

SHOULD THE NEW EVOLUTIONARY SYNTHESIS ACKNOWLEDGE “MEMORY OF WATER” AND THE TENDENCY TO SELF-ORGANIZATION OF AQUEOUS SYSTEMS?

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There are many indications that with the advent of the XXIst century two long awaited revolutions in life sciences are coming. One of them is the cardinal revision of the mechanisms of biological evolution. Another revolution comprises comprehension of the fact that living matter represents aqueous systems, and that all its properties are defined by the peculiar properties of water no less than they are defined by the properties of other chemical substances (Albert Szent-Gyorgyi: “Life is water dancing to the tune of solids”).

It may be stated that to this day the first revolution that has practically started just on the eve of the XXI-st century surely wins. For about 100 years the Synthetic Theory of Evolution (Neo-Darwinism) was considered to be the theoretical foundation of Biology. In a nutshell it is based on the Darwinian principle of Natural Selection of the fittest organisms that may originate from heritable variations of chance mutations of genetic material (DNA). Currently it becomes acknowledged by the majority of biologists that biological evolution precedes according to the principles formulated by Jean-Baptist Lamarck half a century before Darwin. According to the Lamarckian concept, living organisms possess intrinsic activity for the perfection. In response to changing environmental factors organisms actively adopt to fit the novelties. Adaptive changes of living organisms can be inherited in their progeny providing for the transmission of the acquired successful traits in generations. General public mostly knows Lamarck for the admittance of the principle of inheritance of acquired (beneficial) traits (IAT) that was ridiculed by the academic biology for the whole XXth century. As regards his “intrinsic activity” principle it was simply neglected as “vitalistic” and “unscientific”. Rehabilitation of Lamarck means that the major principles of biology undergo currently revolutionary changes.

The principle of intrinsic activity implies that living organisms use internal competences for the performance of functions for their self-development and sustaining alive. Besides an organism actively extracts energy-matter from its environment and is capable to concentrate energy in living matter organized as low entropy coherent dynamic structures. Thus an organism has higher energetic potential than its (immediate) environment and incessantly transforms this potential into free energy used for the performance of all kinds of vital activities. Being intrinsically active a living organism is very sensitive to irritations coming from the environment and reacts to them by adaptive reformatting.

Lamarck argued that intrinsic activity and the responsiveness of living things to external factors is provided by the nature of chemical material of living things -- gelatinous and mucilaginous matter and by self-organizing dynamics of fluxes of “subtle fluids” (electricity and heat) that shape this “active aqueous entity” in a way that leads to its self-maintenance and complexification. Thus Lamarck envisaged that all the properties of living systems are based on intrinsic properties of water – the major constituent of living matter providing for its dynamic organization. Recent evidence demonstrates that aqueous systems represent active complex systems in which different energy gradients always exist between phases. External “irritations” (electromagnetic, mechanical, material fields often of very weak intensity) can stably change characteristic dynamic properties (“mater memory”) of aqueous systems. New properties may be transmitted to “naïve” aqueous systems being the physical basis of IAC. Aqueous systems can evolve in the direction of increasing their complexity, free energy content, and efficiency in using this energy for both sustaining in non-equilibrium state and performing external work over their environment.

The time has not yet come for the acknowledgement of the peculiar properties of aqueous systems by the wide scientific community, but hopefully universal acceptance of the Lamarckian concept of biological evolution will promote the development of the science of water because even according to Lamarck active aqueous systems represent the material basis of self-organizing living systems striving for perfection.