## THE DUALISM OF ECONOMIC SYSTEMS AND ENVIRONMENTAL ISSUES

Leonid Melnyk

Sumy State University, Ukraine

Physicists know the so-called effect of dualism, when particles at the same time exhibit properties both of discreteness and field (photon wave) (Фейнман, 2004). But if certain effects are inherent in the microworld, do they work as well at the macro level – at the level of economic systems? In particular, do economic agents show qualities similar to properties of discrete particles and fields? Most likely, we can say yes to that, to some extent any part of any system, including economic has the property similar in its manifestation to dualism.

**The phenomenon of dualism** lies in the fact that a particular element has both properties: a) discrete unit (corpuscle), which coordinates can be uniquely determined in space and time as a certain point, and b) field-essence, which has a substantial length in space and duration in time.

Economic systems exhibit their field properties in space and time:

- in space as medium of economic relations: first, with suppliers of inputs, and secondly, with consumers of goods, thirdly, with state that provides social services and fourth, with population of the concrete territory (administrative region) delegating the right to dispose public (natural and infrastructure) assets of the area elected to the local authority and administration; fifth, with a variety of competitors (for resources, for potential customers, with the possibility of using limited natural resources and infrastructure), sixth with lower-level structures (subsidiaries and conjugated enterprises);
- *in time* as subjects, which are the subjects of cause-effect relationships: first, as a result of the events that took place *in the past* (being the carrier of heredity, and history of their predecessors), and secondly, as a source (cause) of events extended *in the future*.

For example, we can say that every company creates prerequisites for the operation, respectively, resource providers and consumers of their goods.

The automobile industry development in the United States is an excellent illustration. The car (assuming the specific company for its production) has created infrastructure, related products, life style of America, provided the development of petrochemical industry, road construction, tanker fleet, cars service, training drivers for road police control and nowadays satellite navigation, and many other things.

Economic research of 1960-1970 allowed "see" another facet of the virtual images of the field nature of economic agents. A new economic concept — "externalities» became to be used in everyday life (Classics, 1997, Markandya, 2002). Non formalized effects of businesses that are not "captured" by the official (documented) system of economic accounting businesses that they have produced are called so. More often externalities are understood as environmental impacts. In principle they can be any results that are perceived by other economic agents from the activities of enterprise (Bithas, 2011, Van den Bergh, 2010, The Economics, 2011).

Thus, each company creates a unique information-energy field. Directing capital flows of different degrees of power in different areas (sectors) of activity (eg, resource production, or use of goods), this field is the source of a specific quasi-energy of companies. And this energy is in a certain way directed and concentrated by the information. The mentioned above gives grounds to speak about the information vector of the energy field. The field spreads in space and extends in time. As we have seen, this field can have both negative and positive value, bringing destructive effects or additional benefits of economic and informational forms to other businesses (for example, in the form of increased costs, damages, lost profits).

The role of economic dualism in the evolution of economic systems. The formation of quasi-energy field is a prerequisite for creating variability in the possible change in economies state. Each of the virtual variants of development options for economic systems evolution must pass natural selection, proving its worth in terms of efficiency and the ability to reduce the production of entropy. In his Nobel speech, and a number of publications, Nobel Prize winner Werner Arber has suggested a genetic dualism which manifests itself at the level of biological organisms. In particular, the genetic mechanism is responsible for not only life and development of each individual biological organism, but also the evolution of the entire population to which it belongs (Arber, 2000). Similar processes occur at the level of economic systems development, which content and form are determined by the mechanism of evolutionary triad (heredity-variation-selection) operating in tough competition.

## References:

- 1. Фейнман Р. Характер физических законов; пер. с англ. / Р. Фейнман. М.: НЦ ЭНАС, 2004. 176 с.
- 2. Arber W. / Genetic variation : molecular mechanism and impact on microbial evolution //FEMS Microbiology Review. (ELSEVIER).  $N_2 = 24. 2000. 1 7 p.$
- 3. Bithas Kostas. <u>Sustainability and externalities: Is the internalization of externalities a sufficient condition for sustainability?</u>/Bithas Kostas // Ecological Economics. Volume 70. Issue 10. 15 August 2011. P. 1703–1706.
- 4. Classics in Environmental Studies: An Overview of Classic Texts in Environmental Studies / Editors: N. Nelissen,
- J. Van der Straaten, L. Klinkers. The Hague, the Netherlands: International Books, 1997. 424 pp.
- 5. Markandya A. Dictionary of Environmental Economics / A. Markandya, R. Perelet, P. Mason, T. Taylor. London : Earthscan Publication Ltd, 2002. 196 p.
- 6. The Economics of Ecosystems and Biodiversity in National and International Policymaking Edited by Patrick ten Brink. London, Washington: Earthscan, 2011. 494 pp.
- 7. Van den Bergh J. Externality or sustainability economics? / Van den Bergh Jeroen C.J.M. // Ecological Economics. Volume 69. Issue 11. 2010. P. 2047–2052.