Varieties of Invariance

Denis Walsh[*][†][1]

[1]Department of Philosophy/IHPST – Canada

Abstract

Session: The space of explanations in evolutionary biology. (Huneman, Ariew, Darden, Lyon, Strevens, Walsh) An explanation serves two functions: metaphysical and cognitive. Its metaphysical function involves identifying a feature of the world, the explanans, that relates in the appropriate way to the explanandum. Its cognitive function involves describing the relation in such a way as to provide understanding. One of the principal virtues of Modern Mechanism, I argue, is that it offers a generalizable model for the structure, or anatomy, of an explanation. Mechanistic explanations are bipartite. They cite a mechanism-an entity undergoing an activity-and an elucidating description. The hallmark of the relation between a mechanism and the effect it explains is invariance. Invariance is a robust counterfactual relation. The relation between a mechanism and its effect is one such invariance relation, but I argue that there are others as well, and these may form the basis of alternative modes of explanation. I claim that statistical and teleological explanations conform to the same bipartite structure. Each identifies a property of a system that bears a robust invariance relation to a particular kind of event to be explained. Each, in turn, provides a distinctively elucidating description of that relation. Some phenomena are susceptible of complete explanation in mode than one mode. Explanations of the same phenomena in different modes (say, causal and teleological) neither supersede nor exclude one another: they are 'miscible'. I use examples from evolutionary biology to illustrate this relation of 'miscibility'.

[*]Speaker
[†]Corresponding author: denis.walsh@utoronto.ca