‘Knows might. . .’
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1 The Question
What do we mean when we say ‘S knows that it might be that ϕ’? E.g.

(1) a. The keys might be under the bed. Should I tell Kim that?
    b. No, she already knows that [they might be under there].

2 Guiding Schemata

INTUITIVELY INVALID:

(2) **Might-Omniscience**: ϕ; therefore everyone knows might ϕ.

INTUITIVELY VALID:

(3) **K→B**: S knows might ϕ; therefore, S believes might ϕ.

INTUITIVELY VALID:

(4) **Might-Factivity**: S knows might ϕ; therefore, might ϕ.

3 Puzzling Predictions

The best available theories of epistemic modals, plus Hintikka semantics for ‘knows’ and ‘believes’, predict that (2) is valid but neither (3) nor (4) is.

Why? Researchers of various theoretical persuasions have proposed:

(5) **Magnetism**: For any attitude operator M with domain D, epistemic modals immediately under M quantify over D.

With KS,c,w (BS,w) representing S’s knowledge (belief) worlds at ⟨c, w⟩:

(6) **Hintikka Semantics**: [S knows ϕ]c,w = 1 iff ∀w' ∈ KS,c,w : [ϕ]c,w' = 1.

**Magnetism** plus **Hintikka Semantics** entail that an epistemic modal immediately under ‘knows’ (‘believes’) quantifies over KS,c,w (BS,w).

Since BS,w ⊆ KS,c,w, we predict ‘S believes might ϕ’ |= ‘S knows might ϕ’.

- We validate **Might-Omniscience**: Let ϕ be true at ⟨c, w⟩. From the factivity of knowledge, it follows that ϕ is compatible with KS,c,w, and thus ‘S knows might ϕ’ is true at ⟨c, w⟩, for any S.

This flavor of ‘might’ is ‘epistemic’ when unembedded; I’ll continue to call it ‘epistemic’ when embedded, though embedded epistemic modals are no longer epistemic in an intuitive sense. A variety of tests show the ‘might’ is not a circumstantial modal. See Moss (2013, 2015).

These both have the feel of instances of the more general principles. See Moss (2013, 2015) for discussion of the latter.

E.g., dynamic approaches Veltman (1996), contextualist Hacquard (2010), expressivist Yalcin (2007), among others. **Immediately**=without intervening operators. One motivation: Yalcin (2007)’s observation that embeddings of ϕ ∧ ♢¬ϕ under attitude operators are unacceptable. We can remain non-committal about how to implement this. But not vice versa!

As observed in Yalcin (2012).
The sense of ‘believes’ in question is a philosophical one which may be stronger than some uses of ‘S believes . . .’.

- We don’t validate \( K \rightarrow B \): Suppose \( \varphi \) is true at \( \langle c, w \rangle \); then \( \Gamma S \) knows that might \( \varphi \land \) is true at \( \langle c, w \rangle \) for any \( S \). But suppose further that some \( S \) believes \( \neg \varphi \) at \( \langle c, w \rangle \); then \( \Gamma S \) believes might \( \varphi \) is false at \( \langle c, w \rangle \).

- We don’t validate Might-Factivity: At \( \langle c, w \rangle \), let \( \Gamma \text{ Might } \varphi \land \) be false/not accepted and let \( S \) believe that \( \varphi \) is true; then \( \varphi \) is compatible with \( K_{S,c,w} \), and thus \( \Gamma S \) knows might \( \varphi \) is true at \( \langle c, w \rangle \).

4 Framework for a Solution

Two (very similar) alternatives:

(1) reject Magnetism; (2) hold that when ‘might’ is under ‘knows’ there is always an intermediate operator. Both bring up serious further issues.

Thus a set of sets of worlds.

I.e. so that an epistemic modal embedded immediately under \( \mathcal{M} \) quantifies in turn over every information state that \( \mathcal{M} \) quantifies over.

One of Magnetism or Hintikka Semantics must be rejected; I follow Yalcin (2012) and Willer (2013) in rejecting the latter and instead adopting:

(7) **Pointwise Semantics for ‘Knows’**:

\[
[S \text{ knows that } \varphi]^{c,w}=1 \text{ iff } \forall k \in \mathcal{R}_{S,c,w} : \forall w' \in k : \left[ [\varphi]^{c,w'} = 1 \right]
\]

\( \mathcal{R}_{S,c,w} \), a piecemeal knowledge state, is a set of subsets of \( K_{S,c,w} \).

The idea: break up \( K_{S,c,w} \) into different subsets, treating each as a different domain of quantification for the modal.

If we extend Magnetism in an obvious way, then we predict that \( \Gamma S \) knows might \( \varphi \) is true at \( \langle c, w \rangle \) iff \( \varphi \) is compatible with each one of those subsets.

5 Some Cases

This gives us the resources to give suitably strong truth conditions; to have a predictive theory, though, we need a substantive characterization of \( \mathcal{R}_{S,c,w} \).

