

QUANTUM-INFORMATIONAL MACROPHENOMENA IN BIOMEDICINE & HOLISTIC PSYCHOSOMATICS: QUANTUM-HOLOGRAPHIC FRAMEWORK

D. I. Raković

Retired Professor, Faculty of Electrical Engineering, University of Belgrade, Serbia, www.dejanrakovic.com

INTRODUCTION

In past few decades there is increasing interest in quantum-informational trends in (open) macroscopic quantum environments in biology [1,2], medicine [3-7], and psychology [8-19], all the way down to quantum-informational roots of the universe [20,21], to name few of them. They are motivated by growing experimental evidences and/ or deep theoretical reasons which cannot be accounted by existing classical biophysical paradigm. The underlying macroscopic quantum-coherent non-locality tackles the still open question of universal validity of quantum-physical laws for macroscopic phenomena as well, and presumably needs additional phenomenological assumptions (see [2,10] and refs. therein).

QUANTUM BIOLOGY – BIOMOLECULES AND CELLS

In the context of *macroscopic quantum phenomena of the second kind* [22], we proposed a *quantum-decoherence and quantum-holographic (QDQH) approach to conformational transitions of biomolecules* [2] (which cannot be considered kinetically understood on the basis of (semi) classical predictions: the so-called Levinthal paradox [23]). It seems that our *solution-in-principle* of the long-lasting *Levinthal paradox* offers a natural physical picture of a series of processes with biomolecules including *chain folding* and *biomolecular recognition* in an open biological environment. So, in *quantum world of biomolecules*, fluctuations between non-complementary (approximately isolated) *biomolecular states of energy* and (environment-decoherence-selected non-isolated) *biomolecular states of conformation* are being repeated. *At the level of open cell, our QDQH approach* also allows the *system of identical non-interacting and dynamically uncoupled proteins of a particular type (and their biomolecular targets)* to be considered as a *global spatial quantum ensemble of identical processors*, whose *time-adapting density of conformational states* can be presented as a *cellular Hopfield-like quantum-holographic neural network* [2]. To generalize, *a series of all kinds of intracellular and extracellular environment-driven local biochemically-coupled reactions* could be equivalently *quantum-holographically considered as a global Haken-like neural network composed of a number of corresponding layers of Hopfield-like quantum-holographic associative neural networks* (with the extension to the higher hierarchical levels of the organism, this possibly being the missing *'downward causation'* (epi)genetic control mechanism of morphogenesis and psychosomatics based on acupuncture and consciousness, cf. also next section on quantum medicine).

QUANTUM MEDICINE – THREE FRONT LINES

Holistic approach to *integrative medicine* [4,7] and *transpersonal psychology* [4,19] is of particular importance because of their ever-increasing use in developed countries - since modern research into psychosomatic diseases indicates the need to apply *holistic methods* (with a focus on body's *acupuncture system and consciousness* [4]), oriented to treating a *person as a whole* (including mental environment), implying their *macroscopic quantum origin* - with significant *global implications*. Thus, our extended *QDQH approach* implies three fronts lines of psychosomatic integrative medicine in top-down order [5]: (i) *spirituality and circular (psycho / energy) therapies from all relevant meta-positions* (with the potential for permanent removal of mutual memory attractors at the level of *collective consciousness*, for the purpose of *energy-information dis-entanglement of mental addresses* of persons involved in the problem); (ii) *(quantum) holistic medicine and non-circular (psycho / energy) therapies* (temporarily removing memory attractors at the level of the *acupuncture system / individual consciousness* and preventing or alleviating their somatization as a consequence of negligence on the first front line); and (iii) *conventional symptomatic medicine* (which through the immunology, pharmacology, preventive diagnostics and surgery at the somatic level prevents or alleviates the somatized consequences of neglect in the first two front lines). 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. [15-18] and refs therein).

