

## BOOK REVIEW

### The monograph “Biological unity of the nature and man: an esthetics-anthropological research with emphasis on phylogenesis and ontogenesis features of oro-maxillo-facial system”

Tipografia Centrala, Chisinau, 2019, 496 p.

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The offered monograph is aimed at the comprehensive complete analysis of theoretical and practical problems of the man and medicine, particularly stomatology, seeking to cover unity of historical, philosophical and natural-science approaches relevant for modern anthropology and the world culture of the XXI century in general.

The author published 79 scientific works (articles and theses) reflecting his monograph subject: 13 in national and 66 in the international specialized editions; 1 methodical module; 1 national and 2 international collective monographs. The chosen bibliography is divided according to heads and includes 814 sources. Author's methodical module “Modern concept of development and shaping of a maxillofacial system of the man” (2012) and monograph “Esthetic, spiritual and moral heritage of N. K. Roerich: waiting for demand” (2013) are introduced in pedagogical process in higher educational institutions and practical activities of treatment and prevention institutions in Russia, Belarus and Ukraine.

It is important to emphasize that the author of monograph's foreword is A. I. Subetto, the President of Noosphere public academy of Sciences, academician, member of Presidium of Petrovsky academy of Sciences and Arts, Doctor of Philosophy, Doctor of Economics, Candidate of Technical Sciences, professor, the Honored man of science of the Russian Federation, the Grand doctor of philosophy and Full professor (in the Oxford educational network), St. Petersburg, Russia. It is noted that magnificent alloy of unity of the person and the universe, matter and form, beauty, good and the truth is presented in the monograph. It gives to the reader the chance not only to physically feel this unity, but also to show how such integrated knowledge begins to serve any particular private affair, creation of any technology, for example, technology of dental care in the present and the future. “We live during the Era of the Great Evolutionary Change”, (quoted on page 9).

Part I is devoted to one of fundamental problems in science, evolution of life and differentiation of forms on Earth. It includes four chapters: 1) Nature, Man, Universe; 2) Life and crystallization; 3) Evolution of the person and biotechnologies; 4) Nano-revolution and evolution of teeth. Scien-

tific facts, knowledge accumulated in millennia by mankind in their common cultural context are revealed in detail from various cross-disciplinary points of view (history, philosophy, biology, physics, biomechanics, etc.). Indissoluble thread of continuity between philosophers of various eras and medical science is underlined, which uniting purpose is knowledge of Man, Nature and Universe. The author comes to the conclusion that more profound study of the general evolutionary principles of development and functioning of plants and teeth, is capable to bring us closer to answers to many questions of an embryo-morphogenesis of tissues of an oro-maxillo-facial system. This conclusion is especially important because studying of mechanisms of differentiation and laws of variability of the teeth structure is one of fundamental problems of anthropological odontology.

It should be noted that through all many-sided research revealed by the author on macro and microlevels in various objects of the organic and inorganic nature can be found regularity of fractal geometry. It is fairly noted that “fractals open simplicity in the difficult material world of objects surrounding us.” (quoted on page 27). Now fractal geometry is developing in different high-precision technologies including in methods of the destroyed teeth restorations.

Results of works of great scientists I. Goethe, T. Shvann on studying analogies in the nature and a human body allowed the author to carry out the comparative analysis of established facts between the structure of tooth tissues and plants. His own observations gave the idea of probable, from the evolutionary point of view, similarity between a morpho-functional role of a cambium of plants and enamel-dentine junction of teeth as according to I. Goethe “any being is an analog of everything existing” (page 39-40). In this context attracts attention thesis of V. I. Vernadsky, recognized by world science of the XX century (quoted on page 31): “empirical generalizations on the basis of the exact and indisputable facts are the strong and firm ground for the description of an overall picture of a set of the (coming true) processes taking place around us or occurred far back in the past, even if sometimes these facts do not stand the logical analysis, owing to their incomplete studying and incomprehensibility by contemporary scientific thought”.

