

# How (not) to be a reductionist in a complex universe

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## Abstract

This paper understands reductionism as a relation between explanations, not theories. It argues that knowledge of the micro-level behavior of the components of systems is necessary, but only combined with a full specification of the contingent context sufficient for a full explanation of systems phenomena. The paper takes seriously fundamental principles independent and transcendent of the laws of quantum mechanics that govern most of real-world phenomena. It will conclude in showing how the recent postgenomic revolution, taking seriously the physical principle of organization and collective behavior, can be understood as attempting to complement a reductionist investigative strategy with an antireductionist explanatory strategy.

**Keywords:** principle of organization, self-organization, ontological reductionism, methodological reductionism, reductionist investigative strategy, antireductionist explanatory strategy, postgenomic biology

**Subjects:** [General Issues: Reductionism/Holism](#)

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