

C U S P  
A B S T R A C T

Analyzing epistemic *must* like deontic *must* derives  
indirectness requirement

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Universal epistemic modals such as *must* convey indirect evidence (Karttunen (1972)). *It must be raining* is only okay if we see umbrellas, not if we're experiencing the downpour. Previous analyses of epistemic *must* struggle to derive this requirement. The epistemic *must* of Kratzer (1981) predicts indirectness, but in a way that conflates indirectly supported claims with logically weak ones, as von Stechow & Gillies (2010) point out. Instead, vF & G make a convincing case for a logically strong *must*, but only stipulate that the evidence must be indirect.

To resolve this problem, I treat epistemic *must* parallel to deontic *must* (e.g. *you must not litter*) because both modal forces crucially invoke rules of some sort, whether normative or descriptive. Further unifying the two *musts*, since it is not clear how to distinguish previous analyses' epistemic modal base from deontic modals' circumstantial one, I instead assign both epistemic and deontic *must* a modal base consisting of the contextually relevant facts, leaving subtler differences to context. Like vF & G's strong *must*, both epistemic and deontic *must* quantify universally over the part of the modal base chosen by this ordering source. Epistemic and deontic *must* both quantify over worlds compatible with the circumstances (modal base) and select the worlds compatible with some set of rules (ordering source), either normative or descriptive.

This analysis derives *must*'s requirement for indirect evidence. Epistemic *must* involves moving from facts about this particular world to a claim about all worlds consistent with those facts, invoking a rule – a process which is inherently indirect. This ordering source of descriptive generalizations, parallel to deontic *must*, leads epistemic *must* to invoke indirect evidence.

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## References

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