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On Quantum-Holographic Bases of Psychophysiological Development of a Child

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Abstract - Our previously developed quantum-holographic framework of integrative medicine and transpersonal psychology seems to provide theoretically fundamental understanding of the nature of psychosomatic diseases as well as limitations of their prevention and healing methods, by imposing new healing boundary conditions in the energy-state space of electromagnetic (EM) quantum-field-related acupuncture system / (individual and collective) consciousness – suggesting that there are three front lines of psychosomatic medicine: (i) spirituality and circular (psycho / energy) therapies from all relevant meta-positions, with the possibility of a potential permanent removal of mutual memory attractors on the level of collective consciousness, (ii) (quantum) holistic medicine and non-circular (psycho / energy) therapies, which temporarily remove the memory attractors on the level of the acupuncture system / individual consciousness and prevent or alleviate their somatization, as a result of negligence on the first level, (iii) symptomatic conventional medicine, which via immunology, pharmacology, biomedical diagnostics and surgery at the physical level prevents or alleviates somatic consequences of carelessness on the first two levels. It should be noted that the necessary activities in the second and third levels, with neglect of the first level, would result in further transfer of memory attractors on the level of individual and collective consciousness in this and future generations – thus suggesting necessity to focus on origins of many problems in psychophysiological development of a child on underlying prenatal trans-generational levels (as suggested by experiences of clients in post-hypnotic regressions as well). Everything considered above might also be of fundamental importance in understanding underlying macroscopic quantum-informational Hopfield-like holographic acupuncture system / (individual and collective) consciousness EM field-related biofeedback control mechanisms of embryogenesis / ontogenesis and morphogenesis via downward influence on the expression of genes – shedding new light on the long standing open problems of the acupuncture system and consciousness as well.

Key-words: psychophysiological development of a child, integrative medicine and transpersonal psychology, quantum-holographic framework, acupuncture-based and consciousness-based approaches and techniques.

1. Introduction

In conclusions of the *First International Congress 'Psychological Trauma: Prenatal, Perinatal & Postnatal aspects (PTPPPA 2015)'* the following messages were outlined (Brekhman et al., 2015): (i) For understanding development of human consciousness, communication, behaviour and learning, we must apply a holistic approach from the prenatal period, from preconception, because a man is a unique expression of trans-generational characteristics of his ancestors and interactions with closer and wider environment; (ii) If in considering development of communication and behaviour we do not perceive this fact, we might consequently come into a situation of not being able to have substantial insight into our own situation and behaviour, and even less of the others; (iii) Experts who deal with child development, upbringing and education, should complement their knowledge with the art of composing and interpreting genealogic tree (somatic, psychological, spiritual), thus gaining holistic insight into the complete development of a person from the moment of conception, and being adequately prepared to support young generations properly.

This paper is fully in line with these conclusions. On the one hand, it provides theoretically fundamental understanding of quantum-holographic framework of psychosomatics in integrative medicine and transpersonal psychology (outlined in Section 2). On the other hand, it provides theoretically fundamental understanding of quantum-holographic framework of epistemology and spirituality, suggesting the real nature of transpersonal experiences of various traditions, phenomenological evidences and laboratory and clinical studies (outlined in Section 3). All this might have significant quantum-holographic psychophysiological implications for child development, including underlying prenatal trans-generational aspects (discussed in Section 4).

2. Outline of quantum-holographic framework of psychosomatics

Despite the involved huge financial and intellectual resources in biomedical research and health care, human health is still jeopardized by numerous *psychosomatic*

diseases, which find the fertile soil in modern man exposed to everyday *stress* (Selye, 1974; Group of authors, 1999; Raković et al., 2009, Raković, 2013). Since modern partial methods have not shown the desired efficacy in the prevention / treatment of psychosomatic disorders, new approaches are needed, which will include methods of *integrative biophysics*, oriented to *holistic healing the person as a whole* rather than disease as a symptom of disorder whole – with an ideal to achieve and maintain a state of *complete physical, mental and social well-being* (World Health Organization, 1948).

In the *focus* of these *holistic methods* are *macroscopic quantum-like acupuncture system and consciousness* – closely related within the fast developing fields of *integrative medicine* (<https://www.imconsortium.org>) and *transpersonal psychology* (<http://www.atpweb.org>). Really, according to the *quantum-coherent characteristics* of the Russian-Ukrainian school of *microwave resonance therapy* (MRT) (*highly resonant microwave sensory response of the disordered organism, biologically effective non-thermal microwave radiation of extremely low intensity and energy, and neglecting microwave energy losses down acupuncture meridians* (Devyatkov and Betskii, 1994; Sit'ko and Mkrтчian, 1994; Potehina et al., 2008; Group of authors, 1999; Jovanović-Ignjatić and Raković, 1999; Raković et al., 2000, 2009, 2011; Jovanović-Ignjatić, 2010)), *acupuncture system* is the only *macroscopic quantum system* in our body to be *associated with macroscopic quantum-like manifestations of consciousness* (in-deterministic properties of *free will*, non-local properties of *consciousness pervading body*, and *altered and transitional states of consciousness* (Tart, 1972, 1992; von Neumann, 1955; Stapp, 1993, 2001; Penrose, 1994; Hameroff, 1994-; Shimony, 1995; Hameroff and Penrose, 2014; Raković, 1995, 1997, 2000, 2002, 2007a,b, 2008a,b, 2009, 2011a,b; Raković et al., 2004, 2009; Raković and Dugić, 2005)).^{1,2,3,4}

¹ Although *consciousness* has been the central theme of philosophical essays from the very beginning of philosophical thought, or traditional esoteric practices of the East and West which have reached significant level in control of altered states of consciousness with important philosophical and religious implications – the first scientific attempts to enlighten the phenomenon of consciousness appeared only in psychology of the second half of 19th century (through development of psychophysics and theories of personality), and then in 20th century (through attempts of founding still controversial experimental parapsychology (Jung, 1955, 1963; Jung and Pauli, 1955; Rhine, 1934; Rhine and Pratt, 1957; Schmidt, wiki; Jahn and Dunne, 1988, 2011; Nelson, wiki; Radin, 1997, 2006; Tart, 1972, 1992, 2009; Tart et al., 2002; Targ and Puthoff, 2004; Mitrović, 2015), which however contributed to holistic climate in past several decades (Stambolović, 2003) for development of transpersonal psychology and integrative medicine), in physics of the beginning of 20th century (through development of quantum mechanics and

articulation of the still open problem of the so called wave function collapse and the role of observer in this process), and in computer sciences of the second part of 20th century (through development of artificial intelligence and the conception that the whole cognitive process can be reduced to a computer algorithm). In past two decades Center for Consciousness Studies of the University of Arizona in Tucson was organizing annual multi-disciplinary conferences on consciousness studies (Hameroff et al., 1994-), as the phenomenon of consciousness comes again in the focus of the world scientific community owing to its potential implications in many scientific fields. So, in *medicine* it might give rise to enlightening of the holistic quantum-informational role the acupuncture system and consciousness in development of psychosomatic diseases and their healing and prevention. In *psychology* we could understand mechanisms and roles of altered states of consciousness in the growth of personality, control of creativity, as well as transpersonal phenomena usually accompanying these states. In *biology* it might appear that limits of interactions between individuals are more provisional than widely believed, which would be of significance not only for adaptive mechanisms on the level of the whole biological species, but even for deeper understanding of the very significance of morals in human population. An understanding of the phenomenon of consciousness in *physics* could give rise to a deeper understanding of fundamental problems of the observer's role in quantum-mechanical act of measurement, which would demonstrate that consciousness, space, time, and matter are more deeply interwoven than widely believed. So, an understanding and controlling of transpersonal interactions would significantly change the field of *communications*, where many traditional barriers might be radically surpassed. In *computer sciences*, an understanding of the nature of consciousness might give rise to computers with artificial consciousness, which would function on deeper quantum-mechanical principles. Finally, a deeper understanding of the very nature of consciousness and transpersonal phenomena might radically shift our scientific understanding of some ultimate *philosophical* and *religious* questions, traditionally remaining outside the domain of theoretical and experimental scientific methods of natural sciences, being therefore a subject of deep and painful irrational divisions throughout the whole history of human civilization, which could be finally overcome due to scientific breakthroughs in the field of consciousness.

