THE TRANSITIVITY OF 'IF, THEN'

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Strawson maintains that the fulfilment of the antecedent and of the consequent of a hypothetical statement does not entitle us to say that the hypothetical is correct. We should be prepared to say that the hypothetical was correct 'only if we were also prepared to say that the fulfilment of the antecedent was, at least in part, the explanation of the fulfilment of the consequent'. (¹) Others have stressed, without laying down such a stringent condition, that there should be *some* relevance or connection between antecedent and consequent for us to say that a hypothetical is correct even when antecedent and consequent are both true. Thus such philosophers seek to distinguish hypotheticals from material conditional statements. Strawson also maintains that 'if p then q and if q then r' entails 'if p then r'. (²) It is the purpose of this paper to show that the thesis of relevance and the thesis of transitivity are contradictory. Either one must give up the transitivity of 'if, then' or the thesis that there should be some connection or relevance between the antecedent and consequent.

I shall give examples which employ, at least in the premises, fairly ordinary hypotheticals.

(A)

    i) If I knock this typewriter off the desk then it will fall.

    ii) If it falls then it is heavier than air.

Conclusion: If I knock this typewriter off the desk then it is heavier than air.

In (A) both i and ii are true, but what are we to say of the conclusion ? It is certainly an odd looking hypothetical and it violates Strawson's condition for calling a hypothetical correct. For its being heavier than air has nothing to do with my knocking the typewriter. If it is claimed that, nevertheless there is still some relevance between antecedent and conclusion since both make reference to the same object, a typewriter, we may add a further premiss:

iii) If the typewriter is heavier than air then an elephant is heavier than air.

Combining i, ii, iii by transitivity we obtain the following:

Conclusion: If I knock this typewriter off the desk then an elephant is heavier than air.

Any claim of connection between antecedent and consequent in this latter example is, I think, absurd.

At this point we are faced with two alternatives; either to give up the idea that 'if, then' is transitive or to allow that there need be no relevance between the antecedent and the conclusion. If the latter course is taken then at least part of the argument against identifying hypotheticals with material implication statements falls down. It may well be the case that given any absurd looking conditional, the consequence of which is true, we could find a chain of conditionals that would, by transitivity, entail it. The following example shows that not both antecedent and consequent need be contingent.
(B)

i) If Jones passes his maths degree then he knows at least the elementary propositions of arithmetic.

ii) If he knows at least the elementary propositions of arithmetic then he knows that $2 + 2 = 4$.

iii) If he knows that $2 + 2 = 4$ then $2 + 2 = 4$.
Conclusion: If Jones passes his maths degree then $2 + 2 = 4$.

It is possible that someone could object that premisses (A)iii and (B)iii already violate Strawson's condition, for the explanation of the fulfilment of the antecedent is not even in part an explanation of the fulfilment of the consequent. In that case so much the worse for Strawson's condition for both are perfectly ordinary uses of 'if, then'. However this may be, those who employ criteria of relevance or connection would have to agree that the premisses satisfy their criteria and yet the conclusion does not.

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(¹) P. F. STRAWSON, *Introduction to Logical Theory*, London, 1952, p. 85.
(²) *ibid.* p. 87.