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Bell's theorem on arbitrary causal structures

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Bell's theorem is a gedankenexperiment with an underlying causal structure in the form of the letter "M." I will describe how such a Bell scenario is a special case of a vastly larger class of scenarios, in which the causal structure of the "M" is replaced by an arbitrary directed acyclic graph (or, equivalently, by a causal set). In this formalism, the apparent difference between the notions of "choice of setting," "source," and "measurement" disappears completely and all of these become special cases of the general notion of "event." I will explain how this relieves Bell's theorem of the philosophical baggage associated with free will and also present several mathematical results about these more general scenarios obtained by various people. This formalism is expected to have applications in many other areas of science: it is relevant whenever a system is probed at certain points in space and time, and at each of these points there may be hidden information not observed by the probes.