

КВАНТНА МЕХАНИКА, СВЕСТ И ДУХОВНОСТ: НОВЕ ПЕРСПЕКТИВЕ НА ГРАНИЦИ НАУКЕ И ФИЛОЗОФИЈЕ QUANTUM MECHANICS, CONSCIOUSNESS & SPIRITUALITY: NEW PROSPECTS ON THE VERGE OF SCIENCE & METAPHYSICS

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Сажетак: Садржај рада је наш проширени квантно-информациони теоријски оквир за свест и слободну вољу. Предложени оквир може имати значајне епистемолошко-когнитивне и психосоматско-духовне импликације, омогућавајући боље разумевање трансперсоналног порекла квантно-информационих психосоматских процеса у интегративној медицини и трансперсоналној психологији.

Abstract: The subject of this paper is our extended quantum-informational theoretical framework for consciousness and free will. The presented framework might have significant epistemological-cognitive and psychosomatic-spiritual implications, providing better understanding of transpersonal origin of quantum-informational psychosomatic processes in integrative medicine and transpersonal psychology.

Кључне речи: Проширени хопфилдовски квантно-информациони теоријски оквир, свест, слободна воља, интегративна медицина, трансперсонална психологија, духовност, филозофија.

Keywords: Extended Hopfield-like quantum-informational theoretical framework, consciousness, free will, integrative medicine, transpersonal psychology, spirituality, metaphysics.

INTRODUCTION

Consciousness has been the *central theme of philosophical essays* for a long time 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 significant *philosophical-religious implications* - but all the time the main question has remained about the controversy whether consciousness and free will really exist, which can be scientifically addressed only in the framework of contemporary quantum mechanics and quantum information (as elaborated in ref. [1], on which this plenary paper is mainly based, with some refreshment of the reference list).

Also, in past few decades there is increasing interest in quantum-informational trends in (open) macroscopic quantum environments in biology, medicine, psychology, all the way down to quantum-informational roots of the universe - motivated by growing experimental evidences and / or deep theoretical reasons which cannot be accounted by existing classical physical paradigm, and underlying quantum-coherent non-locality tackling the still open question of universal validity of quantum-physical laws for macroscopic phenomena [2].

The first scientific attempts to enlighten the nature of consciousness appeared only in *psychology* of the second half of 19th century (through development of psychophysics and theories of personality, and afterwards in 20th century through attempts to establish controversial experimental parapsychology, which however have contributed to *holistic climate* for development of *transpersonal psychology* and *integrative medicine* in recent decades [3-6]), in *physics* of the beginning of 20th century (through development of quantum mechanics and articulation of the problem of the so called wave function reduction, and the role of observer in that 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 three decades *Center for Consciousness Studies* of the University of Arizona in Tucson is organizing annual multidisciplinary conferences on consciousness [7], as research on the nature of consciousness comes again in the focus of the world scientific community because of *potential implications* in many scientific fields.¹

¹ For instance [8], in *medicine*, it might give rise to enlightening of the role of acupuncture system and consciousness in development of psychosomatic diseases and their prevention and healing. In *psychology*, we could understand mechanisms and roles of altered

The paper is organized as follows (with numerous more explaining footnotes throughout). After introduction, second section introduces the motivation and significance of consciousness studies. Third section considers the wave function collapse as a fundamental framework for searching physical origins of consciousness and free will. Fourth and fifth sections review epistemological-cognitive and psychosomatic-spiritual holistic implications of our extended quantum-holographic / quantum-gravitational (QHQG) theoretical framework of consciousness and free will. Sixth section discusses transpersonal global origins of trans-generation holistic programs and spiritual freedoms of their optimization. Seventh section concludes on necessity of global reprogramming of collective consciousness, with shift towards holistic gentle actions for solutions of the world risk society.

WAVE FUNCTION COLLAPSE: ON CONSCIOUSNESS AND FREE WILL

When we speak about quantum processes, the term *quantum* refers primarily to the discrete element of energy E in the *microsystem*, to which the fundamental oscillation frequency ν is ascribed, according to the famous Planck formula $E = h\nu$, where h is the Planck constant. This deep relation between discrete energy levels and oscillation frequencies lies in the basis of wave / particle *duality*, characteristic of quantum phenomena. The laws governing these microscopic quantum entities differ from those that govern the everyday classical world, for example, quantum particles can exist in multiple states or multiple locations simultaneously, where such multiple parallel *quantum superposition* alternatives (of which each alternative is measured by a complex number) would be described by a mathematical quantum *wave function*.

From the very beginnings of *quantum mechanics*, the so-called *problem of measurement* was recognized, as a question why we do not observe quantum superposition in *macro-world* as well, where we do not see objects and particles in various locations and in different states. More precisely, the problem of measurement is the *conflict* between two fundamental procedures in quantum mechanics. The first procedure relates to continuous *deterministic* evolution of the quantum state, known as *unitary evolution* (described by fundamental *Schrödinger equation*). The second procedure is applied when *measurement* on the quantum system or *observing* the quantum system is achieved, where the quantum state is *discontinuously* and *probabilistically* replaced by another quantum state, known as a *state reduction* or *wave function collapse* (described by *von Neumann projection postulate*) [9].

