

Models as information carrying artifacts

Lappi, Otto and Rusanen, Anna-Mari (2009) Models as information carrying artifacts . In *[2009] EPSA09: 2nd Conference of the European Philosophy of Science Association (Amsterdam, 21-24 October, 2009): EPSA 2009 Contributed Papers*.

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Abstract

In science, models are used in many different ways: to test empirical hypotheses, to help in theory formation, to visualize data, and so on. Scientists construct and study the behavior of models, and compare this to observed behavior of a target system. We propose that for this to be possible models must carry information about their targets. When models are viewed as information carrying entities, this property can be used as a foundation for a representational theory of models. This account presents a way of avoiding the need to refer to modelers' intentions (or their mental states) as constitutive of the semantics of scientific representations. Moreover, an information theory based account of scientific representations can provide a naturalistic account of models which can deal the problems of asymmetry, relevance and circularity that afflict currently popular proposals based on user intentions. From the information semantic perspective, models as scientific representations can be considered a special case of a larger problem of naturalistic representation. In this paper we will look at what we think is the most promising avenue of developing this information theoretic account of representational models. Traditionally, there has been a strong tendency towards a clear-cut division of labor between philosophers of science and philosophers of mind. We believe that there are some important philosophical insights about representation that are relevant for both camps.

Keywords: Models, representation, information semantics

Subjects: [General Issues: Models and Idealization](#)

Conferences and Volumes: [\[2009\] EPSA09: 2nd Conference of the European Philosophy of Science Association \(Amsterdam, 21-24 October, 2009\): EPSA 2009 Contributed Papers](#)

ID Code: 4949

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Deposited On: 14 October 2009