
What is the Target of a Generalized Model?

Alkistis Elliott-Graves*¹

¹University of Pennsylvania – United States

Abstract

Session: Issues in Biological Modeling–Mechanisms, Simulations and Target Systems
(Bert Baumgaertner, Alkistis Elliott-Graves, Shawn A. Miller)

The logistic growth model in ecology is a generalized model, because it represents a class of phenomena instead of particular instantiations of a phenomenon, yet scientists use it to learn about particular populations, such as Vancouver Island marmots or Canadian horseweed. How is this possible? Weisberg (2013) tries to avoid the problem by arguing that generalized models represent *generalized* target systems. On his view, generalized targets are either composed of the common features of a number of specific targets, or they are more abstract than the model which represents them. In the latter, more complex cases, the scientist must restrict the scope of the model to the more general results which are compatible with the generalized target.

In this paper I will argue against the view that generalized models represent generalized targets. I will provide a unified account of the relation between generalized models and target systems, where the targets are always aspects of instantiated phenomena in the world. I will show that the simple cases of so-called generalized targets are directly derivable from specific targets. Also, the so-called complex cases can be given a simpler characterization. An additional merit of this view is that it is better supported by scientific practice, as scientists often apply these models pluralistically, at different levels of abstraction (e.g density dependence in plants results in the -3/2 power law).

Reference: Weisberg, M. (2013) *Simulation and Similarity* Oxford University Press

*Speaker