
Holism in biology: a restatement and defence

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Abstract

”Session: Holism and organicism: conceptual consensus or historical typologies? (Cheung, Mossio, Toepfer, Wolfe)”

The aim of this paper is to offer a conceptual characterization of holism in the biological domain, and to advocate its relevance as a scientific framework.

In accordance with an increasing number of contemporary studies in theoretical biology and philosophy of biology (Kauffman, 2002), I will submit that the distinctive trait of holism consists in taking *organization* as the fundamental notion in biology, in the light of which all biological phenomena should be understood. From a holistic perspective, what must be explained are, first and foremost, the principles of biological organization (Bertalanffy, 1962). In particular, I will suggest that holism, by shifting the focus on biological organization, opens new research lines to account for the stability that biological systems exhibit in spite of their variability, at both the ontogenetic and phylogenetic scales. This implication is especially relevant in a moment when traditional explanations of stability in molecular biology, framed in terms of genetic information, are being questioned, also because of the increasing evidence of stochastic phenomena at the molecular level (in relation to gene expression and molecular interactions, see e.g. McAdams & Arkins, 1999).

I will conclude by arguing that, more generally, holism provides a coherent naturalized framework to understand central biological dimensions such as, in particular, normativity, functionality and agency.

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