

A CHARACTERIZATION OF (WEAKLY CENTERED) LEWISIAN CAUSAL MODELS

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Abstract. In the interventionist account of causation and causal explanation, subjunctive or counterfactual conditionals are interpreted as statements about consequences of hypothetical interventions. This semantics of conditionals is formally developed in terms of functional causal models or structural equation models, and a natural question is how the causal-model-based semantics is related to the possible worlds semantics. In this talk, I present several results pertaining to this question, which greatly extend Joseph Halpern's result that every recursive causal model is Stalnakerian (in the sense that for every recursive causal model, there is a possible worlds model that satisfies Robert Stalnaker's constraint and validates the exact same formulas as the causal model does, in a language that does not allow nested conditionals or conditionals with disjunctive antecedents.) Specifically, I will precisely characterize the class of Stalnakerian causal models, the class of Lewisian causal models (models that satisfy David Lewis's constraints), and the class of weakly centered Lewisian causal models (models that satisfy David Lewis's constraints except that the requirement of centering is replaced by weak centering). I will discuss some philosophical implications of these results, and relate in particular to recent literature on the causal exclusion problem in the philosophy of mind.

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