlimited quantities.'* ... He visualized with ease the new motors: *'In less than two months, I evolved virtually all the types*

*of motors and modifications of the system now identified with my name ... it was a mental state of happiness as complete as I have ever known in life. Ideas came in an uninterrupted stream and the only difficulty I had was to hold them fast.'* [1]

Tesla was absolutely convinced in similarity of scientific and artistic ideas [2]: *'They are coming from the same source.'* This viewpoint is similar to *Plato's*, but Tesla did not come to that speculating philosophically, but he had *experienced the world of ideas from the boyhood: 'When a word was spoken to me the image of the object it designated would present itself vividly to my vision and sometimes I was quite unable to distinguish whether what I saw was tangible or not ... Sometimes it would remain fixed in space though I pushed my hand through it ['Quantum hologram' [3-6], in Tesla's altered quantum-coherent state of consciousness? (D.R. note)] ... Then, instinctively, I commenced making excursions beyond the limits of the small world of which I had knowledge and saw new scenes. These were at first very blurred and indistinct, and would flit away when I tried to concentrate my attention upon them, but, by and by, I succeeded in fixing them; they gained in strength and distinctness and finally assumed the concreteness of real things. I soon discovered that my best comfort was attained if I simply went on in my vision farther and farther, getting new impressions all the time, and so began to travel - of course in my mind. Every night (and sometimes during the day) when alone, I would start my journeys.'* [*'Astral journeys'* [7-9], in Tesla's transitional quantum-coherent states of consciousness? (D.R. note)]

## **TESLA AS A CASE STUDY FOR UNDERSTANDING THE NATURE OF CREATIVITY**

The above Tesla's quotations undoubtedly reveal that Tesla's visions and inventions were realized in *controlled altered and transitional states of consciousness*, which are manifestations of *macroscopic quantum nature and nonlocality of consciousness*, with significant *psychosomatic-transpersonal and cognitive-creative implications* - elaborated in the Appendix. So, according to our investigations, *two cognitive modes of consciousness* are predicted [4-6]: *quantum-coherent direct one* (religious/creative, in altered and transitional states of consciousness) and *classically-reduced indirect one* (sensory/rationally mediated, in normal states of consciousness) - to which theoretical methods of associative neural networks and quantum neural holography combined with quantum decoherence theory might be applied (cf. Appendix).

So it seems that science closes the circle, *again discovering two cognitive modes of consciousness* and simultaneously putting its *own epistemological limitations* - as it was preserved by millenia in *shamanistic tribal traditions* [10], or as it was concisely described by Patanjali in *Yoga Sutras* [11,12] pointing out that mystical experience (samadhi) is "filled with truth" and that "it goes beyond inference and scriptures" [*'Atman is Brahman'* [11,12], in quantum-holographic altered/transitional states of consciousness!?! (D.R. note)], while this difference between "religious" and "rational" cognitive modes was formulated by Berdjaev at the beginning of the last century in his *Philosophy of Freedom* [13] as prayer-mediated "manifesting of things invisible" and rationally-mediated "manifesting of things visible"!!?

It is especially interesting, in the context of *well documented creative insights and extraordinary series of inventions* of Nikola Tesla (directly *visualized in consciousness with all functioning details of devices*, without any application of Maxwell electromagnetics), to consider possibility of *controlling creative processes* in the framework of our theoretical model - which provides extraordinary *biophysical basis* for traditional/transpersonal *psychology of transitional and altered states of consciousness* [4-6,8,9]. Namely, the model predicts unusual *anticipative properties of psyche in quantum-holographic quantum-coherent*

*transitional and altered states of consciousness* (with subsequent *classically-reduced extrasensory-perception* of the mentally-addressed out-of-body complementary environment - which might be also Jung's "*archetype*" of the *problem-with-solution* on the level of *quantum-holographic collective consciousness*, which arises associataion on the Plato's "*world of ideas*" too!). After returning of the displaced consciousness upon the body, in order that transpersonally acquired information ascends to the level of *normally conscious state*, it is necessary to *overcome two filters* (*acupuncture system/nervous system threshold filter*, which requires "emotional colouring" of the solving problem, and *frontolimbic-amplification brain filter*, which requires "emotional-thinking priority" of the solving problem).

