

EPISTEMIC MODALITY, CONTEXTUALISM AND RELATIVISM

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WILLIAM STARR

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1 Epistemic Modals

- What exactly counts as an epistemic reading of a modal?
 - Current literature says nearly nothing explicit about this
 - We know it when we see it, but let's try to say more
- Linguistic distinction (for *might* and *could*):
 - **Epistemic**
 - (1) a. # John isn't here right now. But, John might be here right now.
b. # John isn't here right now. But, it could be that John is here right now.
 - **Non-epistemic**
 - (2) a. John isn't here right now. But, John might have been here right now. (He might have made the train which he in fact missed.)
b. John isn't here right now. But, John could be here in 1 ms. (He can teleport.)
c. John isn't here right now. But, John could have been here right now. (He could have made the train which he in fact missed.)
 - (3) a. John isn't a fireman. But, John might have been a fireman (earlier in his life).
b. John isn't a fireman. But, John could have been a fireman (earlier in his life).
- *might have been* and *could have been* favor non-epistemic reading, but don't require it:
- But epistemic uses of *might/could have been* can only describe a past possibility
- **Intriguing hypothesis:** the same strange past tense behavior that occurs in the antecedents of conditionals is also at play in ordinary modals (re: last week's seminar)
- If past component of *been* is interpreted modally then counterfactual-style reading
- If interpreted as past, epistemic reading about past

Email: will.starr@cornell.edu.
URL: <http://williamstarr.net>.

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- Epistemic modals are often said, or argued, to be about **knowledge**
 - DeRose (1991): **Might**(ϕ) says that ϕ is compatible with some contextually salient group's knowledge
 - Knowledge is widely held to be veridical information
 - But Kratzer (2012: Ch.3) argues that this is wrong
 - News reports are often incorrect, yet they can specify the information an epistemic modal relates to
 - (4) According to *The Onion*, Steve Jobs must have overseen his own death
 - Let's remain neutral by just talking about 'information'

2 Contextualism

Principle texts: Kratzer (1981), DeRose (1991)

- **Contextualism Generally:** the proposition expressed by an utterance of **Might**(ϕ) is *determined* by information relevant to the context of this utterance
 - **Modal logic** analysis: $\llbracket \text{Might}(\phi) \rrbracket_R = \{w \mid R(w) \cap \llbracket \phi \rrbracket_R \neq \emptyset\}$
 - ▶ R is determined by context of utterance
 - ▶ R maps each world to the contextually relevant information at that world
 - ▶ $R(w)$ the contextually relevant information at w
 - **Kratzerian** analysis: $\llbracket \text{Might}(\mathbf{B}, \phi) \rrbracket_c = \{w \mid \llbracket \mathbf{B} \rrbracket_c(w) \cap \llbracket \phi \rrbracket_c \neq \emptyset\}$
 - ▶ $\llbracket \mathbf{B} \rrbracket_c = \{\langle w, p \rangle \mid p \text{ is the } c\text{-relevant information at } w\}$
 - ▷ So $\llbracket \mathbf{B} \rrbracket_c(w) =$ the c -relevant information at w
 - ▶ c is the context of utterance but it must be richer than Stalnaker's context set
 - ▷ c does not just provide one set of worlds (one body of relevant information)
 - ▷ It provides a set of worlds for each world (a body of relevant information for each world)
 - ▷ So c must contain something like R
 - ▷ What is a context such that it fixes such a thing? Open question.
 - The point: **fix the context of utterance** and you've **fixed** the **proposition** expressed
- **Truth:** $\llbracket \text{Might}(\phi) \rrbracket_c$ is true in w iff $w \in \llbracket \text{Might}(\phi) \rrbracket_c$
 - Truth is a two-place relation between a world and a proposition
- The proposition expressed varies with the contextually relevant information
 - Whether or not that proposition is true depends only on the proposition and the world

- Kratzer (1986) considers a case where the proposition varies:

Suppose a man is approaching both of us. You are standing over there. I am further away. I can only see the bare outlines of the man. In view of *my* evidence, the person approaching may be Fred. You know better. In view of *your* evidence, it cannot possibly be Fred, it must be Martin. If this is so, *my* utterance of (5) and *your* utterance of (6) are both true.

