

Quantum-Informational Bases and Frontiers of Psychosomatic Integrative Medicine

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Abstract—The subject of this paper are quantum-informational bases and frontiers of psychosomatic integrative medicine, oriented to the healing of person as a whole and not diseases as symptoms of disorders of this wholeness, implying their macroscopic quantum origin. In the focus of the related quantum-holistic methods are acupuncture system and consciousness – which as macroscopic quantum biosystems have (fundamental!) quantum-informational structure of Hopfield-like holographic neural network, within the Feynman propagator version of quantum mechanics. In this context, all acupuncture-based and consciousness-based approaches and techniques can be essentially considered as quantum-informational therapies, via bioresonant imposing of new boundary conditions in the energy-state space of the acupuncture system/ consciousness, with downward quantum-holographic biofeedback influence on the cells conformational protein changes and genes expression. This might provide fundamental quantum-informational framework for better understanding of the nature of psychosomatic diseases as well as limitations of the healing methods, which might help in developing strategies for integrative medicine.

Keywords—Psychosomatics, integrative medicine, transpersonal psychology, Hopfield-like quantum-holographic neural networks, downward causation, acupuncture system, consciousness, qi/ prana/ vital energy.

I. INTRODUCTION

Contemporary medicine has put its emphasis on highly pharmaceutical-oriented medicine technologies. On the contrary, in the past years more attention is paid to bioadequate bioresonant quantum-informational medicine technologies, related to usage of such values of the electromagnetic (EM) field energy, appearing in normal functioning of human organism [1-6].

On these lines, contemporary investigations of stress-induced psychosomatic diseases imply the necessity of application of holistic methods, oriented to healing the person as a whole and not disease as a symptom of disorder of the whole, suggesting their macroscopic quantum origin [6-22] – and giving rise to fast development of integrative medicine [2] and transpersonal psychology [3]. In the focus of these quantum-holistic methods are acupuncture system and consciousness – which have quantum-informational structure of quantum-holographic Hopfield-like associative neural network [6-19]. within Feynman's propagator version of quantum mechanics [23,24] – with significant quantum-holographic psychosomatic implications, to be considered hereafter.

The paper is organized as follows. In section II the author's fundamental quantum-informational Hopfield-like holographic framework for psychosomatic integrative medicine is presented, implying that all acupuncture-based and consciousness-based approaches and techniques are essentially bioresonant. Section III provides further considerations of macroscopic quantum-informational bases and frontiers of psychosomatic integrative medicine, based on the author's research and put in the context of other theoretical approaches and experimental results. Section IV presents discussion on wider support of the author's quantum-holographic framework of psychosomatic integrative medicine and transpersonal psychology, and related long standing open problems of the acupuncture system and consciousness, including qi/ prana/ vital energy (and suggested implications on fundamentals of quantum informatics as well). Section V concludes on necessity of developing wider strategies for integrative medicine.

II. QUANTUM-INFORMATIONAL HOPFIELD-LIKE HOLOGRAPHIC FRAMEWORK FOR PSYCHOSOMATIC INTEGRATIVE MEDICINE

In the context of the acupuncture-based [2,4-9,14-22,25-29] and consciousness-based [2-4,6-9,14-22,31-56] approaches and techniques of the EM field-related quantum-informational integrative medicine, their goal would be a bioresonant excitation of psychosomatically disordered (acupuncture-channel palpatory-painful or psychologically traumatic) state (as one of hundreds possible disordered states) thus enabling that its initial memory attractor is resonantly excited (similar to annealing procedure in artificial neural networks [57]) becoming shallower and wider on the account of deepening of the (energy-dominating) attractor of healthy (acupuncture-channel palpatory painless or psychologically traumatic-free) state (cf. Fig. 1) – which is then altogether quantum-holographically projected on the lower quantum-holographic cellular level, thus changing the expression of genes [6-19]. Thus, all these holistic approaches and techniques might be considered as quantum-informational therapies, via imposing new boundary conditions in the energy-state space of the acupuncture system/ consciousness.

However, when this process is hindered by transpersonally imposed blockages in the energy-state space (on numerous laboratory tests revealing the evidence of entangled minds i.e. extrasensory experiences in a quantum reality, see ref. [58]) – then memory attractors of quantum-holographic network of field-related collective consciousness should be removed as well (via prayer or circular psychotherapies from all relevant meta-positions, to disentangle energy-informationally all mental addresses included in the problem [6-9,14-20,46-56]). This transpersonal holistic

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procedure, alongside with working on all levels of acupuncture-based therapies [6-9,14-22,25-30] and non-circular (psycho/energy) therapies [6-9,14-20,31-45], might be the holistic clue for imposing healing boundary conditions in the energy-state space of acupuncture system/ consciousness of the patients.

The above quantum-holographic framework might have significant psychosomatic implications on necessity of including the three front lines of integrative medicine [6-9,14-20]: (1) Spirituality and circular (psycho/energy) therapies from all relevant meta-positions, with possibility of permanent erasing of mutual memory attractors on the level of collective consciousness; (2) Eastern (holistic/quantum) medicine and non-circular (psycho/energy) therapies, whose efforts temporary erase memory attractors on the level of acupuncture system/ individual consciousness, and prevent or alleviate their somatization, as a consequence of the indolence on the first level; and (3) Western (non-holistic/ symptomatic) medicine, whose activities on the somatic level via immunology, pharmacology, biomedical diagnostics and surgery hinder or soothe somatized consequences of the carelessness on the first two levels.

