Why is Metaphor like a Model? Epistemic and Cognitive Uses of Scientific Metaphors

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Abstract

Session: The Role of Metaphor in Evolutionary Reasoning (Greg Priest, Jessica Riskin, Ehud Lamm) Simply put, modeling involves studying one system - primarily via the ability to manipulate it – as
a means for studying another. I argue that manipulability is the hallmark of models, which are meant
to provide a way for studying modeled systems via the manipulations of their models rather than by
manipulating the original system. Manipulability requires that the model have an organized, ideally
well-specified, articulated fine structure. Literary metaphors, as well as scientific metaphors invoked merely to rhetorical effect, need not exhibit the structure required in order to support internal manipulability. But sometimes they do. I will explore several rich metaphors, in science
and literature, particularly those used by Richard Goldschmidt to articulate his theory of the gene,
and argue that they are best understood as models. Viewing them as models provides the best way to
understand the function of the metaphors. Seeing what viewing them as models entails helps adjudicate differing accounts of what models are. In particular, similarity between a model and the
modeled system is required by some accounts of scientific models, but the notion is fraught with
difficulties (Goodman; Suarez). Metaphors are typically too ambiguous and open-ended to establish a
robust similarity relation. On the alternative account I endorse the relationship between model and
system is reflected, or even constituted, by the manipulations the model permits. This relationship
is one of exemplification (cf. Elgin). My account explains why metaphors, even those appropriately
understood as models, are typically only weak models.

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