

There are mechanisms – and then there are mechanisms

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Mechanisms are at centre-stage right now in philosophy of science, especially in discussions of causal explanation and causal inference: for instance Jon Williamson and Frederica Russo argue that experimental and correlational evidence is not enough, evidence for the generating mechanism is required as well for solid causal inference. I shall endorse their view in this talk.

So, what is a mechanism? There are, I shall illustrate, 3 distinct senses of mechanism currently widely in use in philosophy of science and in the social and biomedical sciences themselves: relations that are invariant under intervention, step-b-step causal processes and underlying structures that afford causal regularities. But the three are often not kept distinct. That I shall argue is a serious problem. For different kinds of studies are needed to establish the different kinds of mechanism and different inferences and practices are supported by knowledge of the different kinds of mechanism.