QUANTUM PSYCHOLOGY – TWO COGNITIVE MODES

Our extended *QDQH research* also implies *two modes of knowledge* (as preserved in many traditions!), according to the coupling strength consciousness-body-environment [5,15-18]: (i) *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...); and (ii) *strongly-coupled indirect mode* (in *bodily* perceptively-rationally mediated *classically-reduced stationary normal states of consciousness*, like sensory perception, logic and scientific reasoning...) - with *important spiritual-epistemological implications*. 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!). The mentioned considerations include *three essential comparative holistic aspects* (cf. [5,15-18] and refs therein): (i) *utility* (of transpersonal spiritual practices in the healing or the salvation of souls); (ii) *epistemology* (of mystical and rational modes of knowledge); and (iii) *phenomenology* (of transpersonal spiritual experiences). 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 QDQH paradigm* - where the *role of each individual becomes indispensable* due to the influence and care for *collective mental environment and social well-being*. 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 ENERGY-INFORMATIONAL SYSTEM – THREE ASPECTS

Finally, *three aspects of psychosomatic acupuncture system / consciousness / vital energy* should be pointed out (cf. [5,15-18] and refs therein): (i) *quasi-classical ionic aspect of acupuncture system* (suggested by research of the non-threshold *electrical synapses*, which have shown an order of magnitude increased concentration at acupuncture points, that is consistent with a much lower electrical resistance of acupuncture points compared to the surrounding tissue, as well as a significantly higher absorption of ions in these points); (ii) *quantum-informational electromagnetic aspect of acupuncture system* (indicated by *quantum-coherent characteristics* of Russian-Ukrainian school of *microwave resonance therapy*, and discovery that any quantum system has formal mathematical structure of *Hopfield-like quantum-holographic associative neural network*; it is also pointed out that *acupuncture system is at least psychosomatically related to consciousness*, as supported by very effective *meridian (psycho / energy) therapies* with successive setting new boundary conditions in *acupuncture system during emotionally-involved visualizations of psychosomatic problems*); and (iii) *transpersonal exotic aspect of energy-informational communications* (known in all traditions, and now widely used in transpersonal energy therapies (such as Qigong, Reiki, Pranic healing...) - through *established and stabilized energy-informational channels of vital energy* (qi, ki, prana...) - pointing to a deeper exotic space-time nature of these energy-informational channels of vital energy (i.e. connection with exotic quantum vacuum fluctuations, necessary for anti-gravitational stabilization of the space-time channels)). So, it seems that *multidisciplinary research on crossroad of psychosomatic integrative medicine and quantum informatics may become fruitful in spreading frontiers of the existing scientific paradigm*.

CONCLUSION

The Hopfield-like quantum-holographic framework for macroscopic quantum phenomena in biomolecular folding, integrative medicine, transpersonal psychology, and holistic psychosomatics is outlined. This might have significant implications for better understanding of quantum-holographic feedback control mechanisms of morphogenesis, and healing boundary conditions in acupuncture-based and consciousness-based holistic psychosomatics.

ACKNOWLEDGMENT. The paper was partly financed by the Serbian Ministry of Science, Technology and Development, under Project no. 178027.