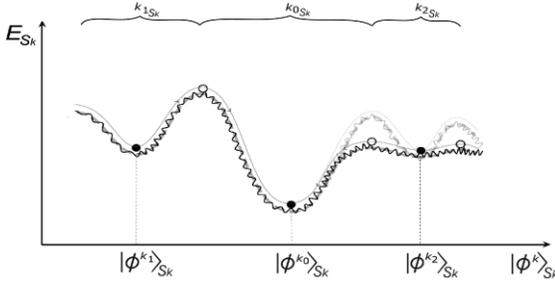


Fig. 1. Schematic presentation of the adaptation of memory attractors in the energy-state hypersurface of the quantum-holographic memory/propagator of various hierarchical levels of biological macroscopic open quantum systems S_k (cellular biomolecular protein/ target, acupuncture system/ consciousness, or out-of-body consciousness/ collective consciousness) [6-19]. It should be pointed out that Nature presumably has chosen elegant room-temperature solution for quantum-holographic information processing, permanently fluctuating between quantum-coherent states and classically-reduced states of the biological macroscopic open quantum system S_k , via non-stationary bioresonance interactions with out-of-body farther environment and through decoherence by bodily closer environment. 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 downward dynamic influence on the expression of genes. This implies necessity of quantum-informational successive bioresonant balancing of all unwilling side memory attractors (like ϕ^{k_2} in Fig. 1), which would otherwise cause development of psychosomatic diseases on the individual level, and interpersonal conflicts in this and further generations on the collective level.

III. ON MACROSCOPIC QUANTUM-INFORMATIONAL BASES AND FRONTIERS OF PSYCHOSOMATIC INTEGRATIVE MEDICINE

The underlying quantum-coherent non-locality of the proposed quantum-holographic framework of psychosomatic integrative medicine might be of fundamental 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, mostly treated by the methods of classical physics. Although this question was raised in the early phase of founding of quantum-mechanical theory, it can be said freely that the problem of universal validity of quantum mechanics is still open [10,59-74], and presumably needs additional pheno-

menological assumptions [74] (for instance, in the manner of quantum chemistry [75] it might be plausibly proposed [10] that many-atomic quantum systems are phenomenologically limited to the structures with dynamically coupled electrons considered as identical fermions, described by permutationally-antisymmetric many-electronic eigenstates, which encompasses all existing molecules and electronic condensed state objects described by general quantum-chemical electronic self-Hamiltonian, including acupuncture system with dynamically coupled electrons all-along macroscopic network of acupuncture channels; in case of the structures with dynamically coupled identical bosons, like phonons and photons, they are described by permutationally-symmetric many-bosonic eigenstates and corresponding self-Hamiltonian).

Within the framework of quantum chemistry, there exist two (interacting) macroscopic quantum subsystems on all quantum-holographic hierarchical levels of biological macroscopic quantum systems S_k (cellular protein-target biomolecular one, acupuncture system/ consciousness, or out-of-body consciousness/ collective consciousness), [7-9,12]: first with modifying many-electron hypersurface $E_e(\phi_e^{(k)})$ and second with modifying EM multi-phonon hypersurface $E_v(\phi_v^{(k)})$. It should be added that an energy hypersurface of multi-phonon quantum state might also include low-energy long-range coherent microwave (MW) Fröhlich excitations (created as a result of interaction of electronic and phonon subsystems [76,77]), of particular significance in the microwave resonance therapy of the acupuncture system [5-9,14-21,25-27].

The above quantum-holographic framework implies that quantum-holographic hierarchical parts carry information on wholeness, enabling subtle Hopfield-like quantum-holographic fractal coupling between different hierarchical biophysical levels – including various acupuncture projection zones and corresponding organs and cells, with quantum-holographic feedback influence of the EM field of acupuncture system/ consciousness on the cellular conformational protein changes and expression of genes (so called macroscopic "downward causation"), and not only reversed (microscopic "upward causation"), with mutual quantum-informational control of ontogenesis/ embryogenesis and morphogenesis (via changes in operator of density of many-electron states $\hat{\rho}_e(t)$ or operator of density of multi-phonon states $\hat{\rho}_v(t)$ of the cellular (quantum-ensemble) protein(s) conformational biomolecular macroscopic open quantum system(s), cf. Fig. 1), starting from the first fertilized cell division which initializes differentiation of the acupuncture system of (electrical synaptic) "gap-junctions" [6-9,20,21].

Our analyses also imply the existence of novel macroscopic quantum biomolecular phenomena, with biomolecular chain folding in an open environment considered as a subtle interplay between energy and conformation eigenstates of the biomolecule, governed by quantum-chemical and quantum decoherence laws [10]. 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 the

enzyme conformational states – might be represented as Hopfield-like quantum-holographic associative neural network (HQHNN) too [7-12] (like in Fig. 1).

