

Epistemic modals: relativism vs. cloudy contextualism

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The plan

Standard contextualism and The Problem

Two solutions: relativism and cloudy contextualism

Empirical adequacy: relativism defended

Empirical adequacy: a problem for cloudy contextualism

Systematic considerations

What we won't talk about

- (1) It isn't now possible that the the earth was formed in 4000 years. But this was possible in 500 B.C.
- (2) It isn't possible that Sam was the killer, because this photo proves he was elsewhere at the time of the murder. But if I hadn't opened this drawer and found the photo, it would still be possible that Sam was the killer.
- (3) If she's cheating on me and I don't know it, then I'm a cuckold.
- (4) If she's cheating on me and might not be cheating on me, then I'm a cuckold.

Standard contextualism

- S1 Utterances of BEMs are typically assertions of a single proposition.
- S2 What proposition this is depends on what is known by a relevant group. *might* P expresses the proposition that P is compatible with what is known by the group, and *must* P expresses the proposition that P is entailed by what is known by the group.
- Notation: $open_G(P)$ = the proposition that P is true at some of the worlds left open by the group G 's knowledge.
- Then: *might* P expresses $open_G(P)$ and *must* P expresses $\neg open_G(\neg P)$.

Standard contextualism

S3 The composition of this group is determined by features of the context of use—the concrete situation in which the utterance is made.

Standard contextualism

- S4 It is appropriate for a speaker to make the assertion only if she has good grounds for taking its content to be true.
- S5 It is appropriate for hearers to reject the assertion if they have good grounds for taking its content to be false.
- S6 The speaker ought to retract the assertion if she has good grounds for thinking that its content is false. She can stand by the assertion if she has good grounds for thinking that its content is true.

The Problem

- (5) a. *George*: Joe might be in Boston.
- b. *Sally*: No/that's wrong/that's false, he can't be in Boston. I just saw him down the hall.
- c. *George*: Oh really? Then I guess I was wrong.

WARRANT how George might reasonably have thought himself warranted in making his first claim

REJECTION how Sally might reasonably have thought herself warranted in rejecting his claim as incorrect

RETRACTION why George should have conceded this and retracted his original claim in response

Targeting the prejacent?

The dialogues remain natural when the dialogue is modified to make explicit which proposition Sally rejects:

Sally: What you said—that Joe might be in Boston—is false. I just saw him down the hall.

Targeting the prejacent?

This strategy doesn't really help with RETRACTION.

- (6) a. *A*: It's rumored that you're leaving California.
- b. *B*: That's false. [Here, it's clearly the embedded proposition that's targeted; *B* is not denying that there's a rumor.]
- c. *A*: *Oh, really? Then I was wrong. [It would be completely unnatural for *A* to retract in this case.]

Targeting the prejacent?

If “that’s wrong” can target the prejacent of a “might” claim, we’d expect that it could also target the prejacent of other epistemic modal claims.

- (7) a. *A*: It’s unlikely that Joe is in Boston.
- b. *B*: That’s wrong. I just saw him down the hall.

Relativism

- R1 Utterances of BEMs are typically assertions of a single proposition.
- R2 This proposition has truth values only relative to an information state (in the simplest case, a set of open worlds). The proposition expressed by *might* P is true relative to an information state iff P is true at some of the worlds in that state, and the proposition expressed by *must* P is true relative to an information state iff P is true at all worlds in that state.

Relativism

- R3 Which information state relevant for the correctness of the utterance is determined by features of the context of assessment—the concrete situation from which the utterance is being assessed. Hence, the utterance may count as correct as assessed from some contexts, incorrect as assessed from others (this is the relativism).

Relativism

- R4 It is appropriate for a speaker to make the assertion only if she has good grounds for taking its content to be true (as assessed from the context she occupies).
- R5 It is appropriate for hearers to reject the assertion if they have good grounds for taking its content to be false (as assessed from the contexts they occupy).
- R6 The speaker ought to retract the assertion if she has good grounds for thinking that its content is false (as assessed from the context she occupies). She can stand by the assertion if she has good grounds for thinking that its content is true (as assessed from the context she occupies).

Relativism and The Problem

George's assertion is licensed because he knows it is true relative to his current information state.

Sally's rejection is licensed because she knows the proposition George asserted is false relative to her current information state.

George's retraction is licensed because Sally's intervention has given him new information; relative to his new information state, the proposition he asserted is false.

Cloudy contextualism

- C1 Utterances of BEMs are not assertions of a single proposition. They are *sui generis* speech acts that “put in play” a cloud of propositions.
- C2 A proposition is in this cloud iff it is the semantic value of the sentence uttered at one of the contexts in the set C of admissible contexts. Relative to a single such context, where G is the contextually relevant group, *might* P expresses the proposition $open_G(P)$, and *must* P expresses the proposition $\neg open_G(\neg P)$.

Cloudy contextualism

C3 The set of admissible contexts C is determined by features of the concrete situation in which the utterance is made. Each context corresponds to a choice of a relevant group; the set contains multiple contexts when it is not fully determinate which group is relevant.