Part II is devoted to laws of the universe in the composition, development and biomechanics of an organism and oro-maxillo-facial system of the man and also includes four chapters: 5) Gold proportions, Fibonacci's numbers and law of a phyllotaxis; 6) Spiral symmetry as universe matrix; 7) Vibrations and a sound at the heart of the universe. Wave biomechanics; 8) Bionics – cross-disciplinary science about knowledge of structural unit of a living organism.

The author presented the extensive analysis of the cross-disciplinary scientific facts and results of own researches in studying of the general regularities of spiral biosymmetry, a gold proportion / golden ratio and a numerical number of Fibonacci both in the nature, and in the organization and shaping of structural elements of a oro-maxillo-facial system. The work reveals the key role of spiral biosymmetry in evolutionary formation of tissues and organs of a human body. The double spiral of DNA can be considered as one of classical examples of total perfection and compactness in the form of the information carrier of the genetic code created in natural laboratory. From these positions is proposed the phyllotaxis theory of the mechanism of a teeth eruption. At the same time, relying on the principles of dichotomic growth as the most ancient type of phyllotaxis growth in the nature, the author offers the original scheme of an embryonic development of the head and a maxillofacial system.

Understanding of the general regularities in development and differentiation of tissues in the nature helps to look from the other point of view at features of architectonics of the occlusal surface of molars. As a result the author marks out three types of expressiveness of natural furrows (fissures) on permanent molars, that play extremely important role in normal functioning of teeth rows, muscles and temporo-mandibular joints: 1) molars with full disappearance of fissures of the II order in the field of the central hole; 2) molars with simplified architectonics of occlusal surface, with deep and wide fissures; 3) molars with complicated architectonics of occlusal surface with superficial and narrow fissures.

The theoretical biomechanical model of solid tooth tissues on the basis of quantum mechanics is originally presented. Biomechanics studies mechanical properties of biological tissues, organs and an organism in general and also the mechanical phenomena occurring in them. It is emphasized that the unity of the nature and universality of its laws are not shown as brightly anywhere, as in the oscillatory and wave phenomena. With all evidence it becomes clear that interstitial reaction during the function of chewing is followed by microfluctuations which extend from the centers

of occlusal contacts. As we know, fluctuation is the movement to the opposite sides around some average position. And the author has proved it convincingly in detail, leaning on the known scientific facts.

The author notes that bionics as a science has begun its formation in the second half of the XX century and great interest to it is caused by considerable practical orientation of this science studying the principles of construction and functioning of biological systems, first of all, for the purpose of creation of new technologies – materials, tools, devices, mechanisms, etc. Bionics studies the most various characteristics of living organisms, including characteristics of material, energetic and information systems. On clinical examples are demonstrated the developed biomimetic “spiral” principle of reinforcing of walls of a tooth and modeling of a pinlay (intra-root incrustation) is shown with the help of a microhybrid composite.

It is important to note that readers can open absolutely new sides of the Unity of Nature and Man which consists not only in community of molecular and genetic bases of evolutionary development on Earth, but also in architectonics of tissues on micro- and macrolevels. This fact, according to the author, can become an additional incentive for the development of bionics and more widespread introduction of its achievements in the general medicine and stomatology.

The work considers the prospects of the modern scientific directions on the basis of biomimetic nanotechnologies, robotics, genetic engineering and also their positive and probable negative influence on a human body and civilization at present and in future. The author comes to the conclusion that “prevention is the most universal medical technology which was and remains the protection of health of each person and its level is the indicator of health of the population in any country of the world” regardless the colossal rate of science, material and technological base development (quoted on page 431).

Thus, the presented monograph covers a wide range of questions and problems which are not lit enough or are practically missing in special literature and therefore it is a unique cross-disciplinary scientific work in modern stomatology and conforms to all international requirements. The monograph is recommended for a wide range of specialists, students and graduate students of medical schools, dental faculties, and doctors.

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