² When we talk about quantum processes, the term *quantum* refers to a discrete element of energy E in a *microsystem*, this energy being related to a fundamental frequency ν of its oscillation, according to Planck's famous formula $E = h\nu$, where h is Planck's constant. This deep relation between discrete energy levels and frequencies of oscillation underlies the wave / particle *duality*, inherent in quantum phenomena. The laws governing these submicroscopic quantum entities differ from those governing our everyday classical world, for example, quantum particles can exist in two or more states or locations simultaneously, where such a multiple coexisting *quantum superpositions* of alternatives (each alternative being weighted by a complex number) would be described mathematically by a *quantum wave function*. From the very beginning of *quantum mechanics*, the so called *measurement problem* was recognized, as the question of why we do not see quantum superpositions in a *macroworld*, where we see objects and particles as material, classical things in specific locations and states. More precisely, the measurement problem is the *conflict* between the two fundamental procedures of quantum mechanics. The first procedure is referred to continuous *deterministic* evolution of the quantum state, known as *unitary evolution* (described by fundamental *Schrödinger equation*). The second procedure is adopted whenever a *measurement* of the quantum system or *observation* of quantum system is taken place, where the quantum state is *discontinuously and probabilistically* replaced by another quantum state, known as the *reduction of the state* or the *collapse of the wavefunction* (described technically by so called *von Neumann's projection postulate*) (von Neumann, 1955). This conflict is denoted as the *measurement problem* (or more accurately the *measurement paradox*), and its problematic nature is made manifest when we consider the *measuring apparatus* itself as a *quantum entity*, which is part of the entire quantum system consisting of the original system under observation together with this measuring apparatus. The apparatus is constructed out of the same type of quantum ingredients (electrons, photons, protons, neutrons etc.) as is the system under observation, and is subject to the same quantum laws

and is described in terms of the continuous unitary evolution. How, then, can the discontinuous and probabilistic reduction come about as a result of the interaction (measurement) between two parts of the quantum system? This is the paradox which basically implies that quantum mechanics is still *incomplete theory*. There are many attempts to resolve this paradox, and some include different *objective reductions (OR)* in which a specific objective threshold is proposed to cause quantum state reduction (Hameroff and Penrose, 2014; Penrose, 1989, 1994).

³ *Indeterministic characteristics of free will* indicate that (associated with it) *consciousness* must play an essential role in the *collapse of the quantum wave function* (von Neumann, 1955; Penrose, 1989, 1994; Hameroff and Penrose, 2014; Stapp, 1993, 2001; Raković and Dugić, 1998, 2002, 2005; Dugić et al., 2002, Raković et al., 2004; Raković, 1995, 1997, 2000, 2002, 2007b, 2008a,b, 2009, 2011b), the only indeterministic property of quantum mechanics, which also has *manifestly open problems* of physical nature of *nonlinear collapse* and relativistically inconsistent instantaneous action on distance of the *nonlocal collapse* (Stapp, 1993, 2001). One possible solution of the problem of (nonlinear) collapse is proposed by Penrose (1989, 1994), in *gravitationally induced OR of the wave function (superposition of two-partite quantum-entangled alternatives 'quantum system / measuring device-environment')*, in which the gravitational field of '*measuring device-environment*' included in the superposition of corresponding quantum-entangled states '*quantum system / measuring device-environment*' implies the superposition of different space-time geometries. When these geometries become sufficiently different (i.e. sufficiently increase the gravitational self-energy E_G of the difference between the two (stationary) mass distributions of the superposition) this implies the break of standard quantum superposition of two-partite states '*quantum system / measuring device-environment*' (ill-defined in strictly separate space-time geometries) and Nature *must choose* between one of them and actually affects *OR* of the wave function during the time $\tau \approx \hbar/E_G$ (inversely proportional to the size of quantum system). Regarding *non-algorithmic quantum-gravitational aspects of consciousness*, Penrose (1989, 1994) and Hameroff and Penrose (2014) tried to search for *sufficiently isolated relevant macroscopic quantum degrees of freedom* in microtubular cytoskeletal structures of neurons (thus avoiding ultra-short *OR-based 'proto-conscious observations'* of the stochastic environment!). Thus unitary evolution of quantum superposition of microtubules is proposed to be kept until the time of the *orchestrated reduction (Orch OR)* $\tau \approx \hbar/E_G \approx 25$ ms (characteristic of γ -waves in EEG, neurophysiologically correlated with consciousness), which would give rise to the moment of consciousness according to *Orch OR* scheme (which was undergone to severe critiques by Tegmark (2000)).

⁴ According to our extended *biophysical quantum-holographic / quantum-gravitational model of consciousness, including vital energy and transpersonal phenomena* (Raković, 2007a, 2008a,b, 2009, 2011a,b, 2013, 2014, 2015a,b,c; Raković et al., 2004), similar *OR* of the wave function might have quantum-gravitational origin in miniature space-time *wormhole-tunnels of highly non-inertial microparticle interactions* in quantum-measurement-like situations (fully equivalent, according to Einstein's *principle of equivalence*, to strong gravitational fields – where opening of wormhole-tunnels is expected (Thorne, 1994)). The question of how it is possible that these highly-noninertial micro-particle processes with inevitable opening of miniature wormhole tunnels were not taken into account within quantum mechanics that is yet extremely accurate theory(?) – could be answered as they possibly were(!) but implicitly within von Neumann's projection postulate (von Neumann, 1955) in order to get *OR* of the wave function in quantum-measurement-like situations (which would imply that von Neumann's *ad hoc projection postulate is based on quantum-gravitational-phenomena!*). Also, *their macroscopically accumulated exotic anti-gravitational imprint* might possibly be observable on cosmological scale (or have been already detected(?) by recent advances in the cosmological tests, that invite again the *Einstein's cosmological constant* and related concept of hypothetical '*dark energy*' or '*quintessence*', which permeates all of space and tends to accelerate the expansion of the universe (Peebles and Ratra, 2003)). In any case, it is expected that only on the level of future *quantum gravitation* the nature of '*black holes*', '*wormhole tunnels*', and '*cosmological singularities*' would be fully revealed (when on the Planck-Wheeler's scales of length $\sim 1,62 \cdot 10^{-35}$ m and time $\sim 0,54 \cdot 10^{-43}$ s the concept of space-time ceases to exist and remains

Having in mind that Peruš (1996) has shown that any quantum system has formal mathematical structure of quantum-holographic Hopfield-like neural network (within the Feynman propagator version of quantum mechanics; see also Raković, 2009), then it follows that acupuncture system and consciousness have fundamental (not model-dependent!) informational structure of quantum-holographic Hopfield-like neural network⁵ – whose memory attractors could be treated as psychosomatic states,

only Wheeler's 'quantum foam', out of which not only space-time singularities but also tiny surrounding parts of space-time are made (Wheeler and Ford, 2000)). On the other hand, *nonlocality of collective consciousness*, as a giant space-time associative neural network with distributed individual consciousnesses (related to bodily acupuncture EM / ionic microwave ultralowfrequently-modulated quantum-holographic neural networks, according to our *biophysical quantum-holographic / quantum-gravitational model of consciousness*, mutually interacting quantum-gravitationally in non-stationary transitional states of individual consciousnesses), might explain (apparently) *instantaneous action on distance* in (nonlinear) quantum-gravitationally induced and (nonlocally) channeled OR by collective consciousness. At the same time, the *analogy between mathematical formalisms of Hopfield associative neural network and Feynman propagator version of quantum mechanics* (Peruš, 1996) implies that *collective consciousness* is possible *ontological property of the all-pervading unified physical field* with various micro-quantum and macro-quantum (non-biological and biological, non-structured and structured, virtual and real) excitations, which is widely spread thesis of *Eastern esoteric / religious traditions*. The relict of the mentioned above microscopic processes seems to remain at the macroplane in *transitional states of individual consciousness* (as *highly-noninertial transitional processes from high-dielectric bodily into low-dielectric out-of-body states*, equivalent-to-strong-gravitation according to *Einstein's principle of equivalence* of inertial and gravitational accelerations!) in *quantum-gravitationally mentally-channeled tunneling* of the out-of-body-displaced part of acupuncture EM-ionic quantum-holographic neural network. This presumably represents biophysical basis for numerous *transpersonal communications* without space-time barriers: precognition and other esoteric phenomena and out-of body experiences (Paramahansa Yogananda, 1946; Castaneda, 1971; Targ and Puthoff, 1977; Swami Rama, 1978; Wilber, 1980; Jahn, 1982; Johari, 1989; Chopra, 1989; Talbot, 1991; Kaznacheev and Trofimov, 1992; Newton, 1994; Vujičin, 1995; Lee Rand, 1998; Petrović, 2000; Pearl, 2001; Moody, 2001; van Lommel et al., 2001; Liptay-Wagner, 2003; Radin, 2006; McTaggart, 2007; Swami Sada Shiva Tirtha, 2007; Hellinger and Ten Hevel, 2009; Øverbye, 2009; Hadži-Nikolić, 2011; Tomšić Akengen, 2011; Lončar, 2011; Jahn and Dunne, 2011), effects of prayer (Hay, 1984; Markides, 1990; Dossey, 1993; Vlahos, 1998; Harris et al., 1999; Stibal, 2006; Vitale and Hew Len, 2007; Bedričić et al., 2011; Moorjani, 2012) and other non-local interactions (Tiller et al., 1999; Persinger et al., 2008; Gariaev, 2009; Gariaev et al., 2011) – where necessity of *mental addressing* on the target implies univocal *ontological personal aspect of individual human consciousness*, which is also widely spread thesis of *Christian religious tradition*.