To work up to this task, consider some cases:

(8) **Jimmy Paranoid**: Jimmy thinks that government agents might be tapping his calls. He doesn’t have any evidence; he’s just paranoid.

Does he *know* that the government might be surveilling him? Intuitively not: as we just said, he doesn’t have any evidence to go on.

(9) **Jimmy On To Something?**: Then Jimmy finds out that, indeed, the government was tracking many calls from his area.

Now are we inclined to say that Jimmy knows that the government might be surveilling him? Intuitively yes: his judgment is based on something he knows which lends support to the proposition that the government is surveilling him.

(10) **Jimmy Wrong**: We (but not Jimmy) discover that Jimmy wasn’t being surveilled.

Even though nothing has changed vis-à-vis his ‘internal’ mental state, we’re no longer inclined to say that Jimmy knows that the government might be surveilling him: after all, the government isn’t surveilling him!
**Generalization:** We say that Jimmy knows the government might be surveilling him iff Jimmy knows something which from our point of view gives Jimmy reason to believe the government is surveilling him.

6  **Piecemeal Knowledge States**

We use a new theoretical notion, *epistemic buttress*, to characterize $\mathcal{R}_{S,c,w}$:

(11) **Piecemeal Knowledge State:** $\mathcal{R}_{S,c,w} = \{ k : k \subseteq K_{S,c,w} \land \forall r((r \text{ is epistemically buttressed for } S \text{ in } \langle c, w \rangle \text{ by something } S \text{ knows in } \langle c, w \rangle \rightarrow r \cap k \neq \emptyset) \}$

In combination with **Pointwise Semantics for Knows**, this account predicts

(12) $[S \text{ knows might } \varphi]_{c,w} = 1$ iff $[\varphi]_{c}$ is epistemically buttressed for $S$ in $\langle c, w \rangle$ by something $S$ knows in $\langle c, w \rangle$.

If we treat epistemic buttress as being something like evidential support, this seems fairly intuitive.

N.B.: Epistemic buttressing is stronger than compatibility with knowledge.

7  **Epistemic Buttress: Role of Context**

Treating epistemic buttress as evidential support gives a first approximation, but it won’t suffice.

First, epistemic buttress must vary with contexts in a way that evidential support doesn’t, for note that the only difference between *Jimmy On To Something?* and *Jimmy Wrong* was a difference in our perspective.

The generalization about the change between those cases seems to be that we do not grant anyone epistemic buttress for $p$ if we know $p$ is false:

(13) **Externalist Constraint:** If $p$ is commonly known in $\langle c, w \rangle$, then nothing $S$ knows epistemically buttresses $\neg p$ for $S$ in $\langle c, w \rangle$.

(13) captures the intuitive contrast between *Jimmy On To Something?* and *Jimmy Wrong*.

And, assuming ‘Might $\varphi$’ is true/accepted at $\langle c, w \rangle$ iff $\varphi$ is compatible with the common knowledge in $\langle c, w \rangle$, (13) entails **Might-Factivity**.

And **Externalist Constraint** entails contextualism about ‘knows’.

But again, evidential support does not obey **Externalist Constraint**.
8 Epistemic Buttress: Role of Subject

Epistemic buttress also diverges from evidential support in its role for the subject of the knowledge ascription.

Suppose that Jimmy found out that, indeed, the government was tracking many calls from his area, but didn’t come to believe he might be under surveillance. Then we would not say he knows he might be under surveillance.

Intuitively, no one knows might $\varphi$ if they believe $\neg\varphi$; in other words, $K\rightarrow B$.

To validate $K\rightarrow B$, adopt:

\[(14) \text{ Internalist Constraint}: \text{If } S \text{ believes } \neg p \text{ in } \langle c, w \rangle, \text{ then } S \text{ has no epistemic buttress for } p \text{ in } \langle c, w \rangle.\]

Assuming Hintikka semantics for ‘believes’.

Internalist Constraint entails $K\rightarrow B$.

And guarantees we match Hintikka Semantics’ predictions for non-modal $\varphi$.

But another departure from evidential support.

9 What is Epistemic Buttress?

The most natural option: derive it from evidential support by cutting evidential support down to satisfy Externalist and Internalist constraints.

I leave it open that there are more differences between epistemic buttress and evidential support than those discussed here.

Note that it is important for accounting for some intuitions about ‘knows might’ that the notion of evidential support we adopt be context-sensitive.

10 Conclusion and Open Questions

As well as a new way of thinking about the semantic representation of knowledge states, and a new argument for contextualism about ‘knows’.

We thus have plausible truth conditions for attributions of knowledge of possibility: "Knows might $p$" means: has epistemic buttress for $p$.

Avenues for further research:

- Explore extensions to probability modals, other embedding modals, and other ‘subjective’ predicates.

- ‘Knows must’ is predicted to mean ‘knows’: not obviously quite right.

- Figure out what epistemic buttress is and where else it shows up.
References