According to our investigations, all mentioned conditions might be realized in *waking quantum-coherent state of meditation* (by entering in this prolonged altered state of consciousness, with mental addressing on the solved problem, which Tesla has been doing by persistent mental focusing on the solving problem as described in the introductory section!), while during the *sleep state* they can be realized in quantum-coherent transitional states of *falling asleep* and quantum-coherent stationary states of *REM-sleep phases* (with previous intense concentration on the solving problem before sleep, and subsequent amplification of the obtained classically-reduced answer mostly in the form of symbolic dream, which should be then correctly interpreted in the context of personal internal symbolism). Of course, for solving conceptually complex *scientific problems* it is necessary to be an *expert* in the corresponding field, in order to scientifically *rationalise* a solution that represents corresponding scientific shift.

The same might be applied to *artistic creative experiences* and their subsequent *expressions* [14], while very *art-works* then behave like *mental addresses of "archetypes"* being in contact with artists in transpersonal communications during the acts of creation. Then *deep artistic experiences* of the public might have strong *spiritual note* too, through *spontaneous mental addressing* of the artistic audience on the *masterpiece* and *emotionally-induced excitation* into transitional state of consciousness.

Finally, this could similarly be extended to *deep spiritual experiences* of the believers with their *mental addressing* on *holy icon/relic* and *emotionally-induced excitation* into transitional state of consciousness.

## CONCLUSION

In this paper *quantum bases of consciousness* are considered, based on application of theoretical methods of associative neural networks and quantum neural holography combined with quantum decoherence theory, with significant *psychosomatic-transpersonal* and *cognitive-creative* implications.

It seems that such theoretical analysis provides extraordinary biophysical basis for *traditional/transpersonal psychology* of transitional and altered states of consciousness, and enables *understanding and control of cognitive-creative processes*, both in *waking state* and *during sleep*. In this context, *Tesla's creativity* is presumably based on *waking meditative control of transitional and altered states of consciousness*.

Finally, regarding extraordinary creative ranges of Tesla's introspective experiences in these exotic states of consciousness (categorized in his time as 'non-physical' phenomena!), his conviction in introductory moto that '*when we start to study non-physical phenomena, we will progress more in ten years than we have for centuries*' becomes clearer.

## APPENDIX

### MACROSCOPIC QUANTUM NATURE AND NONLOCALITY OF CONSCIOUSNESS: PSYCHOSOMATIC-TRANSPERSONAL IMPLICATIONS

Contemporary fundamental investigations of *consciousness* (indeterministic manifestations of *free will* [3-6,8,9,15,16], holistic manifestations of *transitional states of consciousness* [8,9] and *altered states of consciousness* [17], conscious/ unconscious transitions and consciousness pervading body [18]) necessarily imply that some manifestations of consciousness must have deeper *quantum origin*, with significant *psychosomatic and transpersonal implications*.

In the context of *quantum psychosomatic implications* - as demonstrated by *quantum-coherent characteristics* of the Russian-Ukrainian school of *microwave resonance therapy* (MRT) [19-21] - the *acupuncture system* is the only *macroscopic quantum system* in our body (while brain still seems not to be [22]) which might be related to *consciousness* [23]. And as recent theoretical investigations show that any quantum system has formal mathematical structure of *quantum-holographic associative neural network* [3] - then (acupuncture temporary-reprogrammable [4-6,24]) *memory attractors of the quantum-holographic acupuncture-meridian network* can be treated as *psychosomatic individual disorders* representing (*quantum*)*holistic microwave(ultralowfrequency modulated) records* - which might represent biophysical basis of (*quantum*)*holistic local psychosomatics* [4-6,8,9]! At the same time, the mentioned analogy between mathematical formalisms of *Hopfield's associative neural network* and *Feynman's propagator version of the Schrödinger equation* implies that *collective consciousness* is possible *ontological property of the physical field itself* [4-6,8,9] with various microquantum and macroquantum (both nonbiological and biological) excitations, which is widely spread thesis of *Eastern esoteric/religious traditions* [25] - and then *memory attractors of the quantum-holographic space-time network of collective consciousness* can be treated as *psychosomatic collective disorders* representing (*quantum*)*holistic field records* (including interpersonal hesychastic-prayer finally-reprogrammable loads [26]) - which might represent biophysical basis of (*quantum*)*holistic global psychosomatics* [4-6,8,9]! So it seems that the *whole psychosomatics is quantum hologram*, both on the level of individual and collective consciousness, which resembles on Hinduistic relationship *Brahman/Atman* as *cosmic/individual consciousness* where an individual bears information about collective whole [25], implying that quantum-holographic hierarchical parts carry information on wholeness which enables subtle *quantum-holographic fractal coupling between different hierarchical levels* [4-6,27-29].

