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Level-Hierarchien in den Kognitionswissenschaften und das mechanistisch-komputationale Modell der Erklärung

This talk defends a ``mechanistic-computational'' normative ideal of explanation in cognitive neuroscience. It states that a satisfactory explanation of a cognitive system must bridge phenomena at multiple mechanistic levels, such that at least several of these mechanistic levels are shown to implement computational processes. The relevant parts of the computation must be mapped onto distinguishable entities and activities of the mechanism. The ideal is contrasted with two other models of explanation in cognitive neuroscience. The first has been presented by David Marr in combination with a distinction of ``computational levels''. The second builds on a hierarchy of ``mechanistic levels'' in the sense of Carl Craver. It is argued that neither of the two models of explanation secures satisfactory explanations of cognitive systems. The ``mechanistic-computational'' model can be thought of as resulting from a fusion of Marr's and Craver's ideals. It is defended as adequate and plausible in light of scientific practice, certain metaphysical background assumptions are discussed, and some precursors of the framework are reviewed.