

# NOTE ON DEDUCTIVE INFERENCE

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In relation to inferences, there is a tendency to conflate alethic with epistemic modalities:

## Material implication

1. It's not the case that  $B$  is false and  $A$  is true in a given world. (alethic claim)
2. It's certain that  $B$  isn't false and  $A$  is true in a given world. (epistemic claim)

## Formal implication

- (1\*) It's not the case that  $B$  is false and  $A$  is true in any possible world. (alethic claim)
- (2\*) It's certain that  $B$  isn't false when  $A$  is true in any possible world. (epistemic claim)

But notice that (2) doesn't follow from (1), and (2\*) doesn't follow from (1\*). Now, suppose one asserts (1) because it is highly likely. In this case, there would be no meaningful distinction between (1) and the non-deductive inference:

- (1\*\*) It is unlikely that  $A$  is true and  $B$  is false in a given world.

This suggests that the main reason to distinguish deductive from non-deductive inferences lies in epistemic modalities, but what determines whether an inference is deductive or not are its alethic commitments. In other words, the supposed non-deductive status of an inference is simply an epistemic element that should be irrelevant from a logical point of view—unless the goal is to express reasoning about knowledge and belief.

The same could be said about patterns of coherence requirements for inferences such as *modus ponens* and hypothetical syllogism. They track the consequences of alethic truths and not our epistemic commitments.