

Autotrophy, Atom Isotopy, Consciousness

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Summary. The paper discusses the bio-geo-chemical isotopic processes in inert, active and living systems based on the autotrophic worldview. The paper further discusses the problem of consciousness.

Among the lectures on mineralogy and geochemistry given by V. I. Vernadsky at the University of Paris in the early 1920s, one discussed the Autotrophic Humankind and proposed the idea of the inevitable transition of humankind from a heterotrophic (parasitic) state to an autotrophic state. In 1925 the lecture was published in French and in 1981, in Russian. The final, 19th chapter of the paper cleverly links the autotrophic processes in the human organism to atom isotopy in inert and living systems (matter) [1. P. 462-486].

We would like to focus on Vernadsky's last idea of atom isotopy in inert and living matter. Vernadsky defined the biosphere as a portion of the Earth that is covered by the living matter. At the same time, the biosphere also includes inert bodies, which dominate it by volume and mass. The inert, non-living substance and the living matter constantly exchange matter and energy through ordered movement of atoms caused by the living matter. The living matter is unique in that it can derive and synthesize (through photo- and chemosynthesis) individual types of isotopes. It is an example of cold fusion of sorts in living organisms. The biogenic stream of atoms (breathing, feeding, reproducing) generated by the living matter is balanced and organized, despite the heterogeneous structure of the biosphere.

V. I. Vernadsky's genius has expanded the evolutionary autotrophic process beyond the living matter, to the social matter. Socialization of autotrophy brings the scientist closer to solving one of the greatest human mysteries – the mystery of consciousness. The scientist discusses the future autotrophic technological movement through the lens of the bio-geo-chemical isotopic processes in inert, active and living systems. He connects the development of humans and human consciousness with the natural history and cosmic events.

Vernadsky always emphasized that there is no impenetrable border between the matter and consciousness, i.e. consciousness is a special type of matter, and if consciousness is a matter, however special, just like any other matter (whether inert or living) it hosts isotopic processes [2.

P. 40]. The living and the inert (autotrophic and heterotrophic) constantly evolve into one another through the endless processes of life, changing the isotopic structure of atoms: “Oddly, I am arriving to the conclusion that isotope atoms are different in the living and the inert,” writes V. I. Vernadsky [3. P. 244-245]. Developing his thought further, we can assume that they would be different in the social, too.

Isotopic processes are linked to natural or artificial (caused by humans) movement of neutrons in nuclei, which changes the quality of chemical elements. But movement (migration) in the social matter is directed by evolution and is a “continuous, occasionally halted growth of the central nervous system of animals over geologic time, in its meaning in the biosphere and its impact on the environment” [4. P. 27]. The inert layer of the biosphere does not possess the quality of irreversibility, reversible circular physical, chemical and geochemical processes strongly dominate the living matter. The living matter, especially as it transforms into the social matter by generating the scientific thought (the noosphere), is driven by evolution. Ordered movement of neutrons in living and social systems creates the highest form of consciousness – cognition. In 1938 V. I. Vernadsky wrote: “Mysticism is foreign to me, but I am aware that huge areas of consciousness remain unknown, although they accessible to scientific thought... Cognition—Thought in their anaximandrian aspect are connected to isotopes.” [5. P. 179] It appears that consciousness has a multilevel and multidimensional structure and is inherent to all matter, not just the social matter, but the living matter as well, and potentially even the inert matter. Consciousness is found everywhere, although it manifests differently in various components of the biosphere, which in time, inevitably gives rise to the thinking, social matter.

References

- 1 Vernadsky Vladimir. Zhizneopisanie. Izbrannye Trudy. Vospominaniya Sovremennikov. Suzhdeniya Potomkov / by G. P. Aksenov. – M.: Sovremennik, 1999. – 688 p.
- 2 Vernadsky V. I. Dnevnik, 1917-1921. – K.: Nauk. Dumka, 1997. – 326 p.
- 3 Vernadsky V. I. Dnevnik. 1935-1941. 2 Volume Edition. Volume 2. 1939-1941. – M.: Nauka, 2005. – 295 p.
- 4 Vernadsky V. I. Filosofskiye Mysli Naturalista. – M.: Nauka, 1988. – 520 p.
- 5 Vernadsky V. I. Dnevnik. 1926-1934. – M.: Nauka, 2001. – 214 p.