Jolanta KOSZTEYN, *Życie a orientacja w rzeczywistości przyrodniczej* [Life and orientation in reality: essays in the philosophy of living beings together with the elements of a theory of cognition]. Wydawnictwo WAM – Ignatianum, Kraków 2005, pp. 212.

„Life and orientation in the reality" by Jolanta Koszteyn was written as a textbook for postgraduate students studying at the Institute of Oceanology, the Polish Academy of Sciences (Sopot), or at the Sea Fischery Institute (Gdynia), as well as at the University School of Philosophy and Education Ignatianum, (Kraków). It consists of seven essays or chapters.

The first essay describes the complex relationship between the philosophy of the mineral world, the philosophy of living beings, the natural sciences, the philosophy of sciences and the living world as such. In the annexes to this essay the Author illustrates and demonstrates the enormous ambiguity of the term „science" and the term „philosophy".

The second essay refers to the elementary sources of cognition (orientation in the surroundings), but concentrates on the errors of the cognitive processes. The author tries to define the concept of truth, the concepts of fiction, error and forgery. She analyses two fundamental errors consisting in the refusal to see what is evident (the error of negation) and the attempt to pretend that actual fiction should be accepted as an empirical fact (the error of affirmation). This analysis is illustrated by the selected historical examples of errors commited by scientists in the past.

The second part of the same essay describes the aristotelian meaning of „science". The four aristotelian „causes" are described and analyzed. Some elementary concepts referring to hypotheses, theories, and scientific achievements are explained.

In the annexes to the second part the most interesting seem the examples of the quasi-intentional deception observed among animals and plants.

The third chapter describes the function of language in the buildup of scientific knowledge, introduces a distinction between the purely scientific approach to empirical data and the approach manifested by some modern philosophers. The main part of the essay analyses the famous research of Sprengl and Daumann who wanted to discover the mechanism of pollination in Parnassia. This case illustrates the idea of the source and validity of scientific knowledge. It demonstrates the evident fundamental role of sense data in the process of cognition. The objectivity of „qualia" is discussed. The idea of Aristotelian induction *(epagogé)* is illustrated and opposed to the concepts of the Baconian enumerative (incomplete) and the eliminative (J. St. Mill) induction.

The fourth chapter introduces the reader into a philosophical dispute concerning the metaphysical nature of living things. The controversy between the reductionist, monist approach and the pluralist approach is described. The concept of immanence and immanent activity is defined, and the substantial difference between the mineral and the living world is asserted.

In the fifth chapter the problem of the relations between the living forms and their surroundings is discussed. Two different living forms (*Mougeotia,* and Megapodidae) were selected as an illustration of adaptive behavior. The question of the dependence on or independence from environment is analyzed.

In the sixth chapter the problem of „species" is analyzed. Eight different, irreducible descriptive traits of a living form are distinguished. Some of them constitute an empirical background for the recognition of a biological species. A crucial difference between the „lower" (race, species, genus, family) and the „higher" (order, class, phylum, kingdom) taxonomic distinctions is illustrated and discussed.

The last (seventh) chapter puts forward the necessary premises of the proper description and the proper explanation of biological dynamism. Some of these premises refer to methods of observation. Some other tend to stress the difference between mineral matter, a living form and its inanimate products (like nets, nests, machines and other tools, or the *extended phenotype* (Dawkins).

The book is printed in the A4 format. It has no indexes, but the table of contents is sufficiently detailed to guide the reader, who is looking for a particular text or idea. The bibliography contains some five hundred publications, most of them referring to concrete empirical data. The illustrations are numerous (62 altogether), printed in gray scale with no color, though quite legible despite this.

The graphic composition of the text is remarkably rich – several different dimensions of the characters, differences in the margins and many other graphic tricks make the text really friendly. The cover consists of a nice mosaic of miniature designs, related to the structures of living beings. The 212 pages of the book are literally crowded by the text and the designs. In a less frugal textual composition, the book might run to over 400 pages.

The book demonstrates how the object of the scientific research determines the proper method of observation and interpretation. The close interdependence between scientific observational research and the incessant adaptation of epistemological decisions is well illustrated. The dynamism of life has its intrinsic time-scale, spatial scale, its constraints, rules and aims. These intrinsic settings of the object of study should govern the process of our conceptual formation. Scientific methodologies fitting the mineral world seem quite inadequate to describe the essential characters of life. These traits have to be reliably recognized and respected before any sound philosophy of life is conceived. The problem of part, whole and an ensemble has to be solved not in an abstract, mental sphere of arbitrary conceptual structures, but in the light of up-to-dated empirical data. If the process of mental fragmentation, or over-generalisation precedes the act of observation, then the „theory of life" remains unrelated to the phenomena of life. Jolanta Koszteyn's book does not speak for a new „theory of life". It merely prepares some foundation for further research and further synthesis.

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