(5) The person approaching might be Fred.
 (6) The person approaching cannot be Fred.

Had *I* uttered (5) and *you* (6), both our utterances would have been false.
- So on Kratzer's contextualist theory, (5) and (6), in their respective contexts, express compatible propositions, both of which are true
- But how then do we capture the feeling that the two people in Kratzer's example are **disagreeing**?
 - There seems to be more of a disagreement than if Kratzer said *I am Kratzer* and Fred said *I am not Kratzer*
- It is cases like these that some have used to motivate **relativism**
 - If (5) and (6) express compatible propositions, in what sense are they disagreeing?

3 Relativism

Principle texts: Egan *et al.* (2005), Egan (2007), MacFarlane (2011), Stephenson (2007)

- Professor Granger case (Egan *et al.* 2005: 132-3):
 - A CNN reporter in a live interview from Cleveland w/Myles: "Where are all of the celebrities? Where is Professor Granger?"
 - Myles: "We don't know. She might be in Prague. She was planning to travel there, and no one here knows whether she ended up there or whether she changed her plans at the last minute."
 - Prof Granger is amusedly watching from Bora Bora and thinks to herself: Myles was wrong when he said that I might be in Prague.
- Boston cases (MacFarlane 2011: §2.1):¹
 - You overhear George and Sally talking in the coffee line. Sally says, "Joe might be in Boston right now." You think to yourself: Joe can't be in Boston; I just saw him an hour ago here in Berkeley. *Question*: Did Sally speak falsely?
 - MacFarlane: intuitively, yes.

¹ Inspired by Hawthorne (2004: 27 n.68).

- Bond case Egan (2007):
 - Bond and Leiter are in London listening to a bug Bond planted in a conference room in SPECTRE's headquarters in the Swiss Alps. Bond left behind some misleading evidence pointing to his presence in Zürich. Blofeld finds the evidence, takes it to be genuine, and turns to his No.2:

(7) Bond might be in Zürich
 - No.2 replies "That's true." But, Leiter, hearing this all from London, is not at all inclined to say "That's true." when *he* hears (7) from Blofeld, even though Leiter knows that it is compatible with what Blofeld knows.
- The relativist idea:
 - Epistemic modals have different truth-conditions in different **contexts of assessment**
 - ▶ When the context of utterance is the context of assessment, the view is indistinguishable from contextualism
 - ▶ That is why it takes cases of eavesdroppers, over-hearers, etc. to detect the difference
 - Predictions which match contextualist analysis:
 - ▶ *My* utterance of (5), when assessed in *my* context, is true
 - ▶ *Your* utterance of (6), when assessed in *your* context, is true
 - Predictions which don't match, and are supposed to explain feeling of 'disagreement':
 - ▶ But *my* utterance of (5), when assessed in *your* context, is false
 - ▶ *Your* utterance of (6), when assessed in *my* context, is false
 - Same for Prof. Granger's assessment of *Granger might be in Prague*
 - ▶ Assessed in Granger's context, this is false
 - ▶ Assessed in the context of utterance, it is true
- There are two ways of articulating relativism
 - Relativizing content: epistemic modals express different propositions in different contexts of assessment
 - Relativizing truth: epistemic modals always express the same 'proposition' which is true relative to some assessors and not others
- Let's make Content Relativism and Truth Relativism more precise

3.1 Content Relativism

(Defended by Weatherson 2009 for indicative conditionals, but called ‘indexical relativism’)