⁵ This represents the basis of *quantum neural holography* (Peruš, 1996; Peruš and Loo, 2011; see also Raković, 2009), which allows successive reconstruction of the wave functions of the memory states at the output of quantum-holographic Hopfield neural network (complete, of both amplitude and phase) in recognition of the wave function of the previously memorised state displayed again at its input (which is the basis of every holography, but everything here is simpler than in the standard laser holography, which requires so called coherent reference and subject laser beams). Although basic elements of quantum vs. neural system (modeled by formal neurons and connections) are very different, their collective processes obey similar laws. So Hebb's correlation matrix of

representing biophysical basis of acupuncture-based and consciousness-based *quantum-holistic local psychosomatics* (Raković, 2002, 2007a, 2008a,b, 2009, 2011b, 2013, 2014, 2015a,b,c; Raković et al., 2009, 2011). Within this quantum-informational framework, it is plausible to consider healthy psychosomatic state as the simplest informational state of the lowest quantum entropy (with single memory attractor), and disordered psychosomatic states as more complex states of the higher quantum entropy (with additional side memory attractors, up to hundreds of them in primary psychosomatic diseases and thousands of them in their combinations, according to Tibetan medicine (Petrović, 2000)).⁶ That *acupuncture system is closely associated with consciousness and*

memory synaptic connections in Hopfield's associative neural networks, corresponds to Green's function (quantum propagator) in Feynman's version of Schrodinger equation:

$$G(r_2, t_2; r_1, t_1) = \sum_{i=1}^P \phi^{k_i}(r_2, t_2) \phi^{k_i*}(r_1, t_1) = \sum_{i=1}^P A_{k_i}(r_2, t_2) A_{k_i}^*(r_1, t_1) e^{\frac{i}{\hbar}(\alpha_{k_i}(r_2, t_2) - \alpha_{k_i}(r_1, t_1))}$$

where ϕ^{k_i} is i -th *quantum memory attractor* (i.e. explicate short-term memory of i -th quantum state / attractor), and G is *quantum-holographic memory* (i.e. implicate long-term memory of all P quantum states / attractors in quantum memory) of such informationally interpreted (any) quantum system! Then, (re)construction of quantum attractor patterns, i.e. transformation of the representation of *long-term memory* (of quantum latent consciousness / subconscious) into representation of the *recall / short-term memory* (of quantum manifest consciousness), is analogous to the wave-function collapse. In this context, *association of individual consciousness with manifestly-macroscopic-quantum acupuncture system*, by applying methods of *associative neural networks*, *quantum neural holography*, and *quantum decoherence theory*, provides *quantum-holographic framework* for psychosomatics, epistemology and spirituality – outlined in this paper.

⁶ In particular, considering psychosomatic state in generally mixed quantum state of density matrix:

$$\widehat{\rho}_{S_{kv}}^{(k)} = \sum_i |c_{k_i}|^2 |\phi_v^{(k_i)}\rangle_{S_{kv}} \langle \phi_v^{(k_i)}| \equiv \sum_i p_{k_i} |\phi_v^{(k_i)}\rangle_{S_{kv}} \langle \phi_v^{(k_i)}|$$

(where p_{k_i} are probabilities of realization of the k_i -th state), then von Neumann's quantum-mechanical entropy $S = -k \text{Tr}(\widehat{\rho}_{S_{kv}}^{(k)} \ln \widehat{\rho}_{S_{kv}}^{(k)})$ is reduced to classical Shannon's entropy

$S = -k \sum_i p_{k_i} \ln p_{k_i}$ (Nielsen and Chuang, 2002; Dugić, 2004; Raković, 2008a). In the mentioned

quantum-holographic framework, *entropy of pure-healthy state* of the psychosomatic system (described by the single k_0 -th term in the superposition, of probability $p_{k_0} = 1$), would be equal to

$S_{k_0} = 0$ (as pure quantum state $\widehat{\rho}_{S_{kv}}^{(k_0)}$ provides maximal possible information about the quantum psychosomatic system), while *entropy of mixed-disordered state* of the psychosomatic system (described by the full above superposition), would be equal $S_{\widehat{\rho}} > 0$ (as mixed stochastic state

$\widehat{\rho}_{S_{kv}}^{(k)}$ provides uncomplete information about the quantum psychosomatic system). Thus, in the mentioned quantum-holographic framework, *psychosomatic healthy state* is the state of the *minimal entropy*, while *psychosomatic disordered state* is the state of the *increased entropy*. In the same framework, application of some *psychosomatic therapy* naturally *decreases entropy* (degradation) i.e. *increases information* (organization) of the psychosomatic system.

psychosomatics, is also supported by *meridian (psycho / energy) therapies* (with rapid removal of *traumas, phobias, allergies, post-traumatic stress and other psychosomatic disorders* (Callahan and Callahan, 1996; Mihajlović Slavinski, 2000) – where the simultaneous effects of *visualization and tapping / touching acupuncture points* could be theoretically interpreted as ‘*smearing*’ of *memory attractors* of the psychosomatic disorders, *via successive setting of new boundary conditions in the energy-state space of the acupuncture system during emotionally-intense visualizations of psychosomatic problems*. Or to generalize, in the context of acupuncture-based and consciousness-based approaches and techniques of the EM field-related quantum-informational integrative medicine (Raković et al, 2011), their goal would be bioresonant excitation of the target palpatory-painful / psychologically-traumatic memory attractor of the acupuncture system / (individual) consciousness – thus enabling that disordered initial memory attractors are one by one resonantly excited (similar to annealing procedure in artificial neural networks (Hecht-Nielsen, 1990)), becoming shallower and wider on the account of deepening of (energy-dominating) memory attractor of the healthy quantum state (acupuncture palpatory painless or psychologically non-traumatic).

At the same time, the above mentioned *analogy between mathematical formalisms of Hopfield associative neural network and Feynman propagator framework of quantum mechanics* implies that *collective consciousness* is possible *inherent property of the all-pervading unified physical field*, whose *memory attractors* could be the basis of *quantum-holistic global psychosomatics* – with *significant religious / social implications* of the necessity of *transpersonal spiritually-mediated quantum-holographic balancing of all unwilling side memory attractors* (Raković, 2000, 2002, 2007a, 2008a,b, 2009, 2011b, 2013, 2014, 2015a,b,c; Raković et al., 2009, 2011). So, when the healing process is hindered by *transpersonally entangled blockages* in the energy-state space of the acupuncture system / (individual and collective) consciousness (on numerous laboratory tests revealing the evidence of entangled minds i.e. *extrasensory experiences* in a quantum reality, see (Targ and Puthoff, 1977; Jahn, 1982; Jahn and Dunne, 1988, 2011; Kaznatcheev and Trofimov, 1992; Radin, 1997, 2006; McTaggart, 2007; Persinger et al., 2008)) – then memory attractors of quantum-holographic network of field-related *collective consciousness* should be removed as well (via *prayer or circular (psycho / energy) therapies* from all relevant meta-positions *to dis-entangle energy-informationally*

all mental addresses included in the problem, thus providing spiritual integration of personality which initiates the process of permanent healing as suggested by experiences of clients in post-hypnotic regressions (Newton, 1994).

Hence, all these transpersonal holistic procedures, alongside with working on all levels of acupuncture-based therapies and non-circular (psycho / energy) therapies (Raković et al, 2011), might be the holistic clue for imposing healing boundary conditions in the energy-state space of the acupuncture system / (individual and collective) consciousness of the patients. Such modified state of the *acupuncture system / consciousness* is then *quantum-holographically projected* on the lower quantum-holographic *cellular level*, thus changing the *expression of genes* in morphogenesis, as a very important feedback element of *bioinformatics* (Raković, 2007a, 2008a,b, 2009, 2011b, 2013, 2014, 2015a,b,c; Raković et al., 2009, 2011, 2014), so called '*downward causation*'.⁷ It should be added, that *quantum nature of water* (and its fundamental

