

MEDICAL ASPECTS OF THE QUANTUM PHYSICS OF THE ALIVE

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Abstract: It was shown how through the integration of the West knowledge and Oriental experience new approach to the problem of the living matter had been forming. In the scope of this approach we are seeking the way to the creation of the Theoretical Biology and Medicine. The confidence in it is coming from successful treatment of many thousands "incurable" patients with the methods of Quantum Medicine.

Key words: Physics of the Alive, Animate and Inanimate Nature, coherence, laser of mm-range, nonlocal self-consistent potential. Channel, West and Oriental Medicine, gene, Macroscopic Quantum Mechanics Entirety, time, reversibility, integrable system, BAP.

There is a great gap between approaches to the problem of human health restoring (and to the nature of the alive in general) in the West and in the Oriental Cultures. The West science and specifically medicine is based on the "atomistic paradigm". It means that only results received in microscopical investigations are allowed to accept as representative ones, and conversely — the results of macroscopic investigations are regarded at best as preliminary step before beginning of the thorough microscopical study.

At the same time in the traditions of the East (Oriental) Science (including medicine, and moreover, medicine in the first line) the Holism takes an essential place, providing look on the Man as on a cosmical entity. In the framework of such approach Oriental medicine is compelled to use inobservable, immeasurable (to the last time) and, mainly, alien for European mentality categories. And therefore despite of the remarkable successes of Oriental (and in the first place, Chinese) medicine (but may be just due to it) European science looks on it as on a mysticism.

As a result of the "atomistic paradigm" we have medicinal therapy, which also could be named "chemical therapy", because in its scope curing action is realized through short-range chemical influence on the succession of chemical reactions in the sub-cell structures of living system. It's understandable since biochemical cycles and chains of reactions are spacially located and could be at least in principle under experimental control. Therefore by to-day we are able not only to describe processes proceeding on the cell and sub-cell levels of the alive but in some cases to achieve comprehension of the functions, being realized by an organism on these levels. As example of the last we could recollect the deciphering of the mechanism of chromosome heredity in the successive chain from nucleotides to amino acids and farther to proteins (Watson, Crick, and others) and storing of metabolism energy, as a charge on the cell membranes what fulfils through proton transport (Mitchell).

But at the same time it remains unclear how it's realized synchronization of the processes going in million and million cells of body, how it's organized the differentiation of cells and tissues or how it's realized gene information on the level of entire body. These inquiries come us may be to the most significant problem of whole science: What is the difference between dead and alive matter? And we would prefer to receive answer not on the qualitative, descriptive level of Oriental

Philosophy and not on the semi-tautology definition such as: “Life is the way of existing of protein stuff” (Engels). We should like to have a quantity definition of the distinction between dead and alive matter. Moreover the term “quantity” ought to satisfy the claiming and criteria of modern scientific standards.

First of all I should like to emphasize that the “chemical force” is one of the modification of electromagnetic force, which realizes itself in a contact interaction of reagents. It means that this force is a **short-range component of principal electromagnetic interaction**. In the conditions of solid state due to screen-effect long-range components of electromagnetic interaction are eliminated and therefore, microscopical approach is justified in this areas of traditional Physics. But proceeding to the animate nature we notice the lacking of such approach.

Indeed, analysis of the bulk of experimental results through a prism of the last achievements of science (such as synergetic, theory of dissipative structures and so on) has convinced us that remaining in the framework of short-rang force of the chemical nature it's unable to explain in principle the possibility of origin and existence for relatively long time the macroscopic forms of living organisms. In other words being in scope of tradition paradigm we in principle cannot come to understanding of the gist of distinguishing animate nature from inanimate one. I think that H. Fröhlich was the first [1] who attracted our attention to this problem and, moreover, he foresighted that the exit from this situation lay on a way of consideration of “Biological Coherence” [2] which provided possibility of creation of **the effective long-rang interaction**.

