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BIOLOGICAL ROOTS OF KNOWLEDGE

An inspection into the contemporary theory of knowledge shows that a new methodological stance, that is, the so called evolutionary epistemology or, equivalently, evolutionary theory of knowledge, which is a version of “naturalistic” turn has been established. This stance tends to consider various philosophical problems from concrete scientific positions and by means of scientific knowledge. This interdisciplinary enterprise has determined as its purposes the researches of biological preconditions of human knowledge and the explanation of its features on the basis of the modern synthetic theory of evolution.

The paper concerns the thesis that the reality cognizable by man is the reality designed, created during his personally involved communicative activity. In this perspective, the question “What is the object of knowledge?” becomes inappropriate. The reliability of knowledge consists in being able to behave adequately in individual enterprising and in co-operation with other subjects.

The analysis of contemporary epistemological researches shows the importance of a rather new epistemology, based first of all on biology, belonging to the class of naturalistic ones. Those interdisciplinary investigations concern biological preconditions of human knowledge and an explanation of its features on the basis of the modern synthetic theory of evolution. In the English-speaking countries this stance is called “evolutionary epistemology”, and in Germany *Evolutionäre Erkenntnistheorie*.

The founder of the evolutionary theory of knowledge is an Austrian scientist, K. Lorenz. His first works in the domain of the evolutionary theory of knowledge appeared in 1940-ties and received a detailed form in the book *Die Rückseite des Spiegels* (1973). Among other classical works of this philosophizing line are K. Popper's *Objective Knowledge. The Evolutionary Approach* (1972) and G. Vollmer's *Evolutionäre Erkenntnistheorie* (1975).

The term “the evolutionary theory of knowledge” is used in two meanings which are interconnected, nevertheless they represent two independent approaches covering different object domains. In the first meaning, the evolutionary theory of knowledge considers epistemological questions with the tools of natural sciences. The object domain of this approach is not the evolution of human knowledge, but the evolution of our cognitive apparatus and cognitive abilities. This evolution is considered as an adaptive process in Ch. Darwin's sense. The main representatives of this approach are K. Lorenz, G. Vollmer, R. Riedl, and F. Wuketits.

In the second meaning of the term, “the evolutionary theory of knowledge” (“evolutionary epistemology”) constructs models of the growth and development of scientific knowledge. In other words, evolutionary epistemology investigates the dynamics of empirical theories.

Among predecessors of the evolutionary theory of knowledge a special place is occupied by I. Kant. The theory of knowledge grasped traditionally answers to the following fundamental questions:

- How it is possible to distinguish true and false statements?
- Is it possible to prove the objectivity of knowledge?
- Is there a reliable knowledge?

The development of living beings always has two aspects: ontogenetic and phylogenetic. The ontogenetic development of human knowledge is investigated, first of all, by the psychology of development. The phylogenetic development is not reproduced experimentally, but reconstructed by theoretical means.

The following fundamental facts are discussed in the evolutionary theory of knowledge⁵³:

- the fact that knowledge is a function of brain,
- the hypothetical character of all human knowledge,
- features of actual knowledge,
- the dynamic character of human knowledge,
- the evolutionary origin of cognitive abilities.

The evolutionary theory of knowledge investigates epistemological and anthropological consequences of these preconditions. The man has the biological essence; from this essence in the course of evolution he receives properties and abilities, including a special ability to knowing. The whole evolution can be treated as a cognition process because any adaptation to certain conditions is connected with the reception of some information about them by the organic system.

Konrad Lorenz created an essentially new way of the knowledge process research. The traditional philosophical gnosiology described cognitive processes, e.g., sensation, perception, representation, and thinking. Data about these phenomena were taken from introspection. It has been convinced that philosophy has not other methods. In the XX century this approach has been rejected by the most of epistemologists belonging to the naturalistic stream. The biological evolutionary representations was introduced into epistemology by Lorenz. As the basic fact founding his conception of knowledge, he referred to the fact that human knowledge was not settled by scientific knowledge and did not begin with it. Lorenz viewed primary knowledge as much more basic than scientific. This primary knowledge has to be, in his view, a source of all knowledge. He stated that all human existence (individual as well as social) is cognitive. Cognitive processes are based on inherent person inquisitive, or research behavior. According to Lorenz, knowledge has a material foundation in human genes. Knowledge as it is grasped by Lorenz does not consist of mathematical or of logic concepts, and it does not deliver at all to men ready information about the world. It consists of the structures which permit to create information. Concerning «the list of the basic concepts», Kant was not too far from the contemporary naturalistic vision of knowledge. But, certainly, he did not know anything about the material foundations of aprioristic knowledge.