⁷ This might be connected with basic *macroscopic quantum-informational control mechanisms of embryogenesis / ontogenesis and morphogenesis* and their backward influence on the *expression of genes*, starting from the first fertilized cell division which initializes differentiation of the acupuncture system of non-threshold electrical '*gap-junction*' synapses (Raković, 1995, 1997, 2000, 2002, 2007a, 2008a,b, 2009, 2011b; Raković et al., 2004, 2009, 2011) – as well as with similar ideas of *general systems theory* applied to biological systems, with recognized open problem of the '*emergent control*' of higher hierarchical levels over lower levels in *cognitive sciences* (Szentagothai, 1984; Kandel, 1998) – pointing to significant role of *acupuncture system / consciousness* in these processes. The mentioned problem is of fundamentally-theoretical physical significance, as it tackles the question of *universality of quantum mechanics*, i.e. the question of general validity of the quantum-physical laws for *macroscopic phenomena* as well, mostly treated by the methods of classical physics. Although this question was raised in the early phase of founding of quantum-mechanical theory (and temporarily put aside for very different reasons, being considered as a difficult scientific problem), in this respect the situation is not much better today, and it can be said freely that the problem of universal validity of quantum mechanics is still open (Raković et al., 2004, 2014) – and presumably *needs additional phenomenological assumptions*, like *quantum-chemical*, that manyatomic quantum systems are phenomenologically limited to (*fermion*) *structures with dynamically coupled identical electrons* (Raković et al., 2014). In particular, our analyses imply the existence of *novel macroscopic quantum biomolecular phenomena*, with biomolecular chain folding in an open environment considered as a subtle quantum interplay between energy and conformation eigenstates of this biomolecule, governed by quantum-chemical and quantum decoherence laws. On the other hand, within an *open biological cell*, a system of all identical (non-interacting and dynamically non-coupled) biomolecular proteins might be considered as corresponding spatial quantum ensemble of these identical biomolecular processors, providing spatially distributed quantum solution to a single corresponding biomolecular chain folding, whose density of conformational states – within the occupational basis of enzyme's conformational states – might be represented as Hopfield-like quantum-holographic associative neural network (HQHNN) (Raković, 2008a, 2009; Raković et al., 2006, 2014). Further on, since all successive biochemical reactions are functionally interconnected, so are the successive HQHNNs in bioinformational framework within the corresponding enzymes' occupational bases. They may

quantum-informational nature as Hopfield-like quantum-holographic neural network), with its numerous memory attractors, might also *mediate in coupling* quantum-informational intra-cellular and extra-cellular biochemical reactions (this being the possible quantum-informational basis of *homeopathy* (Bellavite and Signorini, 2002) and some intriguing *field-mediated experiments* (Montagnier et al., 2010; Gariaev, 2009; Gariaev et al., 2011)).⁸

Our previous quantum-holographic psychosomatic considerations suggest *three front lines of integrative medicine* (Raković, 2007a, 2008a,b, 2009, 2011b, 2013, 2014, 2015a,b,c; Raković et al., 2009, 2011): (i) *spirituality and circular (psycho / energy) therapies* from all relevant meta-positions, with the possibility of a potential permanent removal of mutual memory attractors on the level of collective consciousness, (ii) *(quantum) holistic medicine and non-circular (psycho / energy) therapies*, which temporarily remove the memory attractors on the level of the acupuncture system / individual consciousness and prevent or alleviate their somatization, as a result of

be presented in the form of Haken's multi-level synergetic neural network, composed of layers of successive HQHNNs – with structure of (non-morphological / abstract) 'formal neurons' massively inter-connected by 'formal connections', while the layers of HQHNNs would be mutually quantum-holographically coupled via their 'memory attractors' (i.e. their quantum-holographic memory states, within the occupational bases of conformational states of the corresponding enzymes involved) (Raković et al., 2014). This is also in line with trends of modelling higher cognitive hierarchical information processes as well (Haken, 1991; Pribram, 1991; Peruš, 1996, 2001; Peruš and Loo, 2011; Raković, 2008a, 2009).

⁸ So, *homeopathic remedy* with water as the diluent can interact with macroscopic quantum-sensory EM level of acupuncture system / consciousness, as supported by *Voll's electropuncture diagnostics* – used to *test the optimal choice* of homeopathic remedies, which from a distance about 50 cm (without an oral administration of homeopathic remedy!) change electroresistance of acupuncture meridians of the patient (so that particular homeopathic remedy is chosen which *mostly reduces* the relative deviation of the previously measured values compared to the nominal value of a healthy state). A step further has been made in the direction of *electronic -homeopathy*, with direct transmission of properties of homeopathic drugs on carriers (water, alcohol, saline solutions, sugar...) with the possibility of changing their potency, without the use of homeopathic substances. Even effects of so called *programmed placebo* were observed, where only labeled name of the homeopathic remedy on the glass walls of the small bottle has transferred information on the enclosed sucrose pills as carriers (Milovanović et al., 2014), with the same effect as in ordinary homeopathy (Samohin and Gotovski, 2007). The intriguing experiments of Montagnier et al. (2010) with *information transferred from the UNF-excited DNK molecules on the water solution* should also be mentioned, with subsequent possibility to transfer it on other organisms, or to be used as (sufficient!) information for the *in-vitro* synthesis of new DNK molecules only with the addition of the necessary building blocks of nucleotide bases in the originally filtrated aqueous solution. In addition, let us mention the fascinating experiments of Gariaev (2009) and Gariaev et al. (2011) with *quantum-holographic transfer of genetic / metabolic information* on both short and long distances (up to 30 km), by introducing this information into bio-system, bio-chemical systems and real physiological conditions.

negligence on the first level, (iii) *symptomatic conventional medicine*, which via immunology, pharmacology, biomedical diagnostics and surgery at the physical level prevents or alleviates somatic consequences of carelessness on the first two levels. It should be noted that the *necessary activities* in the second and third levels, with *neglect of the first level*, would result in *further transfer of memory attractors* on the level of individual and collective consciousness in this and future generations, thus *accumulating quantum-holographic non-local loads* that cause then not only diseases but also interpersonal conflicts, wars and other sufferings!

3. Outline of quantum-holographic framework of epistemology and spirituality

It should be pointed out that many *transpersonal phenomena* associated with consciousness are well documented (Castaneda, 1971; Targ and Puthoff, 1977; Wilber, 1980; Jahn, 1982; Jahn and Dunne, 1988, 2011; Talbot, 1991; Kaznacheev and Trofimov, 1992; Dossey, 1993; Vujićin, 1995; Radin, 1997, 2006; Harris et al., 1999; Tiller et al., 1999; Moody, 2001; van Lommel et al., 2001; Liptay-Wagner, 2003; McTaggart, 2007; Persinger et al., 2008; Øverbye, 2009) – and even practically incorporated in *psychosomatic energy-correction* (Paramahansa Yogananda, 1946; Swami Rama, 1978; Hay, 1984; Johari, 1989; Chopra, 1989; Markides, 1990; Newton, 1994; Lee Rand, 1998; Petrović, 2000; Pearl, 2001; Stibal, 2006; Swami Sada Shiva Tirtha, 2007; Vitale and Hew Len, 2007; Hellinger and Ten Hevel, 2009; Gariaev, 2009; Gariaev et al., 2011; Hadži-Nikolić, 2011; Tomšić Akengen, 2011; Lončar, 2011; Bedričić et al., 2011; Moorjani, 2012), and their physical explanation should be sought on the *border of the current scientific paradigm*. Within our extended *quantum-informational / quantum-gravitational framework* of consciousness and psychosomatics (Raković, 1995, 1997, 2000, 2002, 2007a,b, 2008a,b, 2009, 2011a,b, 2013, 2014, 2015a,b,c; Raković et al., 2004, 2009), they are proposed to be of deeper *quantum-gravitational origin* (in space-time transcending highly-noninertial strong-gravity-equivalent (according to Einstein's principle of equivalence!) *non-stationary transitional states of consciousness* (from high-dielectric bodily into low-dielectric out-of-body

states!),⁹ based on locally generated *wormhole space-time tunnels*, quantum-gravitationally stabilized by so called *exotic matter* (vacuum fluctuations in strongly curved space-time of wormhole tunnels (Thorne, 1994)) with *anti-gravitational effects*, really observed in the *transpersonal psychokinetic manifestations* of vital energy / prana / qi (Paramahansa Yogananda, 1946; Orme-Johnson and Farrow, 1977; Swami Rama, 1978; Wilber, 1980; Jahn, 1982; Johari, 1989; Chopra, 1989; Talbot, 1991; Vujićin, 1995; McTaggart, 2007; Lončar, 2011).¹⁰

⁹ According to our previous proposals (Raković, 1995, 1997, 2000, 2002, 2007a,b, 2008a,b, 2009, 2011a,b; Raković and Dugić, 1998; Raković et al., 2004, 2009), *transpersonal interactions* might be interpreted by *collapse-related consciousness-channeled quantum-gravitational tunneling of operator's individual consciousness* – mentally addressed on the target's content of the *collective consciousness / 'environment'* in operator's *transitional states of consciousness* (short lasting and therefore not easily reproducible (Jahn, 1982)!) – thus *intentionally channeling state of operator's individual consciousness*, and *automatically influencing the complement collective consciousness / 'environment' output in quantum-gravitationally-induced and consciousness-channeled OR*:

$$|\Phi\rangle_S |\Psi\rangle_E = \sum_i c_i |\Phi_i\rangle_S |\Psi_i\rangle_E \xrightarrow{p_j = |c_j|^2 \approx 1} |\Phi_j\rangle_S |\Psi_j\rangle_E.$$

Alternatively, this might be interpreted as *quantum entanglement between memory attractors of individual consciousness* $|\Phi_i\rangle_S$ and *collective consciousness* $|\Psi_i\rangle_E$ (*correlated via consciousness-based resonant recognition / interaction* (Raković, 2014, 2015a,b,c) of *associatively-related attractors of individual and collective consciousness*) – followed by *body-induced collapse-related stochastic process* (with previously mentally enhanced $|c_j| \approx 1$ contribution, by focusing on corresponding *j-th memory attractor* $|\Phi_j\rangle_S$ in normal state of individual consciousness). On this

line, the '*gauge quantum field theory and quantum gravity correspondence*' (within string theory) of any quantum entangled system (i.e. Einstein-Podolsky-Rosen correlated quantum pair) and corresponding connected miniature (non-traversable) 'wormhole' (i.e. quantum-gravitational Einstein-Rosen bridge) should be pointed out (Maldacena and Susskind, 2013). On its possible traversability in cosmological conditions see Thorne (1994), and in transpersonal conditions see refs. (Raković, 1995, 1997, 2000, 2002, 2007a,b, 2008a,b, 2009, 2011a,b; Raković and Dugić, 1998; Raković et al., 2004, 2009, 2011)!).