This conflict is marked as a *problem of measurement* (perhaps more precisely the *paradox of measurement*), and its problematic nature becomes manifest when we consider the *measuring apparatus itself as a quantum entity*, which is part of the entire quantum system consisting of the original observed system together with this measuring instrument. The apparatus is composed of the same quantum constituents (electrons, photons, protons, neutrons, etc.) as the observed system, and is subject to the same quantum laws and is described by continuous unitary evolution. How, then, can the discontinuous and probabilistic reduction result from the interaction (measurement) between the two parts of the quantum system? It is a paradox that basically indicates that quantum mechanics is still an *incomplete theory*. There are several attempts to solve this paradox, and some include different *objective reductions* (ORs) with a specific objective threshold that causes a quantum state reduction [10,11].

On the other hand, the indeterministic characteristics of *free will* indicate that (related to it) *consciousness* must play an essential role in the *wave function collapse* [9-16], the only indeterministic property of quantum mechanics, which still has *manifestly open problems* of the physical nature of *nonlinear collapse* and relativistically inconsistent instantaneous distant action of the *nonlocal collapse* of the wave function [12-16].

One possible solution of the problem of (nonlinear) collapse is proposed by Penrose [11] in *gravitationally induced OR of the wave function* (*superposition of quantum-entangled alternatives of quantum system (S) / measuring apparatus-environment (E)*), in which the gravitational field of E implies the superposition of different space-time geometries included, and when these geometries become sufficiently different (i.e. gravitational self-

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. In *physics*, an understanding of the nature of consciousness and free will 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. In *communications*, an understanding and controlling of transpersonal interactions might radically surpass many traditional barriers. In *computer sciences*, an understanding of the nature of consciousness could give rise to computers with artificial consciousness, which would function on deeper quantum-mechanical principles. Finally, in *philosophy* and *religion*, we might radically shift our scientific understanding of some ultimate 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.

energy E_G of the difference of mass distribution of the superimposed states) this implies the break of standard quantum-entangled superposition of the states S / E (ill-defined in strictly separate space-time geometries!) and Nature *must choose* between one of them and actually affects *OR* of the wave function for time $\tau \approx \hbar/E_G$ (inversely proportional to the size of quantum system S).²

According to our extended *quantum-holographic / quantum-gravitational (QHQG) theoretical model of consciousness* [12-15], the similar *OR* of the wave function might have quantum-gravitational origin in microscopic space-time *wormholes 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 [18,19]). The question how it is possible that these highly non-inertial microparticle processes with inevitable relativistic generation of microparticles' wormholes were not taken into account within quantum mechanics which is yet extremely accurate theory(?) - might be answered as they were(!), but implicitly within the ad hoc von Neumann's projection postulate [9] to account for quantum mechanical *OR* of the wave function in quantum measurement-like situations - implying also that von Neumann's *ad hoc Projection postulate is based on quantum gravitational phenomena* [12-15], on deeper physical level than nonrelativistic quantum mechanical ones!^{3,4,5,6,7,8, 9,10,11}

² Regarding *non-algorithmic quantum-gravitational aspects of consciousness* [11], Hameroff and Penrose 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!), in order to keep unitary evolution of the quantum superposition of microtubules until the time of *orchestrated reduction (Orch OR)* $\tau \approx \hbar/E_G \approx 25$ ms (characteristic for γ -brainwaves in EEG, neurophysiologically correlated with consciousness), which might produce the moment of consciousness according to the *Orch OR* scheme [10] - which was undergone to severe critiques in Tegmark's paper [17].

³ Such *macroscopically accumulated exotic OR-induced anti-gravitational imprints* 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 [20]; cf. also Footnote 6)!

⁴ In this context, it is expected that only on the level of future *Quantum gravitation theory* the nature of '*black holes*', '*wormhole tunnels*', and '*cosmological singularities*' will be 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 only Wheeler's '*quantum foam*', out of which space-time singularities and surrounding parts of space-time are made [21].

⁵ The relic of the aforementioned microscopic processes remained on the macroplane in the transitional states of individual consciousness (as highly non-inertial processes of the space-time quantum-gravitational mentally-channeled tunneling of the displaced part of the acupuncture EM-ionic quantum-holographic neural network), which can be a biophysical basis [12-15] of transpersonal communication [22-27] - in which mental addressing on the target implies unique ontological personal aspect of individual human consciousness [12-15], which is the widespread thesis of Christian religious tradition [28,29].

⁶ It should be noted that many *transpersonal phenomena* are even practically incorporated in the *psychosomatic energy correction* (cf. [3] and refs. therein) and that their physical explanation should be sought at the *very border of the existing scientific paradigm*. In our extended *QHQG theoretical framework* of consciousness and psychosomatics [12-15], it is assumed that they are of deeper *quantum-gravitational origin* (in spatio-temporally transcending highly-non-inertial strong-gravitation-equivalent (according to Einstein's principle of equivalence!) *transitional* states of consciousness (from high-dielectric body to low-dielectric out-of-body states!), based on locally generated *wormhole space-time tunnels*, quantum-gravitationally stabilized by so-called *exotic matter* (quantum vacuum fluctuations in strongly curved space-time wormhole tunnels [18]) *with anti-gravitational effects*, really observed in *transpersonal psycho-kinetic manifestations* of vital energy / prana / qi [24-27].