Filling of the notion of Biological Coherence with the constructive contents began in 1982 when it was manifested the displaying of the characteristic eigenfrequencies of the human body [3]. We have shown the possibility of restoring of the state of the patients by means of influence of low-intensity but sharp-tuning on frequency electromagnetic radiation of mm-range on sick men through their Biology Active Points (BAP). It is important to emphasize that the BAPs coincide with the Points of Acupuncture well known in the Ancient Chinese Medicine. The studing initiated by discover of above mentioned phenomenon has shown that we had touched the property immanent only to the Alive.

The conclusive experimental results [4] and first of all the huge clinical experience gained in cases of successful treatment in different countries of many thousands patients suffered from diseases which listed as “incurable” for ordinary therapy [5] — have given me base for the perception of the role of coherence electromagnetic waves of organism in providing of its genetical entirety and ensuring of variety differential stability of the Alive [6]. This recognition has enabled me to formulate the hypothesis about the place of the Alive on the Weisskopfs Quantum Ladder of Nature. This hypothesis is very and very potentially vulnerable because it has pretensions to be converted to the foundation of the Theoretical Biology and therefore it has not to contradict any good established knowledge and conclusive experimental results in the Biology as well as in West and Oriental Medicine.

The hypothesis could be shortly formulated in such a way. Any functioning as an entire living system is simultaneously macroscopical quantum-mechanics object and laser of mm-range [5, 7]. It was shown that just this insight has given a possibility for non-contradictory explanation of all bulk of experimental data including treatment of “incurable” diseases with the accounting quanta of

electromagnetic radiation ($\sim 10^{-20} \text{W/Hz}\cdot\text{cm}^3$) [4, 5]. The forming of this idea has been based on the perception that the chief principles of Quantum Mechanics — identity and discreteness — and only these principles — stipulate the variety differential stability of the world on the three levels of its quantum organization. It is three steps of Weisskopf's Quantum Ladder — nuclear, atomic and molecular — and in conformity with them three existing fundamental sciences. I guess that the variety differential stability of the Alive, in other words, the existence of species and individual peculiarities of plants and animals ought to have the same reason — they are the Quantum Mechanics Entities.

The problem of reality of quantum mechanics entirety of macroscopic objects is toughly connected with feasibility in it of unitary nonlocal self-consistent potential. Under ordinary conditions of solid state the existence of such potential is impossible. That's why usually in macroscopic physics we deal only with "quantum effects", when extraordinary conditions are arisen, in case, for example, of superconductivity, superfluidity, inverse inhibition (laser's regime), plasma's state and so on.

What is the situation in the living matter? First of all I should like to remind about existence of the huge electrical field ($\sim 10^5 \text{V/cm}$) on the protoplasmic membranes of every living cell. Keeping in mind that physical properties of the membranes give them possibility to oscillate with the eigenfrequencies in the range of (10^{10} - 10^{11}) Hz (i.e. in mm-wave length band for vacuum) we have to conclude that every cells of every living organisms enable to be looked at as an active center, i.e. the source of electromagnetic radiation. Despite of it we as usually cannot say in advance that the existence of active centers in the medium is enough condition for converting into the regime of laser's generation. Very strong absorption in tissues in principle could prevent system from going through the threshold of nonequilibrium phase transition. And here we ought to appeal to the notions of the Oriental Medicine.

The point is that the BAPs are disposed on the surface of the human body not in the random way, but most of them lies on the special tracks named Chinese Channels [for example, 8] better to say on the outside tracks of these Channels, because besides them there are inside tracks of Channels going according to the Oriental Philosophy through main organs of the body. Thus twenty six Channels pierce whole organism and it would seem that the mechanism of action of the Acupuncture could be easily understood. But unfortunately that was not right, because there is no morphological peculiarities connected with the tracks of the Channels, while the traditions of the West medicine demand visualization as obligatory condition of reality.

Rudenko Effect [9] (the detecting of the Channels' tracks with the aid of weak magnetic fields compared on intensivity with the Earth one) has displayed the narrowness of this point of view and demonstrated the electromagnetic nature of the Chinese Channels. This fact as well as the stability of location of Chinese Channels trajectories and the gauge invariability of their length and fragments of the length between principal anatomical peculiarities of body [8] have given me a possibility to look at these Channels as the projections on three-dimension space the phase trajectories of the steady coherent waves of medium (limit-cycles).