- **Content Relativist** analysis: $\llbracket \text{Might}(\mathbf{B}, \phi) \rrbracket_{c,a} = \{w \mid \llbracket \mathbf{B} \rrbracket_{c,a}(w) \cap \llbracket \phi \rrbracket_{c,a} \neq \emptyset\}$
 - $\llbracket \mathbf{B} \rrbracket_{c,a} = \{\langle w, p \rangle \mid p \text{ is the } a\text{-relevant information at } w\}$
 - ▶ So $\llbracket \mathbf{B} \rrbracket_{c,a}(w) =$ the a -relevant information at w
 - a is the context of **assessment**
- The point: **fix** the **context** of **assessment** and you’ve **fixed** the **proposition** expressed
- **Truth**: $\llbracket \text{Might}(\phi) \rrbracket_{c,a}$ is true in w iff $w \in \llbracket \text{Might}(\phi) \rrbracket_{c,a}$
 - Truth is **still** a two-place relation between a world and a proposition
- In cases without eavesdroppers, etc. $c = a$, so this analysis often makes predictions identical to contextualist analysis
- On this view, epistemic modals do not express a proposition until assessed
 - When assessed, it’s infor relevant to the assessment that is taken into consideration
 - As Egan & Weatherson (2011:11) suggest, it is probably plausible to take this information to include the speaker’s information and the assessor’s information
 - \mathbf{B} is something like *we*, but for information
- But this proposition is of the conventional variety:
 - It is a set of worlds, or (if you don’t like the possible-worlds theory of propositions) determines such a set
- Not so for Truth Relativism

3.2 Truth Relativism

(As Egan 2007 develops it. MacFarlane 2011 opts for a slightly more complicated version, but we won’t be looking at issues pertinent to this complication.)

- **Truth Relativist** analysis: $\llbracket \text{Might}(\mathbf{B}, \phi) \rrbracket_c = \{\langle w, j \rangle \mid \llbracket \mathbf{B} \rrbracket_c(w, j) \cap \llbracket \phi \rrbracket_c \neq \emptyset\}$
 - $\llbracket \mathbf{B} \rrbracket_c = \{\langle \langle w, j \rangle, p \rangle \mid p \text{ is } j\text{'s relevant information at } w\}$
 - ▶ So $\llbracket \mathbf{B} \rrbracket_c(w, j) = j\text{'s relevant information at } w$
 - j is the assessor or ‘judge’
- Epistemic modals express propositions that are neither context, nor assessment sensitive
- Instead, **truth** is assessment sensitive
- **Truth**: $\llbracket \text{Might}(\phi) \rrbracket_c$ is true in w relative to j iff $\langle w, j \rangle \in \llbracket \text{Might}(\phi) \rrbracket_c$
 - Truth is **now** a three-place relation between a world, a judge and a proposition

▶ Or, equivalently, between a *centered world* and a proposition

▶ Lewis (1979) analyzed the objects of *de se* attitudes as sets of *centered worlds*

- On this view, epistemic modals express a single proposition in all contexts of utterance and assessment
 - Not so for Content Relativism
- But this proposition is true relative to some judges and not others
- In the Granger case, consider the proposition expressed by *Granger might be in Prague*
 - It is true relative to Myles (interviewee)
 - It is false relative to Granger
 - So they disagree about the truth of the very same proposition

4 von Fintel & Gillies (2008: 79) on Relativism

“Insofar as we want to treat cases of modal disagreement as situations in which both parties speak truly but have substantive disagreement, [relativist] theories seem to offer a considerable overlap between our cake having and our cake eating. We intend to rain on this parade, cake and all. And no one likes soggy cake.” (von Fintel & Gillies 2008: 79)

- Not all *mights* are retracted or rejected in the face of new evidence
 - (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 that they *were* in the drawer. I said they *might be* there – and they might have been. Sheesh.
- We are wondering where John is, and you say:
 - (9) If John is not in his office, he might be in New YorkIn his office, we find a note: “I’m in Boston.” It’s not natural to retract with (10)
 - (10) ?? I guess I was wrong
- Why not think that the ‘disagreement’ concerns the scope proposition, as in (11)?
 - (11) a. X : I think it’s raining out.
 - b. (i) Y : No, it isn’t/ No it can’t be.
 - (ii) Y : ?? No, you don’t.
 - Clearly (11ai) targets the proposition that it’s raining out
- This is indeed possible with modals, where *either* proposition can be targeted!