⁷ The *exotic aspect of wormhole tunnels and vital energy* might be extended to *acupuncture channels (with vacuum-like outside inflow of vital energy / prana / qi)* - implying that such type of *exotic transpersonal communication* enables *continuously-refreshing interaction between the two mentally-addressed persons* [30]. This *transpersonally stabilizes 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 quantum-entangled pairs of particles must be *well isolated from environment* in order to prevent their subsequent quantum-decoherence)!

[Regarding the EM microwave (MW) experiments [31] with 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 [32]!) - this inspired us to suggest an interesting possibility [33] 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 [34]), with non-propagated EM MW evanescent photons [35] pervading our body.]

⁸ Additionally, if put in the theoretical context of the fundamental *holographic principle* [36,37], 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 - in accordance with our extended QHQG framework for psychosomatics and proposed close relationship of the acupuncture system and consciousness (supported by meridian psycho-energy therapies as well, with the rapid elimination of traumas, phobias, allergies and other psychosomatic disorders, by simultaneous emotional-involved intensive visualization of psychosomatic problems and tapping / touching on prescribed acupuncture points [13,38])! It was also conjectured [37] that volume itself is illusory and that *Universe is really a hologram* isomorphic to information "inscribed" on the surface of its boundary.

⁹ Our extended QHQG theoretical framework might also imply 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 [13-15], allowing subtle *fractal coupling of various hierarchical levels* in Nature [39]. This might be supported by *acupuncture system and its projection zones* (ECIWO holographic concept [40]) and the discovery of *quantum-holographic influence of verbal communication on the expression of cell genome* (by voice-modulation of irradiating-laser beams [41]), as well as by the *origin of the amazing creativities* (Tesla and Mozart as case studies [14,15]) and *predestined life paths and temptations* (as indicated by the contemporary experiences of hypno-regressions [42] as well as experiences of different traditions [22], while still emphasizing that it is *possible to optimize them by spiritual purification*).

¹⁰ According to our extended QHQG framework [12-15], *transpersonal interactions* might be interpreted by *OR-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 poorly reproducible!) - thus *intentionally channeling state of operator's individual consciousness*: $|\Phi\rangle_S \rightarrow |\Phi_j\rangle_S$ and *automatically influencing the complement collective consciousness / environment output*: $|\Psi\rangle_E \rightarrow |\Psi_j\rangle_E$ in *quantum-gravitationally-induced and consciousness-channeled OR*:

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

The above relation is basically description of *quantum entanglement between memory attractors of individual consciousness* $|\Phi_i\rangle_S$ and *collective consciousness* $|\Psi_i\rangle_E$ (*quantum-correlated via consciousness-based resonant recognition / interaction of associatively-related attractors of individual and collective consciousness*), followed by *body-induced OR-related stochastic process* (with previously mentally enhanced $|c_j| \approx 1$ contribution by focusing on $|\Phi_j\rangle_S$ memory attractor of individual consciousness, cf. Fig.

1(a)). In this respect, the "*gauge quantum field theory and quantum gravity correspondence*" 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) [19] should be pointed out - as note added in proof of our extended QHQG framework for transpersonal interactions *via* miniature wormholes (on their *possible traversability* in cosmological conditions see ref. [18], while in transpersonal conditions see refs. [12-15]).

[Note that the above expression also describes a much more frequent, *constantly fluctuating*, spontaneous interaction of *individual consciousness with a closer environment*, making that with sensory-focused contents we have the experience of reality as in *normal states of consciousness*! This continuous fluctuation has its analogy in the *quantum biomolecular world*, between *continuously fluctuating non-complementary "states of biomolecular energy" and "states of biomolecular conformation"* (and entangling "*states of biomolecular environment*") [43]!]

¹¹ It should be pointed out, that in the context of *necessary conditions for decoherence* described by the expression in the footnote above, defining of open quantum system and its 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*!), simultaneously creating conditions for the process of decoherence in the context of *existing relative borderline* [12-14]:

On the other hand, *nonlocality of collective consciousness* [11-15], as a giant space-time associative neural network with distributed individual consciousnesses (related to bodily acupuncture MW ULF-modulated quantum-holographic neural networks, mutually interacting quantum-gravitationally in transitional states of individual consciousnesses), might explain (apparently) *instantaneous action* in (nonlinear) quantum-gravitationally induced and (nonlocally) channeled OR by field-related collective consciousness. At the same time, the analogy of mathematical formalisms of *Hopfield's associative neural network* and *Feynman's propagator version of Schrödinger's equation* [44] - points to *collective consciousness* as a possible *ontological property of the physical field itself* [11-15]¹² with different micro-quantum and macro-quantum excitations (non-biological and biological, real and virtual), which is widely spread thesis of *Eastern traditions* [22-27].