Further on, since all successive biochemical reactions are functionally interconnected, so are the successive HQHNNs in bioinformational framework within the corresponding enzymes occupational bases – which may be presented in the form of Haken's multi-level synergetic neural network, composed of layers of successive HQHNNs. In such bioinformational framework of Haken's multi-level synergetic neural network, each of the successive HQHNNs layers, representing corresponding intra-cellular and extra-cellular biochemical reactions, has a formal Hopfield-like mathematical structure in the form of (non-morphological/ abstract) "formal neurons" massively interconnected 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) [10]. Such a generalised bio-informational framework of Haken's multi-level synergetic neural network, representing corresponding intra-cellular and extra-cellular biochemical reactions, is in line with trends of modelling hierarchical information processing in higher cognitive processes as well [8,9,23,24,78,79]. It should be added, that quantum nature of water (and its fundamental 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 [30] and some intriguing field-mediated genetic experiments [80,81]; on some other proposed field-related phenomena of biological water we shall comment later on).

In further, we shall mention that Sit'ko with coauthors have revealed necessary and sufficient conditions for existence of macroscopic selfconsistent potentials (of so called Landau-Haken type) alongside acupuncture channels, with EM MW eigenfrequencies of healthy and disordered states of acupuncture system [26,82-84], pointing out that living systems are the fourth level of quantum ladder of Nature (nuclear-atomic-molecular-biological), governed by specific macroscopic quantum laws of the Physics of the Alive. Sit'ko and coauthors have also conducted EM MW measurements via specially designed radiometric system (on the level of inherent noises $\sim 5 \cdot 10^{-23}$ W/Hz \cdot cm 2), which enabled obtaining of the following important characteristics of the acupuncture channels and points [85]: channels have diameter of 3÷5 mm in their surface exits in the acupuncture points; refraction index within channels is $n = 1$ as in the air, while being 5÷6 in the body outside channels; in case of functional disorders of channels, upon external EM MW flux of $10^{-21} \div 10^{-20}$ W/Hz \cdot cm 2 the corresponding acupuncture points completely absorb radiation, while upon flux greater than 10^{-19} W/Hz \cdot cm 2 acupuncture points completely reflect external EM MW radiation (so in natural conditions the effects of solar radiation on biological systems are neglecting in the very sensitive EM MW regulatory region, being intensely absorbed by atmosphere, which was presumably of evolutionary significance in natural selection of biological species).

Based on the principles of photonic crystals and photonic bandgap guiding, where the confinement of photons in some

low-index hollow-core defect might be achieved by exploiting photonic bandgap reflectivity of the surrounding higher-index (quasi)periodic medium [86], it seems that the above mentioned EM MW experiments suggest an interesting possibility to consider the low-index $n = 1$ acupuncture channels as 3D photonic crystal channel waveguides of propagated EM MW photons (influencing backward the structure and ionic conductivity of the channels [7-9,26,82-84]), 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 [87]) with non-propagated EM MW evanescent photons (the similar mechanism might be possibly extended in the visual range of EM spectrum, to account for experiments of Popp and coauthors with ultra-weak biophoton light channels [88]).

On these lines, it is worth pointing out that Umezawa with coauthors and Del Giudice with coauthors, by applying fundamental quantum-field theoretical formalism of spontaneous symmetry breaking, have pointed to biological room-temperature macroscopic condensates of virtual quasiparticles of the effective mass and charge, so called evanescent photons in water (non-propagated/ tunneling longitudinal modes of quantum EM field embedded by biological macroscopic ordered localizations of the electric dipole field of water), as a possible quantum basis of functioning of cells in general [89-91,92-94], while Jibu and coauthors have pointed to them as a possible quantum basis of consciousness in brain [95-98]. According to such a theoretical concept, as evanescent photons in water are not related to propagating waves (in EM RF range [92-94]), they cannot be detected externally – so in the region of biological macroscopic ordered localizations of the electric dipole field of water special probes must be inserted, to enable embedded quanta of non-propagating modes of the EM RF field to be scattered in propagating modes, which were detected experimentally in the EM RF region [99].

So, the above mentioned quantum-field theoretical formalism (verified experimentally in the EM RF region as well), suggests deeper biophysical origin of non-propagated evanescent photons in water, whose EM field-related macro-quantum condensates might be the basis of traditionally widely present (but scientifically poorly understood) concepts of qi/ prana of energy-informational acupuncture system/ consciousness [16,17,36-43], detectable within low-index hollow-core defect acupuncture channels and non-detectable outside them (with possible generalization from the evanescent EM field to the evanescent unified field, in line with the broader traditional comprehension of prana/ qi/ ki/ mana/ pneuma/ uncreated light... as all-pervasive cosmic quintessence [17,35-39]). These traditional holistic concepts might be additionally supported by fundamental holographic principle [100,101] according to which any (3D) physical system is isomorphic to the holographic information embedded on its (2D) surface, which implies that full quantum-informational content of our 3D body could be holographically contained in the corresponding 2D surface layer – in line with our macroscopic quantum-informational Hopfield-like holographic framework for psychosomatics and proposed close relationship of the acupuncture system and consciousness [8,9,16,17] as well (which is also supported by novel meridian psycho/ energy therapies, with fast removing of traumas, phobias, allergies, post-traumatic stress and

other psychosomatic disorders, via simultaneous effects of emotionally-involved visualization of psychosomatic problems and tapping/ touching of prescribed acupuncture points [45,46]).