References

1. I. B. Djordjevic, *Quantum Biological Information Theory*, Springer, Cham, 2015, and refs therein.
2. D. Raković, M. Dugić, J. Jeknić-Dugić, M. Plavšić, S. Jaćimovski, J. Šetrajčić, "On macroscopic quantum phenomena in biomolecules and cells: From Levinthal to Hopfield," *BioMed. Res. Int.*, Vol. 2014, Article ID 580491, 9 pages, 2014, and refs therein.
3. 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, and refs. therein; reprinted from ref. 4.
4. D. Raković, S. Arandjelović, M. Mićović, eds., *Proc. Symp. Quantum-Informational Medicine QIM 2011: Acupuncture-Based and Consciousness-Based Holistic Approaches and Techniques*, QUANTTES & HF & DRF, Belgrade, 2011, and refs. therein.
5. D. Raković, *Integrative Biophysics, Quantum Medicine, and Quantum-Holographic Informatics: Psychosomatic-Cognitive Implications*, IASC & IEPSP, Belgrade, 2009, and refs. therein.
6. D. Raković, "The influence of electromagnetic (EM) radiation on biological systems and humans", in: O. Gouni, J. R. G. Turner, T. G. N. Turner, eds., *Change: Birthing and Parenting at Times of Crisis*, Cosmoanelix & International Journal of Prenatal & Life Sciences, Athens, 2021, Invited Chapter 3.
7. Cf. also website <https://www.imconsortium.org>, of the *Academic Consortium for Integrative Medicine and Health*, founded by the end of 1990s, which includes over 60 highly esteemed US academic health centers and affiliate institutions.
8. K. Pribram, *Brain and Perception: Holonomy and Structure in Figural Processing*, Lawrence Erlbaum, Hillsdale, 1991.
9. M. Peruš, C. K. Loo, *Biological and Quantum Computing for Human Vision: Holonomic Models and Applications*, Medical Information Science Reference, Hershey & New York, 2011, and refs therein.
10. D. Raković, M. Dugić, M. M. Ćirković, "Macroscopic quantum effects in biophysics and consciousness," *NeuroQuantology*, Vol. 2(4), pp. 237-262, 2004, and refs. therein.
11. C. Tart, ed., *Transpersonal Psychologies*, 2nd ed., Harper, San Francisco, 1992.
12. R. G. Jahn, B. J. Dunne, *Consciousness and the Source of Reality: The PEAR Odyssey*, ICRL, Princeton, 2011.
13. H. P. Stapp, "Quantum theory and the role of mind in nature," *Found Phys*, Vol. 31, pp. 1465-1499, 2001.
14. S. Hameroff, R. Penrose, "Consciousness in the universe, A review of the 'Orch OR' theory," *Phys Life Rev*, Vol. 11, pp. 39-78, 2014.
15. D. Raković, "On quantum-holographic bases and frontiers of integrative medicine and transpersonal psychology: Psychosomatic, epistemological, and spiritual implications," in: G. Brekhman, M. Sovilj, D. Raković, eds., *Proc. 1st Int. Congress on Psychological Trauma: Prenatal, Perinatal & Postnatal Aspects (PTPPA 2015)*, LAAC / IEPSP, Belgrade, pp. 59-72, 2015, and refs. therein.
16. D. Raković, "On extended quantum-holographic framework for consciousness and free will: Round trip from science to spirituality", *International Journal of Prenatal & Life Sciences*, Vol. 3(3), p. 27, 2019, DOI:10.24946/IJPLS, and refs therein.
17. D. Raković, "Nikola Tesla as a case study for quantum-holographic correlations of individual and collective consciousness: Creative and spiritual implications", in: *Proc. Speech & Language 2019*, M. Subotić, S. Maksimović, eds., LAAC / IEPSP, Belgrade, pp. 17-26, 2019, Invited lecture, and refs. therein.
18. D. Raković, "Quantum-holistic framework of transpersonal psychosomatics: Complete healing and spiritual integration", *Int. J. Supervision in Psychotherapy*, No. 3, pp. 55-69, 2021.
19. Cf. also website <http://www.atpweb.org> of the *Association for Transpersonal Psychology*, founded by the beginning of 1970ies, considered by A. Maslow as the fourth force in psychology, alongside with psychoanalysis, behaviorism, and humanistic psychology.
20. L. Susskind, J. Lindesay, *An Introduction to Black Holes, Information and the String Theory Revolution: The Holographic Universe*, World Scientific, Singapore, 2005.
21. V. Vedral, *Decoding Reality: The Universe as Quantum Information*, Oxford Univ. Press, Oxford, 2010.
22. A. J. Leggett, "Macroscopic quantum systems and the quantum theory of measurement," *Prog. Theor. Phys. Suppl.*, No. 69, pp. 80-100, 1980.
23. C. Levinthal, "Are there pathways for protein folding?," *J. Chim. Phys.*, Vol. 65, pp. 44-45, 1968.