Candidates for relevant groups include: the speaker, the speaker's overt audience; the speaker and the audience; and all those who "are engaged (in some sense) in the same investigation as the overt partners in the conversation."

Cloudy contextualism

C4 It is appropriate for a speaker to make the speech act only if she is in a position to assert *at least one* of the propositions in the cloud—that is, only if she has good grounds for taking one such proposition to be true.

Assert: "Suppose an utterance of $\text{might}(B)(\phi)$ by S puts in play the propositions P_1, P_2, \dots . Then S must have been in a position to flat out assert one of the P_i 's."

Cloudy contextualism

- C5 It is appropriate for hearers to reject the speech act if they have good grounds for taking P^+ to be false, where P^+ is the strongest proposition in the cloud that they have good grounds for assigning a truth value to.

Confirm/Deny: "Suppose an utterance of $\text{might}(B)(\phi)$ by S puts in play the propositions P_1, P_2, \dots . Then a hearer H can confirm (deny) the BEM if the strongest P_i that H reasonably has an opinion about is such that H thinks it is true (false)."

Cloudy contextualism

- C6 The speaker is allowed to stick to her guns (not retract her original speech act) provided that she has good grounds for taking *at least one* of the propositions in the cloud to be true. If she does this, the cloud retroactively shrinks to exclude the propositions proven false. However, she can also sensibly retract her original speech act on the basis of the falsity of any of the propositions in the cloud.

Cloudy contextualism and The Problem

“Joe might be in Boston” puts in play:

P_G *open*_{George}(*Joe is in Boston*)

P_S *open*_{Sally}(*Joe is in Boston*)

P_{GS} *open*_{George,Sally}(*Joe is in Boston*)

George's assertion is licensed because he knows P_G to be true.

Sally's retraction is licensed because she knows P_{GS} to be false.

George's retraction is licensed because, after Sally's intervention, he knows P_{GS} to be false.

Point of agreement

We agree that “might” claims are
makeable when the precacent is compatible with one’s current
information,
rejectable by those whose information rules out the prejacent,
retractable when one’s new information rules out the prejacent

We agree that this is a *useful* pattern of use, since the point of epistemic modals is not to keep track of who knows what (we have explicit knowledge attributions for that), but to keep a running tally of open and closed possibilities to guide inquiry. This goal can be best achieved if epistemic possibility claims are both easy to make and easy to reject.

We agree that Standard Contextualism can’t explain this pattern of use.

We agree that we should explain this pattern of use in the context of a truth-conditional semantics.

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Choosing between the views

Empirical adequacy: how well does each fit the data?

Systematic considerations: simplicity, conservativeness, economy, avoidance of ad hoc principles.

Doubts about the data

“...not all mights are retracted or rejected in the face of new evidence. Speakers can quite often resist the invitation to retract even if they have become better informed. Billy is looking for her keys. Alex is trying to help.

- (8) a. *Alex: The keys might be in the drawer.*
- b. *Billy: (Looks in the drawer, agitated.)
 They're not. Why did you say that?*
- c. *Alex: Look, I didn't say they were in the
 drawer. I said they might be there—and they
 might have been. Sheesh.”*

Two distinct questions

- (i) Was the assertion made responsibly?
- (ii) Must the speaker retract the assertion?

“Why did you say that” and “Sheesh” relate to (i). But that’s just noise if we’re interested in (ii).

The dialogue purified

- (9)
- a. Alex: The keys might be in the drawer.
 - b. Billy: (*Looks in the drawer, agitated.*) They're not. Do you still stand by your claim?
 - c. Alex: ? Yes, even though the keys can't be in the drawer, what I said was perfectly true. I said they *might* be there—and, at the time, they might have been.

What is asserted

We use sentences to assert propositions. The more we can assume about our audience, the less we have to make explicit in the sentence.

"It's 3:10 ."

Normally we'd use "The keys might be in the drawer" to assert the (assessment-sensitive) proposition it literally expresses: *that the keys might be in the drawer*.

But we can, in the right setting, use it to assert the (assessment-invariant) proposition *that as far as so-and-so knew at such-and-such time, the keys might be in the drawer*.

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Standing one's ground

- (10)
- a. Alex: The keys might be in the drawer.
 - b. Billy: (*Looks in the drawer, agitated.*) They're not. Do you still stand by your claim?
 - c. Alex: Yes, all I was asserting was that as far as I knew then, they might have been in the drawer. And that is certainly true.

Mastermind

“Part of what’s right about the canon—and part of what’s wrong with the CIA—is that it can be perfectly sensible to assert $\text{might } \phi$ even when you know that ϕ is false. Pascal and Mordecai are (still) playing Mastermind. After some rounds where Mordecai gives Pascal hints about the solution, Pascal asks whether they might be two reds. Mordecai answers:

(11) That’s right. There might be.

He can answer this way even if he knows there aren’t two reds. As far as the norms of assertion go, it’s as if he had uttered an explicit claim about Pascal’s evidence.”