In the context of *quantum transpersonal implications* - if *consciousness* has indeterministic characteristics (*free will*), it still must play essential role in the *wave function quantum collapse* [8,9,15,16], the only indeterministic property of the quantum mechanics, which has itself *manifestly open problems* of the physical nature of *nonlinear collapse* and relativistically inconsistent instantaneous action on distance of the *nonlocal collapse* of the wave function [8,9,16]. One possible solution of the problem of (nonlinear) collapse is proposed by Penrose [30] in *gravitationally induced objective reduction* of the wave function, while according to our *biophysical quantum-holographic/quantum-relativistic model of consciousness*, the similar objective reduction of the wave function might have quantum-gravitational origin in space-time microscopic *wormhole tunnels of highly noninertial microparticle interactions* in quantum measurement-like situations (fully equivalent, according to Einstein's *principle of equivalence*, to strong gravitational fields - in which opening of wormholes is predicted [31]) - implying that von Neumann's *ad hoc projection*

*postulate* [15] is based on *quantum gravitational phenomena* [8,9], being on deeper physical level than nonrelativistic quantum mechanical ones. Besides, *nonlocality of collective consciousness* [8,9], as a giant space-time associative neural network with distributed individual consciousnesses (related to human acupuncture electromagnetic/ionic microwave ultralowfrequency-modulated quantum-holographic neural networks [4-6,8,9,21], mutually interacting quantum-gravitationally in transitional states of individual consciousnesses [4-6,8,9]), might explain (apparently) *instantaneous action on distance* in (nonlinear) quantum-gravitationally induced and (nonlocally) channelled collapse by collective consciousness [4-6,8,9].

The *remnant* of these microscopic processes presumably remained on the macroscopic level in *transitional states of individual consciousness* (as *highly noninertial processes* of the out-of-body spatio-temporal *quantum-gravitational mentally-channelled tunnelling* of the part of acupuncture electromagnetic/ionic quantum-holographic neural network [4-6,8,9]), presenting biophysical basis of numerous *transpersonal communications* without space-time barriers [32-37]. So, what might be really anticipated in transitional states of consciousness of individual consciousness might be the *time evolved quantum-holographic state of the "field" of cosmic collective consciousness* (and/or its complementary "particle" cosmic environment) to which quantum-holographic states of individual consciousness have access, being the constitutive part of cosmic collective consciousness - which is quantum-mechanically described by deterministic unitary evolution governed by Schrödinger (or Feynman propagator) equation, *without collapse* (due to the absence of complementary out-cosmic environment!) [4-6].

The *real biophysical nature* of religious and other transpersonal experiences of different religious/esoteric traditions of East and West should be also pointed out [25,26] - and according to theoretical relationship consciousness/acupuncture macroscopic quantum-holographic electromagnetic/ionic associative neural network [4-6,8,9], esoteric notions such as *subtle body* (*manomaya, lingasarira, manovijnana, ka, psyche, astral body, psychic body, ...*) and *mental body* (*vijnanamaya, suksmasarira, manas, ba, thymos, mind, noetic body, ...*) [25,26] are biophysically inevitably associated with a *displaced part* (connected with the body by miniature "wormhole" tunnel) of *ionic acupuncture system*, and an *electromagnetic/EM component* of ionic microwave/MW ultralowfrequency/ ULF-modulated currents embedded within it, respectively.

Then, the results of all *transpersonal interactions* [32-37] might be *interpreted* [4-6,8,9] by *collapse-related* consciousness-channelled quantum-gravitational tunnelling of operator's individual consciousness with mental addressing on target's content of collective consciousness in operator's highly-noninertial *transitional states of consciousness*, thus *intentionally channelling* operator/target's composite state of collective consciousness ( $|\Phi\rangle_S \rightarrow |\Phi_j\rangle_S$ ) and automatically target/environment's output ( $|\Psi\rangle_E \rightarrow |\Psi_j\rangle_E$ ) in quantum-gravitationally-induced and consciousness-channelled collapse:

$$|\Phi\rangle_S |\Psi\rangle_E \rightarrow \sum_i c_i |\Phi_i\rangle_S |\Psi_i\rangle_E \rightarrow |\Phi_j\rangle_S |\Psi_j\rangle_E .$$

It should be also point out, in the context of *necessary conditions for decoherence* [38], that defining of open quantum system and environment is - *simultaneous process* - so that in the context of universal validity of quantum mechanics *consciousness is relative concept*, non-locally also influenced by farther parts of existing observing universe (and *vice versa!*) [39], simultaneously creating conditions for the process of decoherence in the context of *existing relative borderline*:

$$|\Phi\rangle_S |\Psi\rangle_E = |(\text{partial}) \text{ individual/collective consciousness} \rangle_S |(\text{complement}) \text{ environment} \rangle_E .$$