EPISTEMOLOGICAL-COGNITIVE IMPLICATIONS

Our extended *QHOG approach to consciousness and psychosomatics* also implies *two modes of knowledge* (as preserved in many traditions!), according to coupling strength consciousness-body-environment [13-15,30]: (i) *strongly-coupled indirect mode* (in *bodily* perceptively-rationally mediated *classically-reduced stationary normal states of consciousness*, like sensory perception, logic and scientific reasoning...); and (ii) *weakly-coupled direct mode* (in *out-of-body* spiritually-creative *quantum-entangled non-stationary transitional states of consciousness / quantum-coherent stationary altered states of consciousness*, like prayer, meditation, daydreams, lucid dreams, deep creative insights...) - with conditions of mutual transformation [13-15] (cf. also Fig. 1 and footnote 18).^{13,14,15,16}

$$|\Phi\rangle_S |\Psi\rangle_E \equiv |(partial) individual / collective consciousness\rangle_S |(complement) environment\rangle_E. \quad (2)$$

This is fully in accordance with the idea of *collective consciousness* as a possible *ontological property of the physical field itself*, with different micro-quantum and macro-quantum (both non-biological and biological, real and virtual) excitations. Then, as *cosmic collective consciousness* (coincident with the "field" of Universe) has its complement "particle" cosmic environment, their strong-interaction-coupling affects *decoherence of the "field" of cosmic collective consciousness* into stationary *classically-reduced (observing) stochastic state*, with probabilities of realizations of corresponding classically-reduced states of cosmic collective consciousness.

[However, note that the *cosmic composite quantum state*:

$$|\Phi\rangle_S |\Psi\rangle_E \equiv |cosmic "field" collective consciousness\rangle_S |(complement) cosmic "particle" environment\rangle_E \quad (3)$$

evolves without collapse (due to absence of the complement outside-cosmic environment!), which implies that *Universe as a whole is presumably quantum hologram* subject to deterministic Schrödinger evolution (in the context of universal validity of quantum mechanics!).]

¹² According to direct mathematical correspondence between classical neural variables (left) and quantum variables (right): $q \leftrightarrow \phi$, $q^k \leftrightarrow \phi^k$, $J \leftrightarrow G$, and corresponding Hopfield's classical and Feynman's quantum equations [13,44], it might be realized that *quantum memory attractors* $\phi^{k_i}(r, t)$ of (any!) quantum system behave as quantum analogues of classical neural activities in space r and time t - implying that *wave functions* ϕ^{k_i} ($i = 1, \dots, P$) at *space-time points* (r, t) are behaving fundamentally as *P-dimensional parallel neural quantum processors* (notice also their difference in respect to usually exploited *2-dimensional qubits* in quantum informatics).

[This allows successive reconstruction of the wave functions of the memory states at the output of quantum-holographic Hopfield-like neural network (complete, of both amplitude and phase) in recognition of the wave function of the previously memorized 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 & object laser beams). It should be added that practical requirements for 2-qubit quantum computers are very demanding, with low tolerance (~0.1%), which will require operation at very low temperatures (~μK) to eliminate thermal noise, as well as high degree of isolation from environments to eliminate the effects of decoherence. Due to its mode of operation (where the decoherence by the environment is included in their very information processing), the quantum-holographic Hopfield-like neural networks are significantly more robust and more resistant to the above requirements - with possible operation at room temperature (like biological acupuncture system / consciousness)!]

¹³ This implies the *generally poor informational rationalization* of any direct quantum-holographic spiritual / religious *mystical experience* (as *OR-like collapse of the implicate order of quantum-entangled (quantum-holographic) superposition of states of individual and collective consciousness into the explicate order of observed classically-reduced states of individual and collective*

consciousness) - which differ from tradition to tradition! On the other hand, the consensus of the mystics of the same tradition of a similar partial rationalization of mystical experiences could be understood as part of the same dominant-channeling trans-generational contextual heritage of members of the same tradition (because we are not born as so-called *tabula rasa*, as being indicated by contemporary experiences of hypno-regressions and experiences of different traditions as well, cf. also Fig. 1(b)!).

[So science is closing the circle, by re-discovering two different modes of knowledge and at the same time setting its own epistemological limitations [13-15] - as preserved for millennia in shamanistic tribal traditions, which consider that true reality is represented by lucid dreams, and that the waking state is an illusion [23,24], or as 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" [45], or as 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 affairs invisible" and rationally-mediated "comprehension of affairs visible" [46]!]

¹⁴ In addition, necessity of direct quantum-holographic coupling of individual and cosmic collective consciousness in an observation of the implicate order might need weak out-of-body quantum-communication coupling consciousness-environment, i.e. previous reprogramming of almost 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 the mentally-channelled tunnelled consciousness upon the out-of-body environment, and thus to classically-reduced out-of-body stationary 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 [26] might appear reasonable!

[But it still would leave 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 [13,14].]

¹⁵ A nice example of the description of two modes of knowledge is also found in Mexican *Jaki tradition* [47], as two types of reality, *tonal* (sensory-perceived in the normal state of consciousness) and *nagual* (extrasensory-perceived in altered states of consciousness, with "silver ribbons" of vital energy that transpersonally connect us with our environment). Something similar is also mentioned in African-Haitian *voodoo tradition* (in which visualization deliberately can create a "silver ribbon" between the operator and the victim) [48] - which naturally exists between mother and child, and is spontaneously created by the intensive exchange of vital energy between relatives, close associates, current and former lovers, friends and enemies, and even post mortem can survive between living and deceased persons).