IV. DISCUSSION

Suggested macroscopic quantum-informational Hopfield-like holographic framework for psychosomatics 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 [33,34], allowing subtle quantum-informational coupling of hierarchical levels in Nature [102-104], which is supported by acupuncture system and its projection zones (ECIWO holographic concept [22]) and discovery of quantum-holographic influence on the expression of cell genome (by linguistic-wave-genetic-modulation of irradiating-laser beams [80]), as well as by transpersonal origin of the amazing creativities (Tesla and Mozart as case studies [105,106]) and predestinated life paths and temptations (as indicated by the contemporary experiences of hypn regressions [107] and experiences of tribal traditions [55,56] and traditions of East [33,34] and West [34,51], while still emphasizing that it is possible to reprogram/ optimize them by spiritual purification [31-56,107]).

In the above context, despite the (unitary) deterministic evolution of the quantum-informational Hopfield-like holographic neural network of collective consciousness (as there is no out-of-cosmic environment that triggers the (non-unitary) collapse of quantum-coherent state of the field-related cosmic collective consciousness and complementary particle-related cosmic environment) [6-9,15-18] – the memory attractors of collective consciousness could still be reprogrammed by prayer for eliminating inter-personal loads of collective consciousness – probably via prayer-excited new macro-quantum energy-informational portions of vital energy/ uncreated light in prayer-related persons (similarly to mentally-channeled prana/ qi/ ki in local and transpersonal healing in Ayurvedic/ Qigong/ Reiki practices [37-39]), as disentangling energy-informational indeterministic intervention in quantum-holographic evolution of collective consciousness (and incoming individual and collective events), thus (non-unitary) setting necessary new boundary conditions) [6-9,15-18]. This leaves the most room for free will and influence on future preferences – implying indispensable role of individuals due to their influence and care for collective mental environment.

It should be pointed out that many transpersonal phenomena associated with consciousness [6,31-56,58,102,105-115] are well documented and even practically incorporated in psychosomatic energy-correction, and their physical explanation should be sought on the border of the current scientific paradigm. Within our quantum-informational/ quantum-gravitational theoretical framework of consciousness and psychosomatics [6-9,15-18,72] 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!) transitional states of consciousness (from high-dielectric bodily into low-dielectric out-of-body states!), based on locally generated wormhole space-time tunnels stabilized by so called exotic matter (vacuum fluctuations in strongly curved space-time of wormhole tunnels [116]) with anti-gravitational effects – really observed in the

transpersonal psychokinetic manifestations of vital energy/ prana/ qi [33,34,102,109-111]; the exotic nature of these tunnels might be extended to acupuncture channels of peculiar vacuum-like $n = 1$ refraction index, with outside inflow of vital energy/ prana/ qi).

It should be finally added that the same theoretical framework also suggests a physical basis of von Neumann's projection postulate (at the micro-quantum scale [64,65,72]), to explain the quantum-mechanical wave function collapse (through local quantum-gravity-induced wormhole tunnels in strong-gravity-equivalent (according to Einstein's principle of equivalence!) highly-non-inertial quantum-measurement-like situations [6-9, 72]). 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 (with its physical origin on the deeper quantum-gravitational-level!?!); on the other hand their macroscopically accumulated anti-gravitational imprint might possibly be observable on cosmological scale (or have been already detected(!)) by recent advances in the cosmological tests, which invite again 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 [117]).

The above multidisciplinary considerations presumably imply that joint research on the crossroad of psychosomatic integrative medicine and transpersonal psychology (and related long standing open problems of acupuncture system and consciousness, including qi/ prana/ vital energy) and quantum informatics (and related open problems of quantum physics and general relativity) may become fruitful in spreading frontiers of the existing scientific paradigm.

V. CONCLUSION

The presented macroscopic quantum-informational bases and frontiers of psychosomatic integrative medicine might have significant holistic implications, for better understanding of the nature of psychosomatic diseases as well as limitations of the healing methods, which might help in developing further strategies for psychosomatic integrative medicine. They might also be of fundamental importance in understanding underlying macroscopic quantum-informational Hopfield-like holographic acupuncture system/ 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.

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REFERENCES

- [1] D. Raković, S. Arandjelović, M. Mićović, eds., *Proc. Symp. Quantum-Informational Medicine QIM 2011: Acupuncture-Based and Consciousness-Based Holistic Approaches & Techniques*, QUANTTES & HF & DRF, Belgrade, 2011.