This is fully in accordance with the idea of *collective consciousness as ontological property of the physical field itself*, with different microquantum and macroquantum (both non-biological and biological, real and virtual) excitations. In this context, as *cosmic collective consciousness* ( $|\Phi\rangle_S \sim \prod_k |\phi^k\rangle_{S_k} = \sum_i c_i |\Phi_i\rangle_S$ , coincidental with the "field" of *Universe itself*) has its complement "particle" cosmic environment ( $|\Psi\rangle_E = \sum_i c_i |\Psi_i\rangle_E$ ), then their strong-interaction-coupling gives rise to *decoherence of the "field" of cosmic collective consciousness* into stationary *classically-reduced (observing) stochastic state*,  $\hat{\rho}_S = \sum_i |c_i|^2 |\Phi_i\rangle_{SS} \langle \Phi_i|$ , with probabilities  $|c_i|^2$  of the realization of one of the classically decoherent states  $|\Phi_i\rangle_S$  of *cosmic collective consciousness*. However, the *evolution of cosmic composite quantum state*  $|\Phi\rangle_S |\Psi\rangle_E$  is described by *deterministic unitary evolution* governed by Schrodinger (or Feynman propagator) equation, *without collapse* (due to the *absence of complementary outside-cosmic environment!*), which implies that *Universe as a whole is quantum-coherent hologram* subject to deterministic Schrodinger evolution!

## QUANTUM AND CLASSICAL NEURAL NETWORKS AND TWO MODES OF CONSCIOUSNESS: COGNITIVE-CREATIVE IMPLICATIONS

Further on, we shall focus on *quantum bases of consciousness* in the framework of *two cognitive modes of consciousness* [4-6,10-13]: *quantum-coherent direct one* (religious/creative, in altered and transitional states of consciousness) and *classically-reduced indirect one* (sensory/rationally mediated, in normal states of consciousness) - to which theoretical methods of associative neural networks [40] and quantum neural holography [3] combined with quantum decoherence theory [4,5,41-43] might be applied.

More concretely, by applying *Quantum decoherence theory* the quantum-coherent state of  $k$ -th individual acupuncture system/consciousness  $S_k$ ,  $|\phi_e^{(k)}(t)\rangle_{S_{ke}} = \sum_i c_{k_i}(t) |\phi_e^{(k_i)}\rangle_{S_{ke}}$ , is described by superposition of its all possible states ( $\phi_e^{(k_i)}$ ), which after quantum collapsing in classically-reduced state gives rise to stochastic state described by density matrix  $\hat{\rho}_{S_{ke}}^{(k)}(t) = \sum_i |c_{k_i}(t)|^2 |\phi_e^{(k_i)}\rangle_{S_{ke}S_{ke}} \langle \phi_e^{(k_i)}|$ , with probabilities  $|c_{k_i}|^2$  of the realization of one of the classically decoherent states  $|\phi_e^{(k_i)}\rangle_{S_{ke}}$  - in quantum measurement-like process upon the initial quantum-coherent state  $|\phi_e^{(k)}\rangle_{S_{ke}}$ . The time evolution  $|\phi_e^{(k)}(t)\rangle_{S_{ke}}$  of the *quantum-coherent state* (non-perturbed by the environment) of  $k$ -th individual acupuncture system/consciousness might be described in Feynman's representation by quantum-holographic Hopfield-like neural network *via* dynamical equation for *quantum-holographic memory/propagator*  $G^{(k)}(\mathbf{r}_2, t_2, \mathbf{r}_1, t_1)$  
$$= \sum_i \phi^{(k_i)}(\mathbf{r}_2, t_2) \phi^{(k_i)}(\mathbf{r}_1, t_1)^* = \sum_i A_{k_i}(\mathbf{r}_2, t_2) A_{k_i}(\mathbf{r}_1, t_1) e^{\frac{i}{\hbar}(\alpha_{k_i}(\mathbf{r}_2, t_2) - \alpha_{k_i}(\mathbf{r}_1, t_1))}$$
 [3-5], while the time evolution  $\hat{\rho}_{S_{ke}}^{(k)}(t)$  of the *classically-reduced stochastic state* (perturbed by the environment) of  $k$ -th individual acupuncture system/consciousness  $S_k$  might be described by classical Hopfield-like neural network [3-5], represented by shape-adaptation of the *many-electron hypersurface* in the energy-state space  $E_{S_k}(\phi_e^{(k)})$  of the open acupuncture system/consciousness  $S_k$ . It should be noted that the two interacting and modifying *acupuncture macroscopic quantum systems* practically exist, related to *many-electron* and *many-phonon*