¹⁶ It should be added that transpersonal esoteric concepts of different spiritual traditions [26] - might be accounted within our extended QHOG approach (with elaborated psychosomatic relationship consciousness / acupuncture macroscopic quantum-holographic Hopfield-like EM-ionic-exotic associative neural network [13,14,30]): (i) *astral body* (*manomaya, lingasarira, manovijnana, ka, psyche, nephesh, nafs, subtle body, psychic body, soul...*) - versus ionic component of the out-of-body displaceable EM-ionic-exotic macro-quantum acupuncture system (connected with the body by miniature "wormhole" space-time tunnel, generated in the highly-non-inertial transitional states of consciousness, as frequently observed in non-stationary extrasensory near-death experiences); (ii) *mental body* (*vijnanamaya, sukmasarira, manas, ba, thymos, ruach, ruh, noetic body, spiritual body, mind...*) - versus EM component of the out-of-body displaceable EM-ionic-exotic macro-quantum acupuncture system (embedded within ionic component of the out-of-body displaceable EM-ionic-exotic macro-quantum acupuncture system); (iii) *distributed centers of consciousness* (*chakras, acupuncture points, sephiroths, holy discs...*) - versus EM-ionic-exotic condensations in the structured out-of-body displaceable EM-ionic-exotic 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, Heilstrom, Innate Intelligence, bioenergy / biofield...*) - versus 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).

[Aforementioned consensus on the transpersonal esoteric concepts in different spiritual traditions, demonstrates that acquired information in their transpersonal extrasensory perceptions may give rise to non-distorting OR-like stationary extrasensory perception of their mentally-addressed out-of-body environments of collective consciousness (in Tesla-like creative way [13-15]!) - in contrast to non-stationary mystical states of consciousness (with distorting OR-like non-stationary collapse of the implicate order of quantum-entangled (quantum-holographic) superposition of states of individual and collective consciousness into the particular explicate order of the observed classically-reduced states of individual and collective consciousness, related to corresponding mystical tradition).]

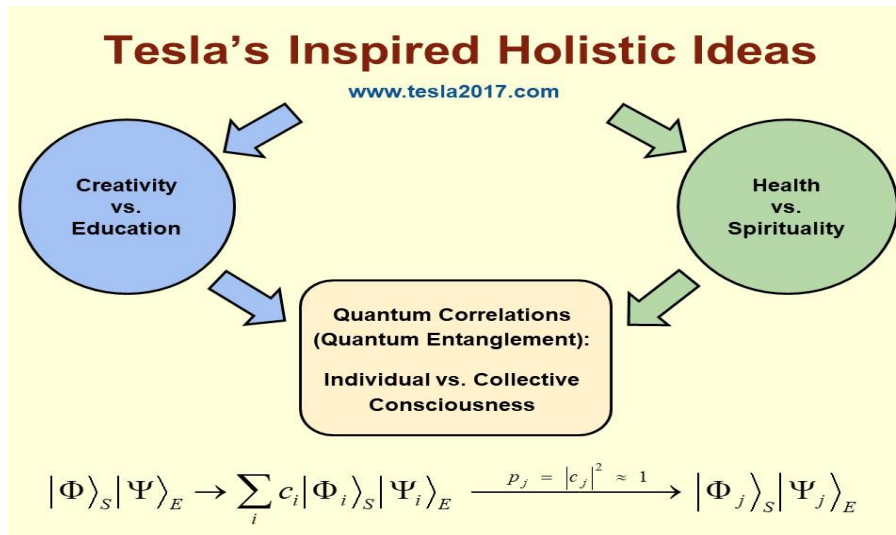


Figure 1. (a) Symbolic representation of mentally controlled-directed increasing of macro-quantum correlations of individual and collective consciousness in transpersonally entangling creative phases (left-hand side of the image and formula above, with previous mental increase of the focused weight contribution c_j and subsequent (practically non-stochastic) classically-reduced selection of this dominant weight contribution c_j) [14,15]; and (b) Symbolic representation of mentally controlled-systemic decreasing of macro-quantum correlations of individual and collective consciousness in transpersonally disentangling spiritual phases (right-hand side of the image and formula above, with previously systemic mental decreasing of almost all weight contributions c_i and subsequent (practically non-stochastic) classically-reduced selection of the remaining dominant weight contribution c_j (related to mentally-embedded address on the founder of the corresponding mystical tradition) [14,15].¹⁷

This is 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 in the framework of extended QHQG paradigm - where the role of each individual becomes indispensable due to influence and care for collective mental environment and social well-being.*

¹⁷ In the context of *creative insights and incredible Tesla inventions* (directly visualized in his consciousness with the details of the functioning of the devices, without any application of Maxwell's electromagnetics!), it is interesting to consider the *possibility of controlling creative processes* within our extended QHQG theoretical framework [14,15]. They predict *transpersonal properties of psyche in short-lasting quantum-entangled non-stationary transitional states of consciousness* (with subsequent *OR-reduced stationary extrasensory perception of the previously focused mentally-addressed out-of-body complementary environment*, which may also be *Jung's "archetype" of the problem-with-solution at the level of quantum-holographic collective consciousness*, which raises associations on *Tesla's "mental inventions" and Plato's "world of ideas"* as well). 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*: (i) *acupuncture system / nervous system threshold filter* (which requires *"emotional coloring"* 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 *waking 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! On the other hand, during the *sleep state* the mentioned conditions might be realized in quantum-entangled non-stationary transitional states of *falling asleep* and quantum-coherent stationary states of *REM-sleep* (with previous *intense concentration* on the solving problem before sleep & *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! 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!*), 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* & emotionally-induced *excitation into transitional state of consciousness.*]

And can help us realize that *all our partial rationalizations* (classically-reduced mappings!) *are just approximations of fundamentally-holistic reality* (quantum-holographic territory!), *and that all divisions are tragic misunderstanding of spiritually immature epoch of civilization* (as map is not the territory!).

