The problem of counterfactual conditionals

Peter Verdée

Institut supérieur de philosophie, Université catholique de Louvain

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What are counterfactual conditionals?

**Conditionals** = If-then-sentences (or synonymous expressions)

**Indicative conditional**: antecedent may be true in the actual world, may be purely contingent

\[\text{If Oswald did not kill Kennedy, somebody else did} \]

**Counterfactual/subjunctive conditional**: antecedent is false in the actual world, subjunctive mood, always modal in nature

\[\text{If Oswald would not have killed Kennedy, somebody else would have} \]

Distinction is still disputed
Why fascinating?

- We have no direct empirical way to test counterfactuals. How to know whether they apply?
- Their semantics is complicated, but often humans employ them successfully in practice.
- Understanding them means understanding the rational flexibility of the human mind.
Why important?

- Crucial in scientific discovery and justification, particularly in historical sciences
- Links with philosophy of laws of nature, causality, explanation, logic, necessity
- Counterfactual reasoning makes our knowledge robust
Main problems

**logic**: how to reason with COFA’s?

**semantics**: when is a COFA true/acceptable?

**pragmatics**: when is a COFA assertible in a communication context

**epistemology**: how can we know/rationally believe COFA’s?

**metaphysics/ontology**: how can COFA’s be objectively true in the world?

**counterpossibles**: how can we deal with COFA’s the antecedents of which are (logically) impossible?
If two people are arguing ‘If p, then q?’ and are both in doubt as to p, they are adding p hypothetically to their stock of knowledge and arguing on that basis about q; so that in a sense ‘If p, q’ and ‘If p, not-q’ are contradictories. We can say that they are fixing their degree of belief in q given p. If p turns out false, these degrees of belief are rendered void. If either party believes not-p for certain, the question ceases to mean anything to him except as a question about what follows from certain laws or hypotheses.

Main solutions

- **Contenability** (Goodman, Chisholm, Rescher, Kvart)
  \[ A > B \text{ iff } \Gamma \cup A \vdash B, \text{ where } \Gamma \text{ is the set of truths which are contenable with } A. \]

- **Belief revision** (Gärdenfors, Levi)
  \[ A > B \text{ is acceptable in a belief system } K \text{ iff revising beliefs } K \text{ with } A \text{ makes } B \text{ a consequence of the revised beliefs.} \]

- **Conditional probability** (Adams)
  \[ A > B \text{ is acceptable iff the conditional (subjective) probability } P(B \mid A) \text{ is close to 1.} \]

- **Possible worlds** (Lewis, Stalnaker)
  \[ A > B \text{ is true iff } B \text{ is true in all possible worlds which are as similar as possible to the actual world, but in which } A \text{ is true.} \]