Time lag

- (12)
- a. Capone: The loot might be in the safe.
 - b. Parker: ??AI was wrong/What AI said is false. The safe was cracked by Geraldo in the 80s and there was nothing inside.

Time lag

- (12) a. Capone: The loot might be in the safe.
b'. Parker: ??AI was right/What AI said is true. He had no idea where the loot was.

Time lag

Parker: Now, where in the world is that missing loot from the Indianapolis heist? If I could find that, I'd be famous!

- (12) a. Capone: The loot might be in the safe.
- b. Parker: Al was wrong/What Al said is false. The safe was cracked by Geraldo in the 80s and there was nothing inside.

Tense

“Sophie is looking for some ice cream and checks the freezer. There is none in there. Asked why she opened the freezer, she replies:

- (13) a. *There might have been ice cream in the freezer.*
b. PAST(*might(ice cream in freezer)*)

It is possible for Sophie to have said something true, even though at the time of utterance she knows (and so do we) that there is no ice cream in the freezer.”

Be-causal contexts

- (14) a. *Ted*: Why did you give up your career and follow Lisa to Europe?
b. *Sam*: She loved me!

Normal contexts

Outside of becauseal contexts, “There might have been ice cream in the fridge” seems to have only a *present-uncertainty-about-the-past* reading:

- (15) Yesterday there might have been ice cream in the freezer, but today there can't be (I just checked).

Can we force a *past-uncertainty-about-the-past* reading?

- (16) ?? Yesterday there might have been ice cream in the freezer, but today there can't be (I just checked). And I know that the contents of the freezer have not been disturbed for the last 48 hours.

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Gibbarding

- (17) Jack: It must be that either P is the turncoat or Q is the turncoat.
- (18) Zack: It must be that either Q is the turncoat or R is the turncoat.

“It is a bad idea for The Boss to conclude something he thinks is false on the basis of reports he thinks are false.”

Gibbarding

“That is not to say that the CIA has nothing to say about these cases. They might, for example, argue that The Boss can do some metalinguistic reasoning about Jack’s and Zack’s truth predicates to arrive at the proper conclusion. Our point is that the CIA has to posit some additional mechanism to do the relevant work here and say why that mechanism is operative here (where we see natural information uptake instead of disagreement) and why that mechanism is not operative in the CIA’s motivating cases (where we, purportedly at least, see disagreement instead of uptake).” (n. 11)

Might and/or

- (a) The relativist account doesn't deal properly with conjunctive might claims with incompatible conjuncts, and
- (b) hence not with disjunctive might claims, either, since these *entail* conjunctive might claims.

Conjunctive mights

- (19) Grandma: It might be a boy, and it might be a girl. Should I buy blue or pink?

“the proper response is not to tell her that she is wrong, but what color to buy.”

Disjunctive mights

- (20) a. Sally: Joe might be in Boston or he might be in New York.
b. George: ??Nah/That's false. He's in New York.
- (22) a. Maria: Cal has won all of its games this year.
b. Luke: ??Nah/That's false. Cal hasn't played any games yet.

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b. Luke: ??Nah/That's false. Cal hasn't played any games yet.

Presupposition failure

- (23) If Blofeld realizes you might be in Zürich, you can breathe easy—he'll send his henchmen to Zürich to find you.
- (24) If he doesn't realize soon that you might be in Zürich, we better get you out of here.

Presupposition failure

- (25) You might be in Zürich. If Blofeld realizes this, you can breathe easy—he'll send his henchmen to Zürich to find you.
- (26) You might be in Zürich. But if he doesn't realize this soon, we better get you out of here.

A worry about cloudy contextualism

- C4 It is appropriate for a speaker to make the speech act only if she is in a position to assert *at least one* of the propositions in the cloud—that is, only if she has good grounds for taking one such proposition to be true.
- C5 It is appropriate for hearers to reject the speech act if they have good grounds for taking P^+ to be false, where P^+ is the strongest proposition in the cloud that they have good grounds for assigning a truth value to.

RATIFICATION A speaker is warranted in issuing an epistemic modal claim iff she would be warranted in confirming such a claim, were she to hear herself utter it.

Mastermind again

- (27) That's right. There might be.
- (28) $open_{\{\text{Pascal}\}}$ (There are two reds).
- (29) $open_{\{\text{Mordecai, Pascal}\}}$ (There are two reds)

Regain Ratification by modifying C4?

- C4 It is appropriate for a speaker to make the speech act only if she is in a position to assert *at least one* of the propositions in the cloud—that is, only if she has good grounds for taking one such proposition to be true.
- C4' It is appropriate for a speaker to make the speech act only if she has grounds for taking P^+ to be true, where P^+ is the strongest proposition in the cloud that she has good grounds for assigning a truth value to.

Systematic considerations

Nonstandard semantics?

Nonstandard postsemantics?

Ad hoc principles?

Confirm/Deny

Confirm/Deny: “Suppose an utterance of $\text{might}(B)(\phi)$ by S puts in play the propositions P_1, P_2, \dots . Then a hearer H can confirm (deny) the BEM if the strongest P_i that H reasonably has an opinion about is such that H thinks it is true (false).”