The next important step to understanding knowledge as a biological process was made by H.R. Maturana and F.J. Varela⁵⁴. They postulate that knowledge should be considered

⁵³ G. Vollmer, *Evolucyonnaya teoria poznania [Evolutionäre Erkenntnistheorie]*, Moscow 1998, pp. 13–14.

⁵⁴ H.R. Maturana, F.J. Varela, *The tree of knowledge. The biological roots of human understanding*, Boston 1988.

not as a stable representation of the world, but, more adequately, as a continuous creation of the world in the process of life. The reason is that human experience is essentially connected with our biological structure. We do not see the whole space of the world, we live in a floor of our vision. The problem of comprehension of the indissoluble concurrence of our life, our activity and our knowledge is inseparable from our experience of the world. The problem can be summarized in the following postulate: "Any action is knowledge, any knowledge is action."⁵⁵

The biological roots of knowledge are not investigated satisfactorily. As last researches show, the knowledge should not be considered as a representation of the world "in a ready form", but more reliable as a continuous creation of the world in the process of life; this approach is opposite to the traditional one.

However, it is necessary to emphasize that all human knowledge is carried out, first of all, by the use of language; this linguistic character of knowledge is a distinctive attribute of people as a biological species. For this reason language is also an initial cognitive tool. The second postulate is as follows: "Everything what is for us is told by someone." Any reflection gives rise to the world.

The nervous system is a tool by means of which the organism receives information from its environment. This system is used for constructing representations of the world; on the basis of such representations the organism behaves adequately for its survival. The nervous system expands the area of possible variants of behavior; an organism with a nervous system is an extraordinary mobile and plastic structure.

The key mechanism by means of which the nervous system covers all set of interactions of organism is the following one: the nervous system carries out communication between touch and motor systems through the neural network; the configuration of the systems can vary in the widest limits. This mechanism is realizable in many various areas of behavior of phylogenic animals and men.

It should be emphasized that the nervous system does not invent behavior, however, it expands behavior considerably in that sense that the nervous system arises in the phylogenetic history of alive essences as a network of specialized cells (neurons) of the organism so that it connects points of touch surfaces with points of motor surfaces.

Summarizing, it may be approved that the nervous system participates in the cognitive phenomena in two mutually complementary ways connected with the concrete ways of functioning of the nervous system.

The first and the most obvious way of the nervous system functioning consists in the expansion of the area of possible conditions of an organism. The realized variety is a key to the participation of the nervous system functioning in an organism.

The second way is realized through opening new means of structural communication for an organism. Owing to those means, it is possible to establish conformity between numerous various elements and various interactions in which the organism takes part.

Knowledge by means of language designs the world. The person spends his/her life in linguistic communication. Therefore he/she is in co-ontogenesis communications as the incessant transformation of the world to linguistic forms. The transformation is carried out not by individual persons but by knowing societies.

⁵⁵ *ibid.*, pp. 16–17.

The program of researches offered Maturana and Varela allows for understanding how our daily experience (the practice of daily life) is connected with the world.

The biological tradition includes all variants of behavior which in the history of social systems became obvious, regular, and comprehensible.

Summarizing: it is possible to claim that the analysis of knowledge from the biological point of view shows that there is an opportunity to expand our cognitive area. The consecutive grasping of biology as the science about the interactions of alive systems with their environment and among themselves is defined by K. Lorenz's methodological position which is called, after D. Campbell, hypothetical realism.

As Maturana and Varela emphasize, the knowledge of knowledge processes is urgently necessary. It compels us to realize that the world which each of us perceives is not quite certain and steady; we create it with others in various ways. It compels us to claim that the world comes to existence if its social reconstruction is carried out.

The basic principles of Maturana and Varela imposed on the understanding of knowledge are the following ones:

1. Any activity is knowledge, any knowledge is activity.
2. All what is told is told by someone.

Lorenz, Maturana and Varela notice especially that the biological approach to knowledge shows that the uniqueness of man consists in social structural communications inherent in him; these communications are carried out by the use of language which generates:

— laws peculiar for the social dynamics of man, his/her individual identity and consciousness,

— through social dynamics of man we can accept that as human beings we possess only that world which we create together with other people.

The question "What is the object of knowledge?" is inappropriate. The reality cognizable by man is a reality designed, created during ours personally involved communicative activity. The reliability of knowledge consists in being able to behave adequately in individual enterprising and in co-operation with other subjects. The same problem can be formulated differently, namely as the question on knowledge understood as evolutionary, interdisciplinary, communicatively-active process.