- [2] http://www.imconsortium.org/prod/groups/ahc/@pub/@ahc/@cahcim/documents/asset/ahc_asset_391689.pdf; official website of the Consortium of Academic Medical Centers for Integrative Medicine, founded by the end of 1990s, which includes nearly 60 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.
- [3] <http://www.atpweb.org>; official website of The Association for Transpersonal Psychology (ATP), concerned from early 1970ies with the study of humanity's highest potential, and with the recognition, understanding, and realization of unitive, spiritual, and transcendent states of consciousness (making transpersonal psychology the fourth force in psychology, alongside with psychoanalysis, behaviorism, and humanistic psychology, after one of its founders, A. Maslow).
- [4] <http://www.issseem.org>; official website of The International Society for the Study of Subtle Energies and Energy Medicine (ISSSEEM), founded by the end of 1980s.
- [5] <http://www.energy-medicine.info>; 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.
- [6] <http://dejanrakovicfund.org>; website of Dejan Raković Fund (DRF) for Promoting Holistic Research and Ecology of Consciousness, with relevant author's books, proceedings, papers, communications, and recommended links.
- [7] D. Raković, A. Škokljević, D. Djordjević, *Introduction to Quantum-Informational Medicine, With Basics of Quantum-Holographic Psychosomatics, Acupuncture and Reflexotherapy*, ECPD, Belgrade, 2009, in Serbian.
- [8] D. Raković, *Integrative Biophysics, Quantum Medicine, and Quantum-Holographic Informatics: Psychosomatic-Cognitive Implications*, IASC & IEPSP, Belgrade, 2009.
- [9] D. Raković, *Fundamentals of Biophysics*, 3rd ed., IASC & IEPSP, Belgrade, 2008, in Serbian.
- [10] D. Raković, M. Dugić, J. Jeknić-Dugić, M. Plavšić, S. Jačimovski, J. Štrajčić, "On macroscopic quantum phenomena in biomolecules and cells: From Levinthal to Hopfield," *BioMed Res. Int.*, vol. 2014, Article ID 580491, 9 pages, 2014.
- [11] D. Raković, M. Dugić, M. Plavšić, G. Keković, I. Cosic, D. Davidović, "Quantum decoherence and quantum-holographic information processes: From biomolecules to biosystems," *Mater. Sci. Forum*, vol. 518, pp. 485-490, 2006.
- [12] D. Raković, "Quantum-holographic Hopfield-like biomolecular recognition," in: B. Reljin, S. Stanković, eds., *Proc. NEUREL-2010*, Belgrade: IEEE Serbia & Montenegro Sect., 2010.
- [13] D. Raković, M. Dugić, "Quantum and classical neural networks for modeling two modes of consciousness: Cognitive implications," in: B. Reljin, S. Stanković, eds., *Proc. NEUREL-2004*, Belgrade: IEEE Yugoslavia Sect., 2004.
- [14] D. Raković, "Hopfield-like quantum associative neural networks and (quantum) holistic psychosomatic implications," in: B. Reljin, S. Stanković, eds., *Proc. NEUREL-2002*, Belgrade: IEEE Yugoslavia Sect., 2002.
- [15] D. Raković, A. Vasić, "Classical-neural and quantum-holographic informatics: Psychosomatic-cognitive implications," in: B. Reljin, S. Stanković, eds., *Proc. NEUREL-2008*, Belgrade: IEEE Serbia & Montenegro Sect., 2008.
- [16] D. Raković, "Quantum-holographic framework for consciousness and acupuncture: Psychosomatic-cognitive implications," *MD Medical Data*, vol. 3(3), pp. 303-313, 2011.
- [17] D. Raković, "Quantum-holographic bases of psychosomatics and spirituality: Contribution to comparative exploration of science and religion," *Interreligious Round Table Religion, Science, Culture: Contribution of World Religions to Science and Culture – Religious Heritage as a Subject of Study at the University of Belgrade*, The Office of the Ombudsman, University of Belgrade, 10 June 2013 (preprint).
- [18] D. Raković, "Scientific bases of quantum-holographic paradigm," in: I. Kononenko, ed., *Proc. Measuring Energy Fields*, Kamnik, Slovenia, 2007.
- [19] D. Raković, "Stress and anti-stress: Holistic quantum-informational framework, with anti-stress recommendations," in: S. Jovicic, M. Subotic, M. Sovilj, eds., *Verbal Communication Quality Inter-disciplinary Research II*, LAAC / IEPSP, Belgrade, 2013.
- [20] Group of authors, *Anti-Stress Holistic Handbook, With Fundamentals of Acupuncture, Microwave Resonance Therapy, Relaxation Massage, Airoionotherapy, Autogenic Training, and Consciousness*, IASC, Belgrade, 1999, in Serbian.