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.

PSYCHOSOMATIC-SPIRITUAL IMPLICATIONS

Holistic approach to *integrative medicine* and *transpersonal psychology* is of particular importance because of their ever-increasing use in developed countries [3-6] - since modern research into psychosomatic diseases indicates the need to apply *holistic methods* (with a focus on body's *acupuncture system and consciousness* [5,6,13-15]), oriented to treating a *person as a whole* (including mental environment), implying their *macroscopic quantum origin*. According to our extended *QHQG approach*, the healthy psychosomatic state (of (open) acupuncture system / consciousness) is considered as simplest informational state of the lowest quantum entropy (with single memory attractor), while disordered psychosomatic states are considered as more complex states of the higher quantum entropy (with additional side memory attractors, cf. Fig. 2).

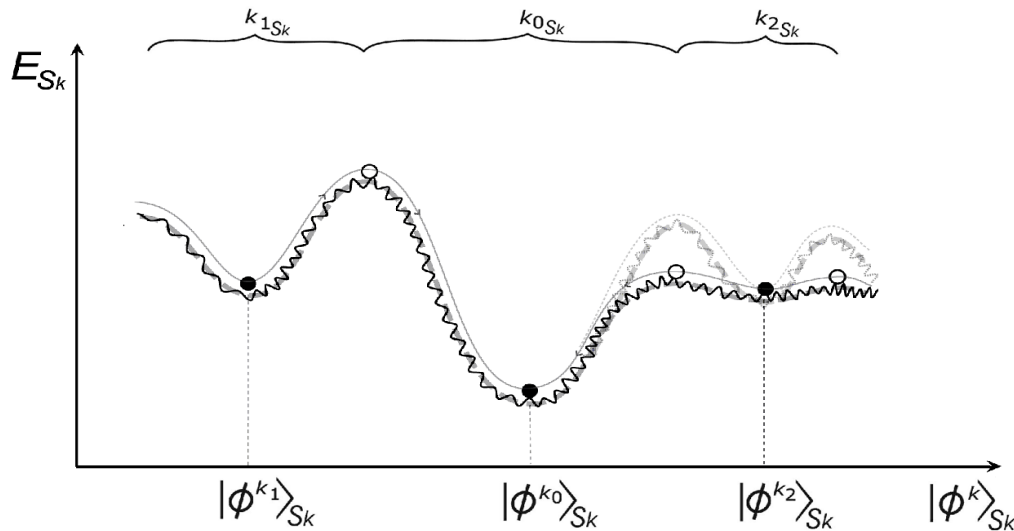


Figure 2. Schematic presentation of the adaptation of memory attractors in the energy-state hypersurface of the quantum-holographic memory / propagator of various hierarchical levels of biological macroscopic open quantum system(s) S_k [13,14,49] (local cell's biomolecular protein / target, local acupuncture system / consciousness, or nonlocal out-of-body consciousness / collective consciousness). This implies necessity of quantum-informational successive bioresonant balancing of all unwilling side memory attractors (like ϕ^{k_2} in Fig. 2), which would otherwise cause development of psychosomatic diseases on the individual level, and interpersonal fights in this and further generations on the collective level.^{18,19}

¹⁸ It should be noted that Nature presumably has chosen elegant room-temperature solution for quantum-holographic information processing, fluctuating between quantum-coherent and classically-reduced states of (open) biological macro-quantum system(s) S_k , via non-stationary bioresonance interactions with out-of-body farther environment and decoherence by bodily closer environment - by adaptation of corresponding quantum-holographic memory / propagator [13,14,49] (with *time-adapting density of states of (open) macro-quantum system(s) S_k* , represented by corresponding depths of minima like in Fig. 2):

$$G(r_2, t_2; r_1, t_1) = \sum_{i=1}^P \phi^{k_i}(r_2, t_2) \phi^{k_i*}(r_1, t_1) = \sum_{i=1}^P A_{k_i}(r_2, t_2) A_{k_i}^*(r_1, t_1) e^{\frac{i}{\hbar}(\alpha_{k_i}(r_2, t_2) - \alpha_{k_i}(r_1, t_1))} \quad (4)$$

Thus quantum neural holography combined with quantum decoherence might be very significant element of the feedback bioinformatics, from the level of cell - to the level of organism - and further to the level of collective consciousness, with backward dynamic influence on the expression of genes.

¹⁹ Further on, by considering *psychosomatic state* in generally mixed quantum state of density matrix:

Thus, all holistic acupuncture-based and consciousness-based approaches and techniques could be treated as quantum-informational therapies, by imposing new healing boundary conditions in the energy-state space of the (open) acupuncture system / (individual and collective) consciousness - implying *three fronts lines of integrative medicine* in top-down order, according to our extended *QHQG approach to psychosomatics* [13,14,49]: (i) collective consciousness;²⁰ (ii) acupuncture system / individual consciousness;²¹ and (iii) somatic level. It should be pointed out that *necessary activities* in the second and third levels, with *neglect of the first level*, would result in *further transpersonal transfer of memory attractors* on the level of individual and collective consciousness in this and future generations. So, this implies necessity to focus on the *origins of many psychosomatic problems* on underlying *prenatal trans-generational levels* (cf. [49] and refs. therein).