¹⁰ See also videolink <http://www.youtube.com/watch?v=2JSk4T9IN3I> of extraordinary *psychokinetic abilities* demonstrated by Serbian boy (with healing inborn abilities too, which clearly testify in support of his strong vital energy), whose breast is sticking metallic, plastic or glass objects weighted up to several kilograms (probably due to the *anti-gravitational cancellation* of local gravity field on the boy's chakra points, spontaneously supplied by strong vital energy through the transpersonally opened energy channels, as in Qigong or Reiki healing practices). The *exotic aspect of these space-time tunnels and vital energy* might be extended to *acupuncture channels* (Raković, 2014, 2015a,b,c) (of peculiar vacuum-like $n = 1$ refraction index (Sit'ko, 2012; Complete issue, 1998)) with *vacuum-like outside inflow of vital energy / prana / qi* (Swami Sada Shiva Tirtha, 2007; Cohen, 1999; Lee Rand, 1998) – implying that such type of exotic transpersonal communication enables *continuously-refreshing interaction* between the two mentally-addresses persons and thus *transpersonally stabilized quantum-entanglement* of their acupuncture systems / consciousnesses i.e. *prevents dis-entanglement* of their macroscopic quantum-entangled non-stationary states by *OR-like interaction* with their local somatic environments (*contrary to situation in microworld* without such stabilizing mentally-addressing exotic transpersonal effects, where laboratory-created

It should be noted that *spontaneous transpersonal communications*, with exchange of information in transitional states of consciousness, have *negative psychosomatic-spiritual effects*, as they necessarily give rise to *global trans-generational increase of psychosomatic loads* on the level of macroscopic quantum space-time network of *collective consciousness* – which might represent the karmic / sin 'engine of history'. *The only phenomenon which decreases these loads is all-forgiving prayer to ourselves and others* (relatives, enemies, decised) – *probably via simultaneously vacuum-excited spiritually-purifying new macro-quantum portions of vital energy* (similarly to spiritually-excited and mentally-channeled Ayurvedic, Qigong, Reiki and modern experiences of local and transpersonal healing (Swami Sada Shiva Tirtha, 2007; Cohen, 1999; Lee Rand, 1998; Brennan, 1987; Pearl, 2001; Stibal, 2006; Kinslow, 2008; Bartlett, 2009; Grabovoi et al., 2012)) *in prayer-related persons* – as (*OR-like quantum-gravitational non-stationary indeterministic purifying interventions in (intrinsically-unitary) quantum-holographic stationary evolution of collective consciousness!*) This leaves most room for *free will and influence on future preferences* – making the *role of every person indispensable* due to influence and concern for *collective mental environment!*¹¹

quantum-entangled pairs of particles must be *well isolated form environment* in order to prevent their quantum-decoherence (Giulini et al., 1996; Nielsen and Chuang, 2002; Dugić, 2004))! Regarding extremely unusual vacuum-like $n = 1$ refraction index of *acupuncture channels* – based on the principles of *photonic crystals* and *photonic bandgap guiding* (where the confinement of photons in some low-index hollow-core 3D-defect might be achieved by exploiting photonic *bandgap reflectivity* of the surrounding higher-index (quasi) periodic medium (Lourtioz et al., 2008))! – the above mentioned EM MW experiments (Sit'ko, 2012; Complete issue, 1998) inspired us to suggest an interesting possibility (Raković, 2014, 2015a,b,c) to consider *acupuncture channels* as *3D photonic crystal channel waveguides of propagated EM MW photons* (influencing backward the structure and ionic conductivity of the channels) – *confined* by the surrounding higher-index (*quasi*) *periodic cellular body medium* outside channels (of $n = 5\div 6$ in the cellular cytoplasm and $n \gg 1$ in the cellular membranes of metabolic depending striking polarization of the volume ion density (Adey, 1981)), with *non-propagated EM MW evanescent photons* (Raković, 2014, 2015a,b,c; Umezawa, 1993; Jibu and Yasue, 1995; Jibu et al., 1996) pervading our body!

¹¹ *As there is no out-of-cosmic environment that triggers* the non-unitary OR of the quantum-entangled non-stationary two-partite state of the field-related cosmic collective consciousness and complementary 'particle' cosmic environment – *the above proposed mechanism of prayer imposes (intrinsically, non-unitary!) necessary boundary conditions without mutually mentally-loaded addresses*. Hence it can be really said that *all-forgiving prayer* represents biophysical basis for optimization of (*quantum*) *holistic global psychosomatics of collective consciousness* (and complementary incoming individual and collective events) (Raković, 2007a, 2008a,b, 2009, 2011b, 2013, 2014, 2015a,b,c; Raković et al., 2004, 2009, 2011)! It should be added that above mentioned Ayurvedic, Qigong, Reiki, and modern experiences of local and transpersonal healings (Swami Sada Shiva Tirtha, 2007; Cohen, 1999; Lee Rand, 1998; Brennan, 1987; Pearl, 2001; Stibal, 2006;

Our *quantum-holographic framework* also implies that quantum-holographic hierarchical parts carry information about the whole (which resembles the Hindu relationship *Brahman / Atman*, as a whole and the part which contains information about the whole (Swami Prabhavananda and Isherwood, 1969; Wilber, 1980; Vujićin, 1995),¹² allowing subtle *quantum-informational coupling of various hierarchical levels* in Nature (Bohm, 1980; Pribram, 1971, 1991; Talbot, 1991; Rakočević, 1995; Koruga, 1995; McTaggart, 2007). This is supported by *acupuncture system and its projection zones* (ECIWO holographic concept (Zhang, 1987)) and the discovery of *quantum-holographic influence of verbal communication on the expression of cell genome* (by voice-modulation of irradiating-laser beams (Gariaev, 2009)), as well as by the *origin of the amazing creativities* (Tesla and Mozart as 'case studies' (Raković, 2011a; Holmes, 1878)¹³ and

Kinslow, 2008; Bartlett, 2009; Grabovoi et al., 2012) imply that *meditative visualization (intrinsically, non-unitary!) also imposes new (OR-like) quantum-gravitational boundary conditions*, by vacuum-excited spiritually-purifying and mentally-channeled transfer of new macro-quantum portions of vital energy. But contrary to prayer, *meditation balances only practitioner himself* while not removing simultaneously other mentally-loaded addresses (thus in these situations it is necessary to practice *circular meditatively-healing visualization from meta-position(s) of the other(s)* included in the exisctic conflict, in order to *remove simultaneously mentally-loaded addresses*)! So, in the context of our quantum-holographic / quantum-gravitational theoretical framework, *spiritual prayer / meditation practices are non-unitary source of free will* at the level of *collective consciousness*, while *non-spiritual behaviour maintains* the trans-generational-programed *unitary evolution of collective consciousness*. This is absolutely not-intuitively from the perspective of quantum physics of inorganic world and lower biological species, and is manifested only with the emergence of the human species and *spiritual prayer / meditation practices* – and evolutionary greatly increases the *responsibility of each individual and the entire human race*! The difference between lower biological species and inorganic world should also be noted, because in the first case *quantum-entangled non-stationary unitary evolution of their portions of collective consciousness is maintained* as a result of 'transpersonal communications' which update their quantum entanglement within the 'collective consciousness' through some kind of so-called quantum Zeno effect (Giulini et al., 1996; Nielsen and Chuang, 2002; Dugić, 2004), while in the second case *standard classically-reducing stationary effects of non-unitary-OR* influenced by the close environment are manifested!

¹² The main findings of the ancient Vedic sages are simply formulated: *Atman is Brahman!* *Atman* is concept of divine manifestation in the form of world-soul or universal being, that exists in everything: objects, trees, animals and people (as also perceived by shamanistic traditions, assigning them personified nature spirits (Castaneda, 1971; Eliade et al., 1991; Øverbye, 2009; Hadži-Nikolić, 2011; Tomšić Akengen, 2011), although not realized to the same extent everywhere. *Brahman* is concept of the highest God, in his unmanifested and undifferentiated unity, containing all possibilities before the divine creativity, absolute self-conscious intelligence in spaceless and timeless potentiality, inaccessible to human cognition and comprehension while we are grounded in the lower realms of manifestation (Wilber, 1980; Vujićin, 1995).

