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THE EPISTEMOLOGICAL BASES OF THE CONCEPT OF FORM
IN THE BIOMEDICAL SCIENCES: MODELS OF INTERPRETATION

Abstract

The epistemological bases of the concept of form in the biomedical sciences are highly elusive due to the intrinsic difficulty of justification for this concept. Morphology is the gnoseological field where the interest is maximally focussed on the form of the human body and its parts, that might be considered as a representation of a particular configuration of the matter in the tridimensional space and, therefore, described by a theoretical model. Although this concept of form has intrinsic limitations, nevertheless it requires the existence of an information as a constitutive principle, the biological information. The nature of the biological information is still matter of debate, as the idea most largely accepted is that the phenotype is primarily if not exclusively genetic in origin and, therefore it is in contrast with the presence of a source of epigenetic information. However, following the morphoregulatory hypothesis by Gerald Edelman it is reasonable to assume the presence of both a genetic and an epigenetic information, that would interact through conditions of positioning of the elements constituting the form, i.e. in relation to a specific topobiology. These conditions allow interpretation of the auto-organization of the life structures on different scales of magnitude and recognition of an equipollence among form, information and organization, leading to a *complex* vision of the biological form in accord with the “complexity” by Edgar Morin. A perspective of the biological form as information allow rational analysis of the epistemological significance of description in morphology and its inclusion in the experimental, “inductive-like” reasoning. On a different epistemological level is the abductive nature of the morphological reasoning in the diagnostic procedure, whose clinical anatomy represents the logical basis. In this case, the principles of separation and reduction owing to the anatomical analysis provide the substrate of knowledge necessary for the application of stocastic inferences, primarily of bayesian type, to the morphological component of an individual, diagnostic problem.