In the scope of such approach the existence of the Chinese Channels alone is enough for proving the existence of the non-local self-consistent electromagnetic

potential of the whole body and consequently for proving the existence of the effective long-range forces (interactions) providing the quantum-mechanics entirety of the organism beyond threshold of non-equilibrium phase transition.

Indeed, the limit-cycles would be regarded as a displaying on the phase plane the stable solution of the simplest non-linear differential equation used in synergetic [7]:

$$\dot{q} = k_1 q - k_2 q^3 \quad (k_1 < 0, k_2 > 0)$$

with the one-dimension Landau-Haken potential:

$$V(q) = \frac{k_1 q^2}{2} + \frac{k_2 q^4}{4}$$

As it's known [10] this potential after transition to two-dimension picture could be presented as a bottle bottom like system with the steady moving of "a probe" along a chute on the circle trajectory imitated electromagnetic limit cycle.

By the way, such "synergetic form" of quantum-mechanical potential, being revealed in this situation, has permitted me to generalize this result on the tradition quantum mechanics tasks. It has also stimulated my suggestion to substitute an ordinary used forms of potential wells, which had given solutions in form of standing waves, to synergetic potentials with the solutions in form of running waves [11].

This substitution attaches physical sense to the mechanism of quantation of the energetical levels regenerating in such a way intuitive provision had been made by N. Bohr.

The running coherence electromagnetic waves are being formed, in the non-linear medium of human body and are spreading inside of it according to the ordinary laws of non-linear optics for closed resonator filled with non-linear absorption medium with the active centers. The principle of minimum losing requires for these waves to fall on the surface of skin from inside under the angles, greater than the angle of total internal reflection for the medium. The analysis of the location of the Points of Acupuncture along the outside tracks of Channels has confirmed this prediction [6]. The dimensions of the cross-sections of the beams of the Channels are defined with the condition of saturation of the medium along the tracks of Channels and for the most ones the precise forming, according to our supposition, could be realized through reflection from fingers' and toes' nails [6].

The next question is the information contents of the spectrum of the electro-magnetic running waves forming the Channels in its connection with the genom and properties of entirety quantum systems. This problem is a gigantic one and now I am able only to express starting premises of its solution and some preliminary speculations.

It's well known that all somatic cells of every organism have the same genom. Just this property gives us the possibility to look on every cell as on active centre of the coherence field of an organism. To be a carrier of the gene information the coherence electromagnetic field ought to receive this information after all from DNA. I share Webb's opinion that processes in cell are also synchronized by the inside coherence electromagnetic field. I guess that the translation of chemical information on the language of electromagnetic one and reverse could be realized through the mechanism of laser chemical pumping (Polanyi) with the

participation of re-ciphering of information in line; DNA — microtubules (cytoskeleton network) — membranes (Koruga [12]). I also consider that the cell's membrane plays the role of great quality active filter with band of transmission in area of mm-range (due to its form and charge) and being governed through the system of membranes canals. This permits to eliminate the going out from the cells the high-frequency part of spectrum, which realizes the self-consistent communication for intercelling processes.

From the positions of above presented ideas there is no direct connection between either gene and the morphological peculiarities of an organism. The genes code the creation of protein molecules (as well known) and form the peculiarities of self-consistent potential well imposing in such a way the “selection rules”, which transform quasicontinuous spectrum of energetic transitions into a discrete one inherent in this organism only. In such a way it is going the formation of the spectrum of the characteristic eigenfrequencies. This spectrum defines all species' and specific for every entity morphological properties in the same way as it is on the other steps of Quantum Ladder. So, spectra of the characteristic eigenfrequencies are the universal Passports of all stable entirety, as for inanimate and animate nature.

In this connection I would like to state my opinion on the issue discussed very intensively in the books and on the pages of scientific magazines especially lately, when ideas of synergetics and theory of dissipative structures have revived interest to the problems of time and its reversibility, entropy, integrable and non-integrable systems, chaos and so on [13].

