
Abstract Models, Generic Mechanisms

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Abstract

Abstraction is necessary in modeling, for epistemic as well as practical reasons. A model that abstracts the right things away is better than one that shows irrelevant details. Too much detail obscures the features of the model that are most important. The literature on mechanistic explanation stemming from Machamer, Darden & Craver (2000) reflects this in its emphasis on mechanism schemas. Truncated, abstract representations are what scientists are usually interested in.

Given the central role of schemas, it is curious that when at least M and C of MDC turn to talking about explanation, the details of the mechanism are suddenly very important. Craver (2006) emphasizes that ‘how-actually’ explanations have to get the details of the mechanism right, and argues that generalizations do not explain. Bogen (2005), who convinced Machamer (2004) to drop regularity of functioning from the MDC definition of mechanism, further entrenched the view that singular causal chains are what should count as explanations.

My aim is to resolve this tension between the necessity of abstraction in mechanistic modeling, and the constraint that mechanistic explanations should reveal the actual causes that bring about explananda. I introduce generic mechanisms, defined as things in the world qua a type which the fully-elaborated mechanism instantiates. Generic mechanisms are in-the-world counterparts to mechanism schemas. They abstract away unnecessary details from instantiated mechanisms, just as schemas do for representations of mechanisms. This allows for general explanations that are still ‘how-actually’ explanations. I illustrate this with examples from neuroscience.

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