- [21] Z. Jovanović-Ignjatić, D. Raković, "A review of current research in microwave resonance therapy: Novel opportunities in medical treatment," *Acup. & Electro-Therap. Res., The Int. J.*, vol. 24(2), pp. 105-125, 1999.
- [22] Y. Zhang, *ECIWO Biology and Medicine: A New Theory of Conquering Cancer and Completely New Acupuncture Therapy*, Neimenggu People Press, Beijing, 1987.
- [23] M. Peruš, "Neuro-quantum parallelism in mind-brain and computers," *Informatica*, vol. 20, pp. 173-183, 1996.
- [24] M. Peruš, "Multi-level synergetic computation in brain," *Nonlinear Phenomena in Complex Systems*, vol. 4, pp. 157-193, 2001.
- [25] N. D. Devyatkov, O. Betskii, eds., *Biological Aspects of Low Intensity Millimeter Waves*. Seven Plus, Moscow, 1994.
- [26] S. P. Sit'ko, L. N. Mkrтчian, *Introduction to Quantum Medicine*. Pattern, Kiev, 1994.
- [27] Yu. P. Potehina, Y. A. Tkachenko, A. M. Kozhemyakin, *Report on Clinical Evaluation for Apparatus EHF-IR Therapies Portable with Changeable Oscillators CEM TECH*, CEM Corp, Nizhniy Novgorod, 2008.
- [28] M. Yu. Gotovskiy, Yu. F. Perov, L. V. Chernecova, *Bioresonance Therapy*, IMEDIS, Moscow, 2010.
- [29] R. Voll, "Twenty years of electroacupuncture diagnosis in Germany. A progress report," *Am. J. Acup.*, vol. 3(1), pp. 7-17, 1975.
- [30] B. Bellavite, A. Signorini, *The Emerging Science of Homeopathy: Complexity, Biodynamics and Nanopharmacology*, North Atlantic Books, Berkeley, 2002.
- [31] S. Milenković, *Values of Contemporary Psychotherapy*, Narodna knjiga – Alfa, Belgrade, 1997, in Serbian.
- [32] V. Jerotić, *Individuation and (or) Deification*, Ars Libri, Belgrade & National and University Library, Priština, 1998, in Serbian.
- [33] K. Wilber, *The Atman Project*, Quest, Wheaton, IL, 1980.
- [34] P. Vujićin, "States of consciousness in esoteric practice," in: D. Raković, Dj. Koruga, eds., *Consciousness: Scientific Challenge of the 21st Century*, ECPD, Belgrade, 1995.
- [35] B. A. Brennan, *Hands of Light: A Guide to Healing Through the Human Energy Field*, Bantam, New York, 1987.
- [36] J. S. Hagelin, "Is consciousness the unified field? A field theorist's perspective," *Modern Sci. & Vedic Sci.*, vol. 1, pp. 29-88, 1987.
- [37] Swami Sada Shiva Tirtha, *The Ayurveda Encyclopedia. Natural Secrets of Healing, Prevention and Longevity*, 2nd ed., Sat Yuga Press, New York, 2007.
- [38] K. S. Cohen, *The Way of Qigong: The Art and Science of Chinese Energy Healing*, Random House of Canada, 1999.
- [39] W. Lee Rand, *Reiki The Healing Touch*, Vision, Southfield, 1998.
- [40] E. Pearl, *The Reconnection: Heal Others, Heal Yourself*, Hay House, Carlsbad, 2001.
- [41] V. Stibal, *Theta Healing: Go Up and Seek God, Go Up and Work with God*, THInK, Idaho Falls, 2006.
- [42] R. Bartlett, *Matrix Energetics: The Science and Art of Transformation*, Beyond Words Publ., Hillsboro, 2009.
- [43] F. J. Kinslow, *The Secret of Instant Healing*, Hay House, Carlsbad, 2008.
- [44] D. Chopra, *Quantum Healing: Exploring the Frontiers of Mind/Body Medicine*, Bantam, New York, 1989.
- [45] R. J. Callahan, J. Callahan, *Thought Field Therapy and Trauma: Treatment and Theory*, Indian Wells, 1996.
- [46] Ž. Mihajlović Slavinski, *PEAT and Neutralization of Primeval Polarities*, Belgrade, 2000
- [47] K. G. Jung, *Psychology of the Unconscious*, Moffat, Yard and Co., New York, 1916.
- [48] C. Tart, ed., *Transpersonal Psychologies*, 2nd ed., Harper, San Francisco, 1992.
- [49] S. Grof, C. Grof, *Holotropic Breathwork: A New Approach to Self-Exploration and Therapy*, Series in Transpersonal and Humanistic Psychology, Sunny Press, Albany, 2010.
- [50] L. Dossey, *Healing Words: The Power of Prayer and the Practice of Medicine*, Harper, San Francisco, 1993.
- [51] J. Vlahos, *Orthodox Psychotherapy: The Holy Fathers Science*, Missionary School of St. Alexander Nevskiy Church, Belgrade, 1998, Serbian transl from Greek.
- [52] L. L. Hay, *You Can Heal Your Life*, Hay House, Carlsbad, 1984.
- [53] A. Moorjani, *Dying To Be Me: My Journey from Cancer, to Near Death, to True Healing*, Hay House, Carlsbad, 2012.
- [54] J. Vitale, I. Hew Len, *Zero Limits: The Secret Hawaiian System for Wealth, Health, Peace, and More*, Wiley, Hoboken, 2007.

