

' \supset ' AND 'If... then...'

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A theorem of classical logic known as "strengthening the antecedent" i.e.:

$$(T1) P \supset R \vdash (P \cdot Q) \supset R$$

has often been cited as a counterexample to treating ' \supset ' as a formalization of 'If... then...'. For, it is argued that, while 'If the match is struck then it will light' is true, the sentence 'If the match is struck and it is held under water, then it will light' is false.*

One may object, that the counterexample only shows that the match's being struck is not sufficient for it to be lit, i.e., that it's just not true that 'If the match is struck then it will light' and thus (T1) fails as a counterexample to the classical account of 'If... then...'.

I hereby propose to cite another theorem, which undermines this objection and will stand on its own as a reason for rejecting the classical account of 'If...then...'. Namely:

$$(T2) (P \cdot Q) \supset R \vdash (P \supset R) \vee (Q \supset R).$$

For it may well be true that 'If both Al and Bill insert their keys, then the vault will open' and yet be false that 'Either, if Al inserts his key then the vault will open, or, if Bill inserts his key then the vault will open'.

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* See: Robert C. Stalnaker, "A Theory of Conditionals". *Studies in Logical Theory* (American Philosophical Quarterly Monograph Series, Oxford, 1968) edited by Nicholas Rescher p. 106; John L. Pollock *Subjunctive Reasoning* (Dordrecht, Holland: D. Reidel, 1976) p. 40; and E.J. Lowe. "If A and B then A". *Analysis*, 45: 2 March 1985, p. 94.