

Epistemology & subjectivity

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What I'm interested in, long-term:

- (1) John must be at the store.
 - a. evidential component: incompatible with certain contexts
 - b. epistemic component: high level of speaker certainty (aot *might*)
 - c. speaker-orientedness: what happens when an interlocutor agrees/disagrees
 - d. truth-conditionality: does *must* contribute all/some/no truth-conditional content?

Compare to:

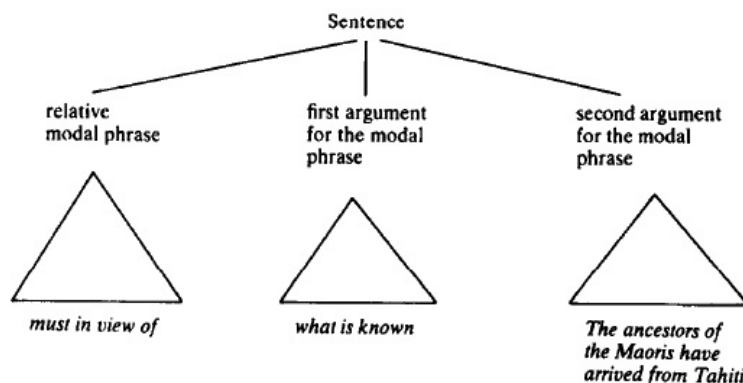
- (2)
 - a. Apparently, John is at the store.
 - b. John is at the store, definitely.

1 Background: modality

- possible worlds! (Kripke, 1959, 1963)
- possibility; necessity
- flavors! (Kratzer, 1977, 1981)

logic	symbols	expressions symbolized
Modal logic	\Box	It is necