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“THEORY OF EVOLUTION”
BETWEEN EPISTEMOLOGY AND THERMODYNAMICS

Abstract

Some ambiguities prevailing in the cultural and philosophical debates on evolutionism have been examined. It has been discussed then the problem of the possibility of formalizing at least the fundamental lines of the evolutionary model, by the tools of mathematical logic.

As it concerns the contents of the evolutionary model and particularly the mechanisms at work to realize the evolutionary processes, we underline the difficulties of traditionally presented conceptions. The “combinatory” view of biology has been particularly criticized by showing that the generally accepted mechanisms allow a so high number of possible combinations, to make negligible the probability that a long series of random but coherent events could be realized, to hold a true evolutionary process.

It is suggested that the quoted difficulties could be overcome by turning toward new approaches suggested by the recent results of the scientific research. We refer particularly to non-equilibrium thermodynamics, especially in non-linear conditions (Prigogine), but also to non-ergodic systems of the statistical mechanics, to system, information and catastrophe (Thom) theories and to studies on the so called “deterministic chaos” and connected fractal geometries.