*hypersurfaces*,  $E_e(\phi_e^{(k)})$  and  $E_v(\phi_v^{(k)})$  [4], where the second one also includes low-energy *long-range coherent microwave Frohlich excitations* created as a result of interactions between the electronic and phonon subsystems, which are of the particular significance in *Microwave resonance therapy* of the acupuncture system [19-21].

It is especially interesting to point out that *quantum decoherence* evidently plays fundamental role in *information processing* in all *biological* quantum-holographic neural networks through *shape-adaptation* of the energy-state hypersurfaces (while in *artificial* qubit-quantum computers it must be *avoided* at any cost until the very act of the quantum computation read-out, to preserve quantum-coherent-state in its quantum-parallel information processing by every term of quantum superposition, which requires work of qubit-processors at extremely low temperatures), demonstrating that Nature has chosen a very elegant and room-temperature solution for *biological quantum-holographic-like information processing*, permanently *fluctuating* between quantum-coherent  $|\phi^k(t)\rangle_{S_k}$  and classically-reduced  $\hat{\rho}_{S_k}^k(t)$  states of the *macroscopic open quantum acupuncture system/consciousness*, through nonstationary interactions with out-of-body-environment and through decoherence by body-environment [4]; the same might apply to lower hierarchical quantum-holographic *macroscopic open quantum cellular enzyme-genomic level*, which also functions at the level of permanent *quantum-conformational quantum-holographic-like* molecular recognition - so that *quantum neural holography* combined with *quantum decoherence* might be very significant in feedback *bioinformatics*, from cell-to-organism levels [4,42].

The *direct cognitive mode* of individual consciousness may be related to weakly coupled consciousness-environment communication, through quantum-holographic coupling of Hopfield-like EM/ionic acupuncture network of individual consciousness and quantum-holographic/quantum-gravitational space-time network of cosmic collective consciousness (characteristic of quantum-coherent *transitional and altered states of individual consciousness*, in religious-esoteric mystical transpersonal communications, including *quantum-holographic* anticipation in *intuition, precognition, and deep creative insights* [4-6,8,9] - being after *quantum collapsing* in classical/normal state of consciousness, through restituted strong coupling of quantum-holographic-consciousness-contents with the body, further subjected to indirect language/artistic/scientific *filtering* through extended reticular-thalamic activated system, ERTAS [44], thus classically-reducing initially obtained direct quantum-coherent information content - so explaining *generally poor epistemological rationalization* of every direct quantum-holographic spiritual/religious mystical experience, including dogmatic, scientific or artistic *ontological pretensions* [4,5]).

The *indirect cognitive mode* of individual consciousness may be related to strongly coupled consciousness-body-environment communication *via* space-time limited perceptual sensations processed by classical/electrochemical hierarchical neural networks and rationally filtered in conscious content by approximate empirical/artistic/scientific concepts dependent of cultural/scientific tradition and education of the inhabitants of some society (characteristic of classically-reduced *normal states of individual consciousness* in everyday communications, additionally *filtered and amplified* by ERTAS system - and afterwards transcribed in conscious content of the quantum-informational acupuncture network of individual consciousness, *via* brainwaves' EM fields every  $\sim 0.1$  s - so generating normal "*stream of consciousness*" [8,9]).

These cognitive modes of individual consciousness are presumably interchanged by periodicity of  $\sim 2$ -hour *ultradian rhythm*, both in waking and sleep states [8,9,45]. However, the above-mentioned division in *two cognitive modes* of individual consciousness, *quantum-coherent direct one* (in religious/creative *altered and transitional states of consciousness*) and



*classically-reduced indirect one* (in sensory/rationally mediated *normal states of consciousness*) - is still non-quite sharp.