¹³ In the context of *creative insights and extraordinary inventions of Nikola Tesla* (directly visualized in consciousness with all functioning details of devices, without any application of Maxwell electromagnetics; Tesla, 1983), it is interesting to consider *possibility of controlling*

predestined life paths and temptations (as indicated by the contemporary experiences of hypno-regressions (Newton, 1994) as well as experiences of tribal traditions (Castaneda, 1971; Hellinger and Ten Hevel, 2009; Øverbye, 2009; Hadži-Nikolić, 2011; Tomšić Akengen, 2011) and traditions of East (Paramahansa Yogananda, 1946; Swami Prabhavananda and Isherwood, 1969; Swami Rama, 1978; Wilber, 1980; Vujičin, 1995) and West (Markides, 1990; Dossey, 1993; Berdyaev, 1996; Vlahos, 1998), while still emphasizing that it is *possible to optimize them by spiritual purification*).

creativity within our quantum-holographic / quantum-gravitational theoretical framework (Raković and Dugić, 2005; Raković, 2000, 2002, 2007a,b, 2008a,b, 2009, 2011a,b, 2013, 2014, 2015a,b,c). It predicts *transpersonal properties* of psyche in *short-lasting quantum-entangled non-stationary transitional states of consciousness and prolonged quantum-coherent stationary altered states of consciousness* (with subsequent classically-reduced stationary extrasensory-perception of the mentally-addressed out-of-body complementary environment, which might also be Jung's 'archetype' of the problem-with-solution on the level of quantum-holographic collective consciousness, which arises association on Tesla's 'mental inventions' and Plato's 'world of ideas'!). After returning of the displaced consciousness upon the body, in order that *transpersonally acquired classically-reduced information ascends to the level of normally conscious state*, it is necessary to *overcome two filters*: (i) *acupuncture system-nervous system threshold filter* (which requires 'emotional colouring' of the solving problem) and (ii) *frontolimbic-amplification filter* (which requires 'emotional-thinking priority' of the solving problem). According to our investigations, all mentioned conditions might be realized in quantum-coherent stationary state of *meditation* (by entering in this prolonged altered state of consciousness, with mental addressing on the solved problem) – which *Tesla* was doing by *persistent mental focusing* on the solving problem! On the other hand, during the *sleep state* the mentioned conditions might be realized in quantum-coherent stationary states of *REM-sleep* (with previous *intense concentration* on the solving problem before sleep, and *subsequent amplification* of the obtained classically-reduced answer in the form of symbolic dream, which should be then *correctly interpreted* in the context of personal internal symbolism) – *widely applicable* even to meditation-non-trained persons (Jung, 1963; Raković, 2008b)! 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* representing scientific shift. The same might be applied to *artistic creative experiences* and their subsequent *artistic expressions* (*Mozart* as an excellent example; Holmes, 1878), while very *art-works* then behave like *mental addresses of 'archetypes'* being in contact with artists in mentally-addressed 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 public on the masterpeace* 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*. So it seems that field-related *collective and individual consciousnesses* are just different hierarchical levels of *cosmic quantum hologram*, enabling subtle quantum-holographic fractal coupling between different hierarchical levels in Nature. To readers interested in phenomenology of consciousness I recommend the book *Holographic Universe* (Talbot, 1991), with numerous well documented mysterious phenomena in *altered states of consciousness* (including *anticipative visions* and *lucid dreams*). Talbot (psychic himself) shows in this book that *Universe* might be *giant quantum hologram*, a type of *mind construct on the boundary subject-object* – relativizing a question *whether objective reality exists or fluctuate between implicate (quantum-holographic) and explicate (classically-reduced) orders!*!

This *quantum-holographic framework* also suggests *two modes of knowledge*, according to the coupling strength consciousness-body-environment (Raković and Dugić, 2005; Raković, 2000, 2002, 2007a,b, 2008a,b, 2009, 2011a,b, 2013, 2014, 2015a,b,c; Raković et al., 2009): (i) *weakly-coupled direct mode* (in the *out-of-body* spiritual-creative *non-stationary quantum-entangled transitional states of consciousness / quantum-coherent stationary altered states of consciousness*, like prayer, meditation, daydreams, lucid dreams, creative insights...) and (ii) *strongly-coupled indirect mode* (in *bodily* perceptively-rationally mediated *classically-reduced stationary normal states of consciousness*, like sensory perception, logic and scientific reasoning...) – with *conditions of mutual transformation*. This explains the *generally poor informational rationalization* of any direct quantum-holographic spiritual / religious *mystical experience* (as the problem of quantum theory of measurement, related to the reduction of the implicate order of the quantum-entangled (quantum-holographic) superposition of two-partite states into the explicate order of measuring classically-reduced one-partite states) – which is close to the experiences of numerous *shamanistic tribal traditions*, with beliefs that the *genuine* (quantum-holographic) reality is represented by *lucid dreams* (McTaggart, 2007), and that (classically-reduced) waking state is lie / illusion (*maya*, as stated in the *traditions of the East* (Swami Prabhavananda and Isherwood, 1969; Wilber, 1980; Vujićin, 1995)).¹⁴

So *science is closing the circle, by re-discovering two different modes of knowledge* and at the same time setting its *own epistemological limitations* – as it was

¹⁴ In addition, the necessity of direct quantum-holographic coupling of individual and cosmic collective consciousness in an observation of the implicate order needs weak out-of-body quantum-communication coupling consciousness-environment, i.e. previous *reprogramming of all psychosomatic loads* (cleansing of the possessive or hedonistic emotional-mental sinful / karmic connections with world – which as loading '*mental addresses*' would give rise to quantum projections of mentally-channelled tunnelled consciousness upon the out-of-body environment, and thus to classically-reduced stationary *out-of-body extrasensory observing* of the mentally-addressed environment). In this context the efforts of mystics of all traditions to *purify consciousness / soul via spiritual practice* (prayer, meditation...) and thus to reach their *final eschatological goal* (Kingdom of God, nirvana...), i.e. *post-mortem salvation of soul* (non-bounded sin-free / karmic-free) by *re-union (re-ligare / yoga)* with the *supreme God* (Swami Prabhavananda and Isherwood, 1969; Wilber, 1980; Vujićin, 1995, Vlahos, 1998) appear reasonable! It still leaves room for *personal love*, whose highest manifestation is ability and readiness for *permanent and unconditioned forgiving* (to loving person, and because of him / her to everybody else, including enemies!), in spiritual prayer and (subtly related quantum-holographic) living practice; the same refers to love for relatives and friends (Raković, 1997, 2008b).

preserved for millennia in *shamanistic tribal traditions* (Castaneda, 1971; Øverbye, 2009; Hadži-Nikolić, 2011; Tomšić Akengen, 2011),¹⁵ or as it was concisely described by *Patanjali in Yoga Sutras* more than two millennia ago, pointing out that mystical experience (*samadhi*) is ‘filled with truth’ and that it is ‘above inference and the scriptures’ (Swami Prabhavananda and Isherwood, 1969; Vujićin, 1995), or as this difference between faith and cognition was formulated at the beginning of the last century by *Berdyaev in Philosophy of Freedom* as the difference of two modes of knowledge, prayer-mediated ‘comprehension of the affairs invisible’ and rationally-mediated ‘comprehension of the affairs visible’ (Berdyaev, 1996)!

The aforementioned studies are in line with re-awakened interest in fundamental and applied *holistic research* in past decades, anticipating the occurrence of *grand synthesis of two modes of knowledge* – where *the role of each individual* becomes *indispensable* due to the influence and care for *collective mental environment and social well-being*. And can help us realize that all our *partial rationalizations* (classically-reduced mappings!) are still only an approximation of *fundamentally-holistic reality* (quantum-holographic territory!) – and that all *divisions are tragic mis-understanding* of spiritually immature (historical) epoch of civilization (as map is not the territory!).¹⁶

¹⁵ A nice example of the description of the *two modes of consciousness* can be found in central-American *Jaki* tradition described by Castaneda (1971), as two types of reality: *tonal* (sensory-perceived in the normal state of consciousness) and *nagual* (extrasensory-perceived in altered states of consciousness, with opservabile ‘*silver cords*’ of vital energy that connect us transpersonally with the environment, via *heart, stomach or throat* chakras). Something similar is mentioned in African-Haitian *voodoo* tradition (in which *deliberate visualization creates a ‘silver cord’* between operators and victims), and Hawaiian *hoo’ponopono* tradition (in which *visualized ‘silver cord’ is intersected* thus removing the existing transpersonal emotional connection). According to esoteric traditions, ‘*silver cord*’ *naturally exists* between mother and child, and is *spontaneously formed* by intensive exchange of vital energy between relatives, close associates, current and former lovers, friends and enemies, and can survive even *post mortem* between the living and the deceased persons (Markides, 1990; Vujićin, 1995, Mihajlović Slavinski, 2008).