ON TRANS-GENERATION PROGRAMS AND FREEDOM OF OPTIMIZATION

Michael Newton, a famous American transpersonal hypno-regression-therapist, writes about a number of psychotherapeutic experiences of post-hypnotic regressions, with systematized messages of his clients that our major life lessons and opportunities to optimize otherwise predestined life-programs are lying in spiritual sphere of purification [42]. Reading of Newton's book(s) brought me a special pleasure, due to many important *associations and implications* on correspondence of the *described experiences* and *theoretical predictions* of our extended QHQG framework [50]: (i) *transpersonal-spiritual tunneling as exclusive communications, without space-time barriers* (in accordance with our theoretical predictions); (ii) *soul transpersonally chooses a pair of prospective parents, among*

$$\hat{\rho}_S = \sum_i |c_{k_i}|^2 |\phi^{k_i}\rangle_S \langle\phi^{k_i}| \equiv \sum_i p_{k_i} |\phi^{k_i}\rangle_S \langle\phi^{k_i}| \quad (5)$$

(where p_{k_i} are probabilities of realization of the k_i -th quantum state), then von Neumann's quantum-mechanical entropy $S = -k_B \text{Tr}(\hat{\rho}_S \ln \hat{\rho}_S)$ is reduced to classical Shannon's entropy $S = -k_B \sum_i p_{k_i} \ln p_{k_i}$ [13,14,49]. So, within our extended *QHQG* theoretical 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 $S_{k_0} = 0$ (as pure quantum state $\hat{\rho}_{S_{k_0}}^{(k_0)}$ 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 $S_{\hat{\rho}} > 0$ (as mixed stochastic state $\hat{\rho}_{S_{k_0}}^{(k)}$ provides uncomplete information about the quantum psychosomatic system). So, we plausibly obtain that healthy psychosomatic state is the simplest informational state of the lowest quantum entropy (with single memory attractor), while disordered psychosomatic states are more complex states of the higher quantum entropy (with additional side memory attractors, cf. Fig. 2).

²⁰ Since there is no out-of-cosmic environment to *push* on *non-unitary-OR* a quantum-entangled state of the field-related cosmic collective consciousness and the complementary 'particle' cosmic environment, the *proposed mechanism of prayer (intrinsically non-unitary)* sets the *necessary new boundary conditions without mutual mentally-loaded addresses* - so it can really be said that an *all-forgiving prayer* represents a biophysical basis for the optimization of (*quantum*) *holistic global psychosomatics of collective consciousness* (and complementary incoming individual and collective events) [13-15]! Let us add that both traditional and modern experiences of local and transpersonal energy healing [5,6] (by vacuum-excited spiritually-purifying new macro-quantum portions of vital energy and their subsequent mentally-channeled transfer), indicate that *meditative visualization* (intrinsically non-unitary) *imposes new (OR-similar) quantum gravitational boundary conditions* (however, in contrast to prayer, *it would not eliminate simultaneously* all mentally-loaded addresses, but would balance energy-informationally *only one particular client*). Therefore, in such situations, it is necessary to do *circular meditative-healing visualization from all meta-positions involved in the existing conflict, thus eliminating simultaneously all mentally-loaded addresses*! Hence, in the context of our QHQG theoretical framework, *spiritual prayer / meditation practices* represent a *non-unitary source of free will at the level of collective consciousness*, which evolutionary *increases the responsibility of every individual and the whole human race!*

²¹ The goal of these local *acupuncture-based and consciousness-based procedures and approaches* would be a *bioresonant excitation* of the psychosomatically disordered state (*acupuncture palpatory-painful / psychologically traumatic*) - thus enabling that its initial memory attractor is bioresonantly excited (similar to annealing procedure in neural networks [51]) becoming shallower and wider on the account of deepening of the (energy-dominating) attractor of healthy (*acupuncture palpatory painless / psychologically traumatic-free*) state [13-15,49] - which is then altogether quantum-holographically projected on the lower quantum-holographic cellular level, thus changing expression of genes.

several offered alternatives previously carefully observed with all 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); (iii) by made choice of the 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 fundamental importance of spirituality as a source of the greatest freedom for optimizing otherwise predestined life-programs, and necessity of careful control of reactions on current life-temptations in order to avoid further deepening of the existing conflicts); (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 transfer of accumulated information, with experiences that transferred contents leave a strong impression of the previously lived lives).

So, in the context of 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 as well), it seems irrational not only to be angry at life program (previously freely chosen prenatally), but it is also irrational not to optimize it (spiritually-accepting and forgiving ourselves and our environment) - contributing to both our own spiritual growth and catharsis of our trans-generational mental environment (which is fundamental question of both mental hygiene and civil decency i.e. both spiritual and civil morality)!^{22,23,24,25,26,27,28}

²² It is hereby instructive 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 [52]! In the context of the mentioned above *quantum-holographic predestined life programs*, this is fully justified because we all (*non-consciously*) react to current conflicting-encoded life-situations (several hundred milliseconds before we become aware [53]!), but immediately afterwards we have a chance to (*consciously*) permanently untangle the existing trans-generational conflict by penitential-forgiving prayer. This is quite fair spiritual opportunity - and up to each person is either to use it or not - with accompanied either unloading or overloading trans-generational conflicts!