- [55] B. Hellinger, G. ten Hevel, *Acknowledging what is: Conversations with Bert Hellinger*, Zeig, Tucker & Theisen, Phoenix, 1999.
- [56] M. Tomšić Akengen, "Abiku phenomenon: Spiritual origin and treatment of self-destructiveness," in: D. Raković, S. Arandjelović, M. Mićović, eds., *Proc. Symp. Quantum-Informational Medicine QIM 2011: Acupuncture-Based and Consciousness-Based Holistic Approaches & Techniques*, QUANTTES & HF & DRF, Belgrade, 2011.
- [57] R. Hecht-Nielsen, *Neurocomputing*, Addison-Wesley, New York, 1990.
- [58] D. Radin, *Entangled Minds: Extrasensory Experiences in a Quantum Reality*, Paraview, New York, 2006.
- [59] A. J. Leggett, "Macroscopic quantum systems and the quantum theory of measurement," *Prog. Theor. Phys. Suppl.*, no. 69, pp. 80-100, 1980.
- [60] A. J. Leggett, A. Garg, "Quantum mechanics versus macroscopic realism: Is the flux there when nobody looks?," *Phys. Rev. Lett.*, vol. 54, pp. 857-860, 1985.
- [61] W. H. Zurek, "Decoherence and the transition from quantum to classical," *Phys. Today*, vol. 44(10), pp. 36-44, 1991.
- [62] W. H. Zurek, "Decoherence, einselection, and the quantum origins of the classical," *Rev. Mod. Phys.*, vol. 75, pp. 715-765, 2003.
- [63] G. C. Ghirardi, A. Rimini, T. Weber, "Unified dynamics for microscopic and macroscopic systems," *Phys. Rev. D*, vol. 34, pp. 470-491, 1986.
- [64] R. Penrose, "On gravity's role in quantum state reduction," *Gen. Rel. Grav.*, vol. 28, pp. 581-600, 1996.
- [65] D. Giulini, E. Joos, C. Kiefer, J. Kupsch, I.-O. Stamatescu, H. D. Zeh, *Decoherence and the Appearance of a Classical World in Quantum Theory*, Springer, Berlin, 1996.
- [66] J. Kofler, Č. Brukner, "Classical world arising out of quantum physics under the restriction of coarse-grained measurements," *Phys. Rev. Lett.* vol. 99, 180403, 2007.
- [67] J. Kofler, Č. Brukner, "Conditions for quantum violation of macroscopic realism," *Phys. Rev. Lett.* vol. 101, 090403, 2008.
- [68] V. Vedral, *Decoding Reality: The Universe as Quantum Information*, Oxford Univ. Press, Oxford, 2010.
- [69] V. Vedral, "Information and physics," *Information*, vol. 3, pp. 219-223, 2010.
- [70] M. Dugić, *Decoherence in Classical Limit of Quantum Mechanics*, SFIN XVII(2), Institute of Physics, Belgrade, 2004, in Serbian.
- [71] D. Raković, M. Dugić, "A critical note on the role of the quantum mechanical 'collapse' in quantum modeling of consciousness," *Informatika*, vol. 26(1), pp. 85-90, 2002.
- [72] D. Raković, M. Dugić, M. M. Ćirković, "Macroscopic quantum effects in biophysics and consciousness," *NeuroQuantology*, vol. 2(4), pp. 237-262, 2004.
- [73] M. Dugić, D. Raković, J. Jeknić-Dugić, M. Arsenijević, "The ghostly quantum worlds," *NeuroQuantology*, vol. 10(4), pp. 618-628, 2012.
- [74] J. Jeknić-Dugić, M. Arsenijević, M. Dugić, *Quantum Structures: A View of the Quantum World*, LAP LAMBERT, Saarbrücken, 2013.
- [75] L. A. Gribov, *From Theory of Spectra to Theory of Chemical Transformations*, URSS, Moscow, 2001, in Russian.
- [76] H. Fröhlich, "Long-range coherence and energy storage in biological systems," *Int. J. Quantum Chem.*, vol. 2, pp. 641-649, 1968.
- [77] G. Keković, D. Raković, M. Satarčić, Dj. Koruga, "Model of soliton transport through microtubular cytoskeleton in acupuncture system," *Mater. Sci. Forum*, vol. 494, pp. 507-512, 2005.
- [78] H. Haken, *Synergetic Computers and Cognition: A Top-Down Approach to Neural Nets*, Springer, Berlin, 1991.
- [79] K. Pribram, *Brain and Perception: Holonomy and Structure in Figural Processing*, Lawrence Erlbaum, Hillsdale, 1991.
- [80] P. P. Gariaev, M. J. Friedman, E. A. Leonova-Gariaeva, "Principles of linguistic-wave genetics," *DNA Decipher J*, vol. 1(1), pp. 11-24, 2011.
- [81] L. Montagnier, J. Aissa, E. Del Giudice, C. Lavalée, A. Tedeschi, G. Vitiello, "DNA waves and water," [arXiv:1012.5166v1 \[q-bio.OT\]](https://arxiv.org/abs/1012.5166v1).
- [82] S. P. Sit'ko, Ye. A. Andreyev, I. S. Dobronravova, "The whole as a result of self-organization," *J. Biol. Phys.*, vol. 16, pp. 71-73, 1988.
- [83] S. P. Sit'ko, V. V. Gizhko, "Towards a quantum physics of the living state," *J. Biol. Phys.*, vol. 18, pp. 1-10, 1991.
- [84] S. P. Sit'ko, "The realization of genome in the notions of Physics of the Alive," *MD Medical Data*, vol. 4(2), pp. 207-215, 2012.
- [85] Complete issue: *Physics of the Alive (Фізика живого)*, vol. 6(1), 1998.