- Pascal is teaching Mordecai to play Mastermind. After a few rounds, Pascal says:
 - (12) There might be two reds
 Mordecai, who knows the solution, could say any of the following:
 - (13)a. That's right. There might be.
 - b. That's right. There are.
 - c. That's wrong. There can't be.
 - d. That's wrong. There aren't.
- The challenge: relativists want to say the very same proposition goes from true to false
 - But their data simply don't guarantee that what's true in one case and false in the other are the same proposition
 - ▶ Offhand, this challenge doesn't seem to apply to Content Relativism...
- Additionally, they have not ruled out the idea that challenges and retractions may not target a proposition at all
 - Sometimes we challenge the grounds of an utterance (e.g. You're in no position to assert that!)
 - *Might* claims do more than profess ignorance
 - They make a point of professing ignorance about a particular possibility
 - By professing this ignorance about *this* possibility, they convey that this possibility should be taken seriously
 - So their utterance may be open to reproach, retraction or correction when it becomes clear that they were relying on incorrect assumptions
- Another worry: 'time-lag' (intuitions not particularly sharp, in my opinion)
- Problem with Tense?
 - Sophie is looking for ice cream, but finds none in the freezer. Why did she look there?
 - (14) a. There might have been ice cream in the freezer
 - b. PAST(*might*(ice cream in freezer))
 It is possible for Sophie to say something true, even though in the context of assessment she knows there is none
 - ▶ So it would seem that (14) should come out false on a relativist analysis
 - Standard analysis of past tense: $\llbracket \text{Past}(\phi) \rrbracket_c = \{ \langle w, t \rangle \mid t < t_c \ \& \ \langle w, t \rangle \in \llbracket \phi \rrbracket_c \}$
 - ▶ ϕ was true in a world in the past of now (t_c) iff there is a time before now in that world where ϕ was true
 - ▶ Propositions are sets of world-time pairs
 - ▶ Truth is defined relative to a world and a time