Namely, in religious/creative *altered and transitional states of consciousness*, quantum-coherent direct mode might be *transformed* into classically-reduced indirect mode, in the case of strong out-of-body interaction consciousness-environment, with quantum-reduced out-of-body *extrasensory perception of the mentally addressed environment*, which transforms out-of-body displaced EM/ionic part of individual consciousness from nonstationary quantum-coherent state of the quantum-holographic Hopfield-like neural network into above described stationary classically-reduced stochastic state of the classical Hopfield-like neural network. After interruption of this interaction, with returning out-of-body displaced EM/ionic part of individual consciousness in quantum-gravitationally mentally-channelled tunnelling of the displaced part of individual consciousness upon its body, this information is further transcribed and filtered through (MW/ULF) EM acupuncture system/nervous system and afterwards language/artistic/scientific filtered and amplified by the brain hierarchical neural ERTAS-system (with accompanied neuron-like oscillatory [46] "brainwave frequency"-ascending thought from lower-frequency ULF ( $\delta, \theta$ ) unconscious form of subliminal thought to higher-frequency ULF ( $\alpha, \beta, \gamma$ ) conscious form, pointing at the very mechanism of thinking [47], closely related to the mechanism of frontolimbic-amplification of the pragmatic language processing [48], which is dominantly going on the unconscious level).

It should be also pointed out that mentioned (MW/ULF) EM *acupuncture system/nervous system interaction* has its *threshold potential* of the nervous electrochemical synapses (in contrast to practically non-existing threshold potential of the acupuncture electrical "gap-junction" synapses [27], which makes bodily acupuncture system an extremely sensitive *quantum sensor* which can resonantly "detect" even ultraweak EM fields [49] - with radiesthesia-diagnostic, noncontrolable-pathogenic and quantum-therapeutic psychosomatic effects [50]) - and therefore filters all thus extrasensory obtained information below nervous threshold potential, preventing it to be additionally language/artistic/scientific articulated by the brain hierarchical neural ERTAS system - enabling further processing of only that information which is sufficiently "emotionally coloured" i.e. has sufficient critical depth of MW/ULF EM acupuncture memory attractors, or has greater general acupuncture energetic potential (inborn or gained through various traditional techniques of stimulation, deep breathing, relaxation, meditation or prayer [21]).

On the other hand, the reverse *nervous system/acupuncture system interaction* - effective in transcription of language/artistic/scientific articulated brain information into conscious content of the acupuncture network of individual consciousness, mediated by ULF EM field of brain neural activities every  $\sim 0.1$  s thus generating normal "stream of consciousness" and ULF-modulating acupuncture MW-memory attractors - is going *without threshold limits*. In this context, in perceptually/rationally mediated *normal states of consciousness*, the classically-reduced indirect mode can be *transformed* into quantum-coherent direct mode of individual consciousness after ULF EM transcription of the brain articulated information into conscious content during interaction nervous system/acupuncture system, in the case of short-lasting *nonstationary excitations of acupuncture system* - which transforms the acupuncture system from stationary classically-reduced stochastic state of classical Hopfield-like neural network into nonstationary quantum-coherent state of quantum-holographic Hopfield-like neural network, that then collapses into following stationary classically-reduced state.

This might be a model of intentional sensory/rationally induced classical/quantum/classical stationary/nonstationary/stationary hierarchical (inter)actions nervous/acupuncture/nervous systems - i.e. model of *free will* [4,5]!

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  29. About *local quantum-holographic coupling* on the level of bodily acupuncture system and its numerous projection zones cf. [D. V. Park, *Su Jok Doctor by Yourself*, Balkan Su Jok Therapy Center, 2003, Serbian translation from Russian original, 2001; Group of Authors, *Anti-Stress Holistic Handbook, with Fundamentals of Acupuncture, Microwave Resonance Therapy, Relaxation Massage, Airoionotherapy, Autogenic Training, and Consciousness*, IASC, Belgrade, 1999, in Serbian]. For most fascinating manifestation of *global quantum-holographic coupling* on the level of preferences of collective and individual history coded within The Old Testament, cf. [D. Witztum, E. Rips, Y. Rosenberg, "Equidistant letter sequences in The Book of Genesis", *Statistical Science*, vol. 9, pp. 429-438, 1994; M. Drosnin, *The Bible Code*, Simon & Schuster, New York, 1997; M. Drosnin, *Bible Code II: The Countdown*, Viking Penguin, New York, 2002] - which might be interpreted as a consequence of the quantum-holographic nature of the cosmic collective consciousness (God!?) and its every original manifestation (including The Old Testament, as well as every individual consciousness) - which still does not mean the strict determinism of the History by the existing state of collective consciousness, whose memory attractors could be reprogrammed by hesychastic prayer for the others thus removing interpersonal loads of the quantum-holographic Hopfield-like neural network of collective consciousness - so leaving the room for free will and influence on the future preferences [4-6,8,9].

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