- [86] J.-M. Lourtioz, H. Benisty, V. Berger, J.-M. Gerard, D. Maystre, A. Tchelnokov, *Photonic Crystals*, 2nd ed., Springer, Berlin, 2008.
- [87] W. R. Adey, "Tissue interactions with nonionizing electromagnetic fields," *Physiol. Rev.*, vol. 61, pp. 435-514, 1981, and refs therein.
- [88] Complete issue: *Indian J. Exp. Biol.*, vol. 41(5), 2003, *Proc. Symp. Biophoton.*
- [89] L. M. Ricciardi, H. Umezawa, "Brain and physics of many-body problems," *Kybernetik*, vol. 4, pp. 44-48, 1967.
- [90] C. I. J. M. Stuart, Y. Takahashi, H. Umezawa, "Mixed-system brain dynamics: Neural memory as a macroscopic ordered state," *Found. Phys.*, vol. 9, pp. 301-327, 1979.
- [91] H. Umezawa, *Advanced Field Theory: Micro, Macro, and Thermal Physics*, American Institute of Physics, New York, 1993.
- [92] E. Del Giudice, S. Doglia, M. Milani, "A collective dynamics in metabolically active cells," *Phys. Lett.*, vol. 90A, pp. 104-106, 1982.
- [93] E. Del Giudice, G. Preparata, G. Vitiello, "Water as a free electric dipole laser," *Phys. Rev. Lett.*, vol. 90A, pp. 104-106, 1988.
- [94] G. Preparata, *QED Coherence in Matter*, World Scientific, Singapore, 1995.
- [95] M. Jibu, S. Hagan, S. R. Hameroff, K. H. Pribram, K. Yasue, "Quantum optical coherence in cytoskeletal microtubules: Implications for brain function," *BioSystems*, vol. 32, pp. 195-209, 1994.
- [96] M. Jibu, K. Yasue, *Quantum Brain Dynamics: An Introduction*, John Benjamins, 1995.
- [97] M. Jibu, K. H. Pribram, K. Yasue, "From conscious experience to memory storage and retrieval: The role of quantum brain dynamics and boson condensation of evanescent photons," *Intern. J. Mod. Phys.*, vol. 10, pp. 1735-1754, 1996.
- [98] M. Jibu, K. Yasue, "What is mind? Quantum field theory of evanescent photons in brain as quantum theory of consciousness," *Informatika*, vol. 21, pp. 471-490, 1997.
- [99] M.-W. Ho, F.-A. Popp, U. Warnke, *Bioelectrodynamics and Bio-communication*, World Scientific, Singapore, 1994.
- [100] L. Susskind, J. Lindesay, *An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe*, World Scientific, Singapore, 2005.
- [101] J. D. Bekenstein, "Information in the holographic universe," *Sci. Am.*, vol. 289(2), pp. 58-65, 2003.
- [102] M. Talbot, *The Holographic Universe*, HarperCollins, New York, 1991.
- [103] M. Rakočević, "The universal consciousness and the universal code," in: D. Raković, Dj. Koruga, eds., *Consciousness: Scientific Challenge of the 21st Century*, ECPD, Belgrade, 1995.
- [104] Dj. Koruga, "Information physics: In search of a scientific basis of consciousness," *ibid.*
- [105] D. Raković, "On nature and control of creativity – Tesla as a case study," in: D. Karabeg, J. Park, eds., *Proc. 2nd Int. Workshop on Knowledge Federation*, Dubrovnik, Croatia, 2010, CEUR-WS.org/Vol-822, 2011.
- [106] F. Holmes, *The Life of Mozart Including his Correspondence*, Chapman & Hall, 1878, p. 211.
- [107] M. Newton, *Journey of Souls*, Llewellyn, Woodbury, 1994.
- [108] K. C. Markides, *Fire in the Heart. Healers, Sages and Mystics*, Paragon, New York, 1990.
- [109] Paramahansa Yogananda, *Autobiography of a Yogi*, The Philosophical Library, New York, 1946.
- [110] R. G. Jahn, "The persistent paradox of psychic phenomena: an engineering perspective," *Proc. IEEE*, vol. 70, pp. 136-170, 1982.
- [111] R. G. Jahn, B. J. Dunne, *Consciousness and the Source of Reality: The PEAR Odyssey*, ICRL, Princeton, 2011.
- [112] R. Targ, H. Puthoff, *Mind-Reach: Scientific Look at Psychic Ability*, Delacorte, New York, 1977.
- [113] V. P. Kaznacheev, A. V. Trofimov, *Cosmic Consciousness of Humanity*, Elendis-Progress, Tomsk, 1992.
- [114] P. van Lommel, R. van Wees, V. Meyers, I. Elfferich, "Near-death experience in survivors of cardiac arrest: Prospective study in the Netherlands," *The Lancet*, vol. 358, pp. 2039-2045, 2001.
- [115] B. Bedričić, M. Stokić, Z. Milosavljević, D. Milovanović, M. Ostojić, D. Raković, M. Sovilj, S. Maksimović, "Psycho-physiological correlates of non-verbal transpersonal holistic psychosomatic communication," In: S. Jovičić, M. Subotić, eds., *Verbal Communication Quality Interdisciplinary Research I*, LAAC & IEPS, Belgrade, 2011.
- [116] S. Thorne, *Black Holes and Time Warps: Einstein's Outrageous Legacy*, Picador, London, 1994.
- [117] P. J. E. Peebles, B. Ratra, "The cosmological constant and dark energy," *Rev. Mod. Phys.*, vol. 75(2), pp. 559-606, 2003.