Proceeding from this short expounded conception of the Physics of the Alive I guess that:

1. The notion “Integrable system” is equivalent to the notion “Entirety Quantum Mechanics system in the ground state”.

2. The Entirety Quantum Mechanics systems (nuclei, atoms, molecules, living objects) in a ground state are described with the periodical wave functions type of $\psi \sim e^{imt}$. In the attempting of recognition of the nature of time's non-reversibility the sign of imaginarity $j = \sqrt{-1}$ usually relates to the frequency (energy) [13] introducing in such a way the notion of complex energy that seems some artificial. I attribute “j” to “t”. It means that in ground state the Entirety Quantum Mechanics Systems have not got real time. As an example, for atom of hydrogen in the ground state we are unable to ascribe the notion of “time” (What is the age of this hydrogen atom?) despite that it exists in the world where time is going on. Only in case of external influence (transition to excited state, radioactivity) it is appearing real part of complex time: “time of life” in excited state, “period of half-delay” in radioactivity.

3. The category “time” is emerging as a gauge of the interaction between particles (in general case the interaction between Entirety Quantum Mechanics Systems).

Time is growing with the increasing of interaction (number of particles). Uniform space conforms uniform time. In other cases we have more complex relation between time, space and matter. From here we could try to turn round to the relativity conceptions of A. Einstein.

But if the Particles or Quantum Entireties put together and form new Entirety Quantum Mechanics System, real part of complex “time” vanishes and System begins to be described by the periodical wave function with the imaginary time. On the language of classical physics it means that we have come to regime of integrable system and can exclude from Hamilton operator (and hence from the total energy) potential energy, i.e. we can perform the canonical transformation and show that in new coordinates (angle — variable of action) there is no interaction of integrable system with the remaining world. The integrable system depends from only one variable—an action, so as Entirety Quantum System is described with only one wave function.

The issues of Theory of Development, in general, and Embriology, in particular, are also in the sphere of interests of Physics of the Alive. Now we are trying to understand the mechanism of the Embrion’s “electromagnetic framework” formation in its self-consistency with the biochemical development of a baby. It is essential to underline that the ideas of Physics of the Alive don’t contradict to the existence of biochemical picture of the Development. On the contrary, these ideas are filling the lacunas in this picture. We attempt to find the modern physical realization of mathematical ideas, connected with the problem of formcreation and morphogenetical fields [14]. I keep in mind in the first line the topological models with theory of graph’s stability [15]; the approach to the philotaxis and the geometrical construction of the different representatives of animate nature from the position of the Limited Magical Quantum Entirety — Science of Numbers with the Fibonachy numbers, Golden Mean and so on [16]; the conforming reflection and the projective geometry as possible mathematical foundation of ontogenesis [16]; the Fractals theory with the Hausdorff dimention and its role in the grounds of 5-dimentionations World to have come to the insight of the Alive [12]; the substantiation of imaginarity for two from five above mentioned coordinates to imitate through Mandelbrot’s set the Diversities of Life in *any of non-linear medium* [17].

Even some years ago many from the written in the last sentence would sound as mystical text, but now it is the area of the interest of West Science [18].

Thus I consider that the creation of the Science of the Alive which has just being begun will go on the way of integrity of the West and Oriental Knowledge, by so the contribution of the Oriental one will be not a bit less.

МЕДИЧНІ АСПЕКТИ КВАНТОВОЇ ФІЗИКИ ЖИВОГО

С.П. СІТЬКО

Показано, як через інтеграцію західної науки та східного досвіду сформувався новий підхід до проблеми живої матерії. У світлі цього підходу ведеться пошук шляхів для створення Теоретичної біології та медицини. Впевненість у правильності пошуку обумовлена досвідом успішного лікування багатьох тисяч “невеликовних” хворих методами квантової медицини.

МЕДИЦИНСКИЕ АСПЕКТЫ КВАНТОВОЙ ФИЗИКИ ЖИВОГО

С.П. СИТЬКО

Показано, как через интеграцию западной науки и восточного опыта сформировался новый подход к проблеме живой материи. В свете этого подхода мы ищем путь создания Теоретической биологии и медицины. Уверенность в правильном пути связана с опытом успешного лечения многих тысяч “неизлечимых” больных методом квантовой медицины.

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