¹⁶ All this indicates the *full significance of holistic education and behavior* – demonstrating ultimate necessity of *redefining* the global educational / informational / political goals, with the shift towards *holistic gentle actions for global solutions of the world risk society* (Raković, 1997, 2002, 2007b; 2008b; Beck, 1999; Jerotić et al., 2002; Kreculj and Marić, 2002; Uskoković, 2004, 2006)! Thus civilization, via *synthesis* of scientific knowledge in the field of *consciousness* and millennia experiences of the *spiritual traditions*, could contribute that new millennium would be characterized by *wisdom*. Decisive role in this process could be played by all *religious communities, cultivating a true spiritual moral* and absolute (not declarative, as so far in history!) inter-personal, inter-ethnic and inter-religious *tolerance*, as a measure of individual behavior from the *perspective of death*, i.e. amount of generated and non-reprogrammed psychosomatic conflicts until death. This determines the *spiritual evolution* of the soul of the deceased as well as the *preferences* of the individual and / or collective future of the descendants – that can be *significantly*

4. On quantum-holographic psychophysiological implications for child development

Our previously developed quantum-holographic framework of integrative medicine and transpersonal psychology seems to provide theoretically fundamental understanding of the nature of psychosomatic diseases as well as limitations of their prevention and healing methods, by imposing new healing boundary conditions in the energy-state space of electromagnetic (EM) quantum-field-related acupuncture system / (individual and collective) consciousness – suggesting *three front lines of psychosomatic medicine*: (i) collective *consciousness*, (ii) *acupuncture system / individual consciousness*, and (iii) *somatic level*. It should be pointed out that the necessary activities in the second and third levels, with neglect of the first level, would result in further transfer of memory attractors on the level of individual and collective consciousness in this and future generations. So, this implies necessity to focus on origins of many problems in psychophysiological child development on underlying prenatal trans-generational levels, as suggested by experiences of clients in post-hypnotic regressions as well.¹⁷

Michael Newton, a famous American transpersonal hypno-regreso-therapist, in his books talks about a number of psychotherapeutic experiences of post-hypnotic

altered only via *collective prayer* for ourselves and our neighbors and enemies, with *global reprogramming of collective consciousness*.

¹⁷ Thus, all *psychosomatic problems* might have their roots in the energy-information *blockages at different levels of consciousness* (caused by trans-generationally-predestined stressors such as fear, frustration, anger, hatred ...) – while *healing* would begin by their *integration* with healthy core of personality, through unconditional *spiritual and forgiving acceptance of ourselves and our environment* (or in Jung's terminology, by first integration of the breakaway aspects of Shadow (subconscious) and Person (ego), and then with the higher Self at the end of the process of individuation (psychosynthesis) (Jung, 1955, 1963; Jung and Pauli, 1955; Assagioli, 1967)). In the context of *trans-generational* cosmic quantum hologram, although on the level of collective consciousness everything is *quantum-holographically predestined* – as suggested by the experiences of tribal traditions (Eliade et al., 1991; Hadži-Nikolić, 2011; Tomšić Akengen, 2011) and the traditions of the East (Swami Rama, 1978; Wilber, 1980; Eliade et al., 1991; Vujićin, 1995) and traditions of the West (Markides, 1990; Eliade et al., 1991; Vujićin, 1995), as well as contemporary experiences of post-hypnotic regressions (Newton, 1994) – these experiences also suggest the possibility of *optimizing* life-programs by *spiritual purification*. Within our *quantum-holographic / quantum-gravitational framework*, this is essentially reduced to dis-entanglement / unbinding from all levels of individual and collective consciousness, and consequently to the full *re-integration of higher Self* – with reaching conditions for *post-mortem salvation of* (sinless, unbound) *soul* by its *re-unification* (re-ligare / yoga) *with the spiritual primal source* (Wilber, 1980; Eliade et al., 1991; Vujićin, 1995; Vlahos, 1998).

regressions, with systematized messages of his clients that our major life lessons and opportunities to optimize the otherwise predestined life-programs are lying in spiritual sphere of forgiveness (Newton, 1994). Reading of Newton's books brought me a special pleasure, because of the many important *associations and implications* on correspondence of the described experiences and theoretical predictions of our *quantum-holographic / quantum-gravitational framework*: (i) *transpersonal-spiritual tunneling as exclusive communications, without space-time barriers (in accordance with our theoretical predictions)*;¹⁸ (ii) *soul transpersonally chooses a pair of prospective parents, among several offered alternatives previously carefully observed with all the details of a future life (indicating that life is predestined on the physical level by existing boundary conditions at the level of cosmic field / collective consciousness)*;¹⁹ (iii) *by made choice of the*

¹⁸ This is in accordance with *transpersonally-extended esoteric concepts* of various spiritual traditions of East and West (Wilber, 1980; Vujićin, 1995; Vlahos, 1998; <http://en.wikipedia.org/wiki/Soul>; <https://en.wikipedia.org/wiki/Spirit>; <https://en.wikipedia.org/wiki/Qi>), which could be biophysically accounted within our plausibly generalized *quantum-holographic / quantum-gravitational framework* (Raković, 2007a, 2008a,b, 2009, 2011b, 2013, 2014, 2015a,b,c; Raković et al., 2004, 2009): (i) *astral body (manomaya, lingasarira, manovijnana, ka, psyche, nephesh, nafs, subtle body, psychic body, soul...)* vs. *ionic component of the out-of-body displaceable EM-ionic macro-quantum acupuncture system (connected with the body by miniature 'wormhole' space-time tunnel, generated in the highly-noninertial transitional states of consciousness, as frequently observed in extrasensory near-death experiences)*; (ii) *mental body (vijñanamaya, suksmasarira, manas, ba, thymos, ruach, ruh, noetic body, spiritual body, mind...)* vs. *EM component of the out-of-body displaceable EM-ionic macro-quantum acupuncture system (embedded within ionic component of the out-of-body displaceable EM-ionic macro-quantum acupuncture system)*; (iii) *distributed centers of consciousness (chakras, acupuncture points, sephiroths, holy discs...)* vs. *EM-ionic condensations in the structured out-of-body displaceable EM-ionic macro-quantum acupuncture system*; (iv) *vital energy (chi / qi / ki, prana / akasha, mana, ka, pneuma / ether / natura medica / anima mundi, yesod, baraka, the Holy Spirit / Uncreated Light, bioenergy / biofield...)* vs. *EM-ionic-exotic macro-quantum condensates (unstructured / structured, virtual / real) within acupuncture channels (with possible generalization from the EM field to the unified field, in line with the broader traditional meaning of vital energy, as all-pervasive cosmic quintessence)*. Additionally, if put in the *theoretical context of the holographic principle* (Susskind & Lindesay, 2005), according to which any 3D physical system is *isomorphic* to the holographic information embedded on its 2D surface, then *quantum-holographic informational content of a body* could also be contained in *corresponding surface layer of vital energy of the astral-mental body (aura)*, as has been stated in various traditions of East and West.

¹⁹ In this context, the intriguing field-mediated experiments (Gariaev, 2009; Gariaev et al., 2011; Montagnier et al., 2010) indicate that the (*quantum-holographic*) *field-encoded information* is presumably critically important even on the evolutionary scale to transfer appropriate boundary quantum-information conditions necessary for an explanation of the current *dynamics of biological evolution*, that cannot be explained on the basis of classical random laws described by the probability theory, as simply argued by Lennox (2007). This indicates that the *quantum information* (embedded by quantum-holographic boundary conditions in the very beginning of the Universe) is *fundamental physical property of the Universe* (and perhaps even more fundamental than particles, fields, and even the space-time, as briefly formulated by Wheeler's famous motto '*It from bit*'

parents, life is not completely fixed, but can be optimized by spiritual means, repenting and forgiving to ourselves and others (bringing new boundary conditions at the level of cosmic field / collective consciousness, which points to the fundamental importance of spirituality as a source of the greatest freedom for optimizing otherwise predestined life-programs, and necessity of careful control of the reactions on current life-temptations in order to avoid further deepening of the existing conflicts);²⁰ (iv) although the aforementioned experiences evoke strong associations on reincarnation, some of the reported insights suggest the possibility of transmission of information of the same content into several persons during their overlapping lifetime periods (implying a trans-generational

motivated by *quantum-theoretical* viewpoint that we live in a *participatory Universe* (Wheeler, 1990; Vedral, 2010). On possibility of spiritual imposing new boundary conditions at the level of cosmic field / collective consciousness see next footnote.

