The interplay of model building and science policy: the case of lock-and-key in 20th century biochemistry

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Abstract

Session Title: Towards Epistemologies of Biological Practice
With: C. Kenneth Waters (Minnesota Center for Philosophy of Science, University of Minnesota), Marie I. Kaiser (Department of Philosophy, University of Geneva), Sabina Leonelli (Department of Sociology, Philosophy and Anthropology, University of Exeter) and Rachel Ankeny (School of History and Politics, University of Adelaide)

Abstract:
My talk will examine the interplay of model building and science policy in order to capture the role of models in the institutionalization of political agendas within science. I will claim that understanding the processes of model building and usage is crucial for understanding how science policy affects knowledge generation processes and vice versa. This claim will be advanced by examining the history of the lock-and-key model in the mid 20th century. Biologists' use of the lock-and-key model offers a revealing case study for examining the relation of epistemic and social values. As I will show, application of the lock-and-key model was largely restricted to synthetic programs in biochemistry and was related to agendas that highlighted what chemical synthesis could do for biology, medicine and social welfare. The lock-and-key model reached its political potential in the 1940s and 50s due to the impact of the molecular biology program and its institutionalization by the major American philanthropic organizations (such as, e.g., the Rockefeller Foundation). I will conclude that we should start thinking about models, not just as instruments for investigation and explanation, but also as instruments for the implementation of political agendas within science.

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