

## **History and Results of Development of Biosemiotics**

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Without repeating my presentation at the Gatherings in Biosemiotics 2012 in Tartu, I will discuss one issue that characterizes both the process of development of knowledge about biosemiosis, and its results. In the history of the knowledge of living beings (LB) we can distinguish the following superparadigms that relate to different periods of development of human knowledge and culture in general: – The totem-pagan worldview. It contains the totemic animal / plant and human interaction with these LB that occurs through language. Mythical bio-linguistics is an integral part of such cultures. – The Antique logical-epistemic understanding of knowledge, that allows to formulate questions about the language of animals (anthropomorphic understanding), rational fixation of observations on this subject and systematization of such observations. – The medieval Judeo-Christian view of the world as the Book (the Second Testament) that saw the practice of drawing up bestiaries, endowing animals with moral character and speech – starting Conversation with Animals (in What Language?) by King Solomon. – The allegories of anthropocentric based Renaissance and Early Modern times, which represent various traits in people by comparing them to animal behavior, in order to show their true personality (cunning as a fox, coward as a rabbit). – The descriptive naturalism of the 18th and beginning of the 19th centuries, where the opposition of nature versus culture grants language only to the latter. Plants and animals act as silent wonders. – The functional examination of plants and animals allowed to identify the unity of living beings and to generate biology as an independent science, physiology (mid-19th century) and ecology (beginning of the 20th century), where it becomes necessary to consider inter organism communication (birds singing, mating behavior, means of maintaining social organization in flocks, etc.); human language is regarded as the most sophisticated tool of such communication. Consideration of the functional advantages of individual populations has led to the emergence of (neo-)Darwinism, which considered the perfection of mechanisms of communication as one of the selective advantages. – Consistent exile anthropomorphism leads to the formation of ideas about reflexes (conditioned reflexes of the brain) as the basis of behavior (including the complex, in particular intellectual, activity). The psyche begins to be interpreted as an epiphenomenon of higher nervous activity, and human language, as the second signal system (as opposition to the first – [un-]conditioned reflex). Within this framework ethology, animal psychology, sociobiology and related subjects are formed and being developed (by the middle of the 20th century), each of which operates with concepts of signals, signs, symbols, etc., which is also reflected in the justification of semiotics by Ch. Morris. – The discovery of the genetic code, the realization of its semiotic status (G. Gamow) make it clear that every LB has a semiotic nature. This is seen in the representation of linguistically released biology by H. Pattee or W. Nöth's idea that all life lies above the Umberto Eco's semiotic threshold. However, it can be comprehended differently. Biohermeneutics focuses on the multi-layer biological meaning, variability of its reception 17th Annual Gatherings in Biosemiotics – Lausanne, 6-10 June 2017 55 (interpretation), bio-philology seeks to capture the history of compliance with the structural components, bio-linguistics deals with the use of the most technologically developed means of sign analysis to describe the specificity of linear sequences of the biological signs, biosemiotics traces the manifestation of semiotic universals in biological signs, biopragmalinguistics focuses on the study of how biological signs perform a particular action. – Each of the versions of the

understanding of biological signs asserts semiotic nature of LB, introduces non-anthropomorphic idea of meaning and is a methodologically correct answer to the questions of animals' language and the world as the Book. This is the main result of the development of the discussed area. At the same time, awareness of the semiotic nature of the LB is not to restructure all of biology (just like at one point Darwinism did for physiology, ecology, genetics, and molecular biology), so that without the use of semiotic categories it would have been completely impossible to produce any biological discourse. Therefore, a semiotic turn in biology cannot be considered fully implemented.