

Determinism and Indeterminism

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Abstract

Determinism is a rich and varied concept. At an abstract level of analysis, Jordan Howard Sobel (1998) identifies at least ninety varieties of what determinism could be like. When it comes to thinking about what deterministic laws and theories in physical sciences might be like, the situation is much clearer. There is a criterion by which to judge whether a law— expressed as some form of equation— is deterministic. A theory would then be deterministic just in case all its laws taken as a whole were deterministic. In contrast, if a law fails this criterion, then it is indeterministic and any theory whose laws taken as a whole fail this criterion must also be indeterministic. Although it is widely believed that classical physics is deterministic and quantum mechanics is indeterministic, application of this criterion yields some surprises for these standard judgments.

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