Downward Determination as a Non-Causal Probability-Raising Relation

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Abstract

No account of the influence of whole systems over their parts will do without preliminary decisions on what causes are. Based on such decisions, we show that top-down relations can be construed as non-causal determination, a probability-raising relation between general organization principles at the higher level and particular events at the lower level (as relata). We use Glennan's canonical form of causal claim, stressing the distinction between causally productive events and causally relevant properties, to elaborate on the nature of 'determining' in top-down relations. The causal relationship between two components of a living system is expressed as follows: Event c involving component $A1$ causes event e involving component $A2$ [in background conditions B of the living system] via the operation of mechanism M and in virtue of properties P of M, a key property of M being its spatiotemporal organization, as structural determiner of the probability of interaction between $A1$ and $A2$. Using Schaffer's quaternicity interpretation of causal relations, we can explain how probability changes induced by the spatiotemporal configuration of S can explain why c rather than c^* causes e rather than e^* within S. This is all it takes to put forward a consistent account of downward determination as a probability-raising non-causal relation.

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