²⁰ It is interesting to mention Buddhist interpretation of *karma*, which occurs not as a *result of our spontaneous reaction* to the current situation in life, but as a *result of the latter justification of our conscious reactions against the others* in this situation (Panajotović, 2011). In the context of the above mentioned *quantum-holographic predestined life programs*, this is fully justified because we all (*non-consciously!*) *react to current conflicting-encoded life-situation* (several hundred milliseconds before we become aware (Dennett, 1991; Wegner, 2002; Hameroff and Penrose, 2014)!), but immediately afterwards we have a chance to (*consciously!*) *permanently untangle the existing trans-generational conflict by penitent-all-forgiving prayer*. This is *quite fair spiritual opportunity – and on each individual is to use it or not –* with accompanied unloading or deepening trans-generational conflicts! That could be possibly the reason for *Christianity* to insist on *repenting and forgiving* ('And forgive us our debts, as we forgive our debtors', Mt.6,12), which represents a level of *spiritual maturity of a person*. This implies an obligation of spiritually mature persons to help in reprogramming mental / emotional conflicts by praying, even when themselves being victims of the conflicts ('But I say unto you, love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use you, and persecute you', Mt.5,44). *It is not even allowed to see evil in fellow-men and condemn them* (an old biblical commandment given to the man in paradise, forbidding to take food 'of the tree of the knowledge of good and evil' – in fellow-men – 'for in the day that you eat there-of you shall die' (Gen.2,17), whose violation has caused the *Adam's fall*, and sowed the seed of the growing '*terror of history*'), insisting only on *personal repenting and forgiving*, as the only way in *permanent reprogramming of psychic conflicts*. Anything else enhances the existing mental / emotional personal loads and enlarges evil in the world, dismissing an individual and humankind from the final spiritual ideal of sinless state of consciousness. Bearing in mind the role of a mentally burdensome contents in the *post-mortem spiritual evolution of the soul* of the dying (to mention transpersonal collective levels of consciousness of '*Bardo levels*' in Tibetan tradition (Evans Wentz, 1968) or '*aerial toll house*' in Christian tradition (Father Seraphim Rose, 1988)) – this implies the importance of prayers for the soul of the deceased with ability not only to *influence its spiritual evolution*, but also *trans-generational preferences for individual and / or collective future offspring* (with even retroactive-nonlocal trans-generational dis-entangling / unbinding of mental / emotional conflicts, as suggested by *experiments with prayer* (McTaggart, 2007)!).

*transfer of accumulated information, with experiences that transferred contents leave a strong impression of the previously lived lives).*²¹

In the context of the aforementioned *trans-generationally-predestined quantum-holographic structure of collective consciousness* (as suggested by the experiences of tribal traditions, and traditions of the East and the West), *it seems irrational not only to be angry at life program* (previously freely elected prenatally (Newton, 1994)) *but it is also irrational not to optimize it* (spiritually-accepting and forgiving ourselves and our environment)^{22,23} – *contributing to both our own spiritual growth and catharsis of our*

²¹ Bearing in mind the *generally poor informational rationalization* of any direct quantum-holographic spiritual / religious mystical experience, it can help us to understand that all our *partial rationalizations* (with different personalized pantheons) are only approximations of *fundamentally-holistic reality* (Paramahansa Yogananda, 1946; Evans Wentz, 1968; Swami Prabhavananda and Isherwood, 1969; Castaneda, 1971; Swami Rama, 1978; Wilber, 1980; Father Seraphim Rose, 1988; Markides, 1990; Eliade et al, 1991; Talbot, 1991; Dossey, 1993; Newton, 1994; Vujićin, 1995; Vlahos, 1998; Øverbye, 2009; Hadži-Nikolić, 2011; Tomšić Akengen, 2011; Bakhmutsky, 2015). In the same context, we mention *several-millennia controversy about post mortem evolution of the soul*, which is probably related to an *interpretative epistemological level* of rationalization of transpersonal transfer of mentally-addressed loads within the existing generation and further generations via network of collective consciousness, with possibility that particular strong conflicts transferred as ‘ego-states’ leave a strong impression of previously lived lives (Raković, 2008a,b, 2009, 2015c). But what is the *ontological spiritual reality* – could remain *permanent controversy* of all these principally limited attempts of *human rationalization* (Vujićin, 1995).

²² Let us also mention Hawaiian *hoo’ponopono* tradition, based on the *participatory* concept of taking full *responsibility for any circumstance* in which we find ourselves, as a result of existing transpersonally-entangled spiritual-psycho-somatic life programs (Vitale and Hew Len, 2007). They apply practice of *repenting and forgiving ourselves* in the context of life situations (spoken in ourselves to our soul and God: (i) *I am sorry*, (ii) *Forgive me*, (iii) *I love you*, (iv) *Thank you*), with fascinating successes in reprogramming *themselves and their environment* (in this context, I have to mention an incredible experience of my cousin Milica, with genetically conditioned high-risk pregnancy with very low levels of amniotic fluid, normalized in just a few days of ho’oponopono prayer practices, with subsequent normal delivery!). We also mention some other tribal traditions where initiated shamans ritually enter the altered states of consciousness and receive answers to the health problems of members of their tribe, and apply their healing methods based on reprogramming the loads on the level of tribe’s collective consciousness (as in South America *ayahuaska* tradition (Hadži-Nikolić, 2011), or Nigerian *Abiku* tradition (Tomšić Akengen, 2011) with fascinating spiritual diagnosis and subsequent extension of the predestined-short-life programs!).

²³ On the same line, it is worth mentioning the *fascinating world bestseller confession of Anita Moorjani* (2012) *on spiritual changing of her life program* (in which she has not previously sufficiently loved herself and had a fear of cancer, but decided to change her previous life program (and forgive herself and her grieving husband) and to continue to live – with return from clinical death and after a few weeks even *spontaneous healing of terminal phase of cancer!* This greatly contributes to our understanding that even *most difficult psychosomatic illness*, like cancer, *have their roots in the energy-information blockages* and that *healing begins by removing them* – first lovingly to ourselves, accepting ourselves and forgiving ourselves, which is then manifested by love to others and acceptance of others (e.g. by spiritually dis-entangling / unbinding repentant-forgiving prayer: *‘My God, help me to accept myself (my personality, my body, my disease, my*

trans-generational mental environment (which is fundamental question of both mental hygiene and civil decency i.e. both spiritual and civil morality)!

All this might be inspiring for wider applications of *transpersonal holistic approaches and techniques* in improvement of verbal-emotional-cognitive development of children and their psycholinguistic functions, and of psychosomatic-cognitive status of children and adults too.²⁴

5. Conclusion

The presented quantum-holographic framework for psychosomatics might have significant holistic implications, providing better understanding of the *nature of stress-induced psychosomatic diseases* as well as *limitations and methods of their prevention and healing*, which might help in *developing strategies for integrative psychosomatic*

therapists, my therapies) and my environment (my relatives, my friends, my enemies). Help me to forgive myself and all others. Thank you for your support so far and I pray to spare us of oversized further temptations' (Raković, 2008a,b, 2009))!

²⁴ We hereby also recommend several additional transpersonal approaches and techniques: **(1) Reiki Positive Affirmations, for creation of new healthy habits** (based on idea of achieving harmony within self and environment): (i) *Just for today, I will not worry. Just for today, I will expect the best.* (ii) *Just for today, I will not be angry. Just for today, I will rejoice at everything.* (iii) *Just for today, I will be grateful for everything.* (iv) *Just for today, I will do my work honestly. I will work on myself.* (v) *Just for today, I will be kind to every living creature.* The basis of these affirmations is the fact that we only really have 'today', and if everyone lives 'today' as the only possible one, harmony would be achieved. Reiki educations provide simple and efficient method of self-aid in energy-informational *revitalization of the person* on all spiritual-psycho-somatic levels. **(2) Meridian Therapies, for fast removing of psychological traumas, phobias, allergies, post-traumatic stress** (via simultaneous effects of *emotionally-involved visualization of the psychosomatic problems and tapping / touching of some acupuncture points*; in associative array they also enable reaching to the deepest root of some permanent problem, i.e. finding and integration of clients's *primeval polarities*). These psycho / energy therapies also demonstrate close *relationship between consciousness and acupuncture system*. Having in mind that for permanent removal of traumas it is necessary to apply *transpersonal circular (psycho / energy) therapeutic processes from all relevant meta-positions of the trauma-involved persons*, they thus confirm that spontaneous interactions between trauma-involved persons are deepening at the level of *collective consciousness*. **(3) Family Constellations, for transpersonal optimizing existing family relationships**: This *group psychotherapy method*, known also as *Order of Love*, includes an internal spiritual realm of the individual and transpersonal relationships within the family and social environment (transcending the boundaries of private and enabling insight into the trans-generational dynamics and their effect on the individual). Group work in the field of transpersonal Family Constellations and comprehension of *trans-generational dynamics* at the level of collective consciousness provide insight into the relationship and a sense of family relationships, leading to very rapid progress and final resolution and *healing of family relationships*.

medicine in the 21st century, based on three front lines: collective consciousness; acupuncture system / individual consciousness; and somatic level.

This implies necessity to focus on origins and treatment of many problems in psychophysiological child development on underlying prenatal trans-generational levels of collective consciousness, as confirmed by experiences of clients in post-hypnotic regressions too.

Everything considered might be of fundamental importance in understanding underlying macroscopic quantum-holographic Hopfield-like acupuncture system / (individual and collective) consciousness EM field-related biofeedback control mechanisms of embryogenesis / ontogenesis and morphogenesis via downward influence on the expression of genes – shedding new light on the long standing open problems of the acupuncture system and (individual) consciousness as well.

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- <http://www.dejanrakovicfund.org>; Official website of Dejan Raković Fund (DRF) for Promoting Holistic Research and Ecology of Consciousness, with available relevant author's books, proceedings, papers, communications, and links to recommended websites.
- <http://www.energy-medicine.info>; Official Inergetix website with contemporary critical review of technologies in the wider field of quantum-informational medicine, including information on Rife's early research in the field of bioresonance medicine in 1930s, which was not recognized at that time.
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