²³ That might 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 would enhance the existing mental / emotional personal loads and enlarge evil in the world, dismissing an individual and humankind from the final spiritual ideal of sinless state of consciousness - an old biblical commandment after *Adam's fall* ("The man has now become like one of us, knowing good and evil. He must not be allowed to reach out his hand and take also from the tree of life and eat, and live forever." (Gen.3,22)).

²⁴ Bearing in mind the role of a mentally loaded contents in the *post-mortem spiritual evolution of the soul* of the dying (let us mention transpersonal collective levels of consciousness of *Bardo levels* in Tibetan tradition [54] or *aerial toll house* in Christian tradition [55]) - this implies importance of prayers for 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 possibility of even *retroactive-nonlocal trans-generational dis-entangling / un-binding of mental / emotional conflicts*, as suggested by *experiments with prayer* [23] - bearing resemblance to quantum delayed choice experiments [56,57], and pointing additionally to quantum roots of consciousness)!

²⁵ We also mention some tribal traditions where initiated shamans ritually enter the altered states of consciousness and receive answers to the health problems of members of their tribes, and apply their healing methods based on reprogramming the loads on the level of tribes' collective consciousness (like in South America *Ayahuaska tradition* [58], or Nigerian *Abiku tradition* [59], with fascinating spiritual diagnosis and subsequent extension of the predestined-short-life programs; or like in Hawaiian *Ho'oponopono tradition* [60], based on the *participatory* concept of taking full *responsibility for any circumstance* in which we find ourselves and *repenting and forgiving ourselves* in the context of disturbing life situations, with fascinating successes in reprogramming *ourselves and our environment*). In this context, I have to mention an incredible experience of my cousin Milica, with (epi) genetically conditioned high-risk pregnancy of very low level of amniotic fluid, normalized in just a few days of ho'oponopono prayer practices, with subsequent normal delivery!

²⁶ On the same line, we mention the contemporary spiritual teaching of Bruno Groening (1906-1959), the greatest *faith healer* of the 20th century, renown in Germany for biblical cases of miraculous mass healings during 1950s, whose fascinating *divine healing channel* is remained open after his death via spreading activities of his Circle of Friends all over the world [61]. Groening teaches that

CONCLUSION

The above research is in line with awakened scientific interest in researching the nature of consciousness in past decades, with indication of the *grand synthesis of two modes of knowledge* - where the *role of each individual becomes irreplaceable due to influence and care for collective mental environment* - leaving the largest space for *free will* and *fundamentally enhancing significance of spiritual morality*.

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 play all *religious communities and spiritual practices*, *cultivating* a true *spiritual moral* and absolute 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, which 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 altered via collective prayer and acceptance of ourselves and our neighbors and enemies*, and hence *global reprogramming of collective consciousness*.

This indicates *full significance of holistic education and behavior* - with *necessity* of *redefining global educational / informational / political goals* [66-69] - and shift towards *holistic gentle actions for global solutions of the world risk society*.

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one can maintain health and heal from illness by *absorption of a divine life force* (germ. Heilstrom, most similar to Christian notion of Holy Spirit [26]) in upright position with arms and legs uncrossed and palms facing upwards, *keeping strong faith* in healing after mental request to Groening *to take all his/her/its burdens!* He never took credit for the healings, saying that he was only an instrument of God, regardless of persons' religion or nationality. Groening claimed that individual healing was only 5% of his spiritual effects, while the rest 95% was devoted to Great Reversal of humanity (this being very efficient way to optimize not only individual but also collective life programs!).

²⁷ We also mention the *fascinating world bestseller confession* of Anita Moorjani [62] *on spiritual changing her life program*, in which she decided to change her previous life program (and thus 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 illnesses*, 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 / un-binding repentant-forgiving prayer [6,13-15,63])!

²⁸ Finally, we mention the experience of Jon RG (John-Richard - 50 years ago) Turner [65]: Some 50 years ago, I was living in Los Angeles, California. I was producing and hosting a talk show *Holistic Viewpoints, Expanding Consciousness* on KPFK-Pacific Radio in Hollywood. At the same time, I had a psychotherapy practice in Beverly Hills. I was getting referrals of patients who had been declared incurable. Sitting at my marvelously carved Mexican desk, I closed my eyes and asked my Whole-Self what I could possibly do to assist these patients who had failed to find homeostasis after 5, 10, some even 20 years of various therapies. What entered my mind were the words "If you will take each person back to the period before they were born each will experience rapid healing!" With this instruction from my Whole-Self, I pioneered in reawakening and releasing the psychic memories each person had from before conception through after birth. What those patients discovered, in the first person is: *Not only am I the synthesis of my parent's genetic DNA coding which gave me my physical characteristics, I am also the synthesis of their energetically charged thoughts and emotions during their pregnancy which gave me my mental and emotional characteristics: my Whole-Self emotional DNA© (W-S eDNA©)*. The healing came from the recognition that the trauma feelings were the result of their mother's event not something they had done.

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 - [4] <https://www.imconsortium.org>; official website of the Consortium of Academic Medical Centers for Integrative Medicine, founded by the end of 1990s, which includes over 70 highly esteemed US academic health centers and affiliate institutions, in order to transform medicine and healthcare through rigorous scientific studies, new models of clinical care, and innovative educational programs that integrate biomedicine, the complexity of human beings, the intrinsic nature of healing, and the rich diversity of therapeutic systems.
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