- ▶ The point: the semantics of past tense is contextualist
- Temporal **Kratzerian** analysis: $\llbracket \text{Might}(\mathbf{B}, \phi) \rrbracket_c = \{ \langle w, t \rangle \mid \llbracket \mathbf{B} \rrbracket_c(w, t) \cap \llbracket \phi \rrbracket_c \neq \emptyset \}$
 - ▶ $\llbracket \mathbf{B} \rrbracket_c = \{ \langle \langle w, t \rangle, p \rangle \mid p \text{ is the } c\text{-relevant information in } w \text{ at } t \}$
 - ▷ So $\llbracket \mathbf{B} \rrbracket_c(w, t) =$ the c -relevant information in w at t
- $\llbracket \text{Past}(\text{Might}(\phi)) \rrbracket_c = \{ \langle w, t \rangle \mid t < t_c \ \& \ \llbracket \mathbf{B} \rrbracket_c(w, t) \cap \llbracket \phi \rrbracket_c \neq \emptyset \}$
 - ▶ There's a past time where the **context's** modal base was compatible with ϕ
- Temporal **Content Relativist** analysis (Version 1):
 $\llbracket \text{Might}(\mathbf{B}, \phi) \rrbracket_{c,a} = \{ \langle w, t \rangle \mid \llbracket \mathbf{B} \rrbracket_{c,a}(w, t) \cap \llbracket \phi \rrbracket_{c,a} \neq \emptyset \}$
 - ▶ $\llbracket \mathbf{B} \rrbracket_{c,a} = \{ \langle \langle w, t \rangle, p \rangle \mid p \text{ is the } a\text{-relevant information at } \langle w, t \rangle \}$
 - ▷ So $\llbracket \mathbf{B} \rrbracket_{c,a}(w, t) =$ the a -relevant information at $\langle w, t \rangle$
 - ▶ a is the context of **assessment**
- $\llbracket \text{Past}(\text{Might}(\phi)) \rrbracket_{c,a} = \{ \langle w, t \rangle \mid t < t_c \ \& \ \llbracket \mathbf{B} \rrbracket_{c,a}(w, t) \cap \llbracket \phi \rrbracket_{c,a} \neq \emptyset \}$
 - ▶ There's a past time where the **assessor's** modal base was compatible with ϕ
- No problem so far!
- More data show that Version 1 isn't what a relativist wants:
 - (15) a. Alex at t_1 : The keys might be in the car.
 - (...Looks...They're not there.)
 - b. Alex at t_2 : Oh, I guess I was wrong. They can't be in the car.
 - ▶ This is exactly the kind of retraction that motivates relativism, but on Version 1 it is not captured
 - ▶ On Version 1, what (15a) says *was* true but *is* false.
 - ▶ In the past, assessor's knowledge was compatible with the keys being in the car
 - ▶ What we want is the assessor's knowledge in the context of assessment
 - ▶ So we need to change the semantics for $\llbracket \mathbf{B} \rrbracket_{c,a}$
- Temporal **Content Relativist** analysis (Version 2):
 $\llbracket \text{Might}(\mathbf{B}, \phi) \rrbracket_{c,a} = \{ \langle w, t \rangle \mid \llbracket \mathbf{B} \rrbracket_{c,a}(w, t) \cap \llbracket \phi \rrbracket_{c,a} \neq \emptyset \}$
 - ▶ $\llbracket \mathbf{B} \rrbracket_{c,a} = \{ \langle \langle w, t \rangle, p \rangle \mid p \text{ is the } a\text{-relevant information at } \langle w, t \rangle \}$
 - ▷ So $\llbracket \mathbf{B} \rrbracket_{c,a}(w, t) =$ the a -relevant information at $\langle w, t_a \rangle$
 - ▶ a is the context of **assessment**, t_a the time of assessment
- $\llbracket \text{Past}(\text{Might}(\phi)) \rrbracket_{c,a} = \{ \langle w, t \rangle \mid t < t_c \ \& \ \llbracket \mathbf{B} \rrbracket_{c,a}(w, t_a) \cap \llbracket \phi \rrbracket_{c,a} \neq \emptyset \}$
 - ▶ There's a past time and the **assessor's** current modal base is compatible with ϕ
- But this analysis **does** get (14) wrong!
- Dilemma: fail to account for the motivating phenomena or get tensed modals wrong!

- Gibbard-style cases:
 - The Boss, two informants Jack and Zack, are spying on an enemy meeting to discern whether *P*, *Q* or *R* is the traitor
 - Jack looks through his peep hole and sees that either *P* or *Q* is the traitor
 - Zack looks through his peep hole and sees that either *Q* or *R* is the traitor
 - Jack sends The Boss (16a) and Zack sends him (16b)
 - (16) a. It must be that either *P* is the traitor or *Q* is the traitor
 - b. It must be that either *Q* or *R* is the traitor
 - It seems natural for The Boss to conclude that *Q* is the traitor
 - But, in The Boss's context of assessment, both modals come out false
 - This gets at a more general puzzle for relativists: when a less informed assessor interprets modal claims they must do a bunch of inductive reasoning about why the utterers asserted them and what their information was
 - This just looks like reconstructing the contextualist account
 - Why doesn't this reasoning kick in in the relativist's motivating cases?
 - It must be something about the asymmetry between the quality of information in the context of assessment and utterance
 - But it seems like a contextualist analysis built on that idea could work too!
- Even when the assessor is more informed, he can agree with less-informed modal claims:
 - Mordecai is still teaching Pascal to play Mastermind. After some hints, Pascal says:
 - (17) There might be two reds.
 Despite knowing the solution, Mordecai and perfectly well say:
 - (18) That's right. There might be.
- Two more objections:
 - *might* and *and/or*
 - Modals embedded under factive attitude verbs e.g. *realize*

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