
Mechanisms and the puzzle of explanatory relevance

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Abstract

On the mechanistic account of explanation, scientific models are explanatory only insofar as they exhibit the real causal mechanisms that produce the phenomena under study. In this paper, I show that the mechanistic criterion for explanatory relevance is problematic both on grounds of internal consistency and with respect to the actual modelling and explanative practices of cognitive scientists. In response, I put forward a productive compatibilist account of explanation that extends and enriches the mechanistic conception. Moreover, in contrast to Kaplan and Craver (2011) position, I argue that abstract (mathematical) models can have bona fide explanatory functions in the context of cognitive scientific research. In particular, I maintain that mathematical modelling affords an alternative, non-decompositional strategy of explaining salient features of cognitive systems. I argue that the proposed compatibilist view of explanation respects the ‘individuality of the particular problems’ confronting current cognitive experimental and theorising practices. As such, it promises to offer a more robust analysis of the varieties of explanatory models used in the domain of cognitive science.

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