
How mechanisms work, how they change, and how the way they work affects the way they change

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Abstract

In Session: "Models & Mechanisms: Extending the Framework" with Arnon Levy, Thomas Polger, and Stuart Glennan Work on mechanistic explanation in philosophy has focused primarily on proximate biology: explaining how the parts, processes, and organisation of a biological mechanism produce some phenomena of interest. A related project, which has received far less attention, is examining explanations for how mechanisms change over time. Such explanations appear frequently in evolutionary developmental biology and evolutionary systems biology. I show how a key tool for exploring the structure of such proximate mechanisms—the notion of difference-making—can be equally applied to understanding change over time in mechanisms. I then use a model of evolution in gene regulatory networks to demonstrate how paying attention to difference-making both at-a-time and over-time provides a strategy for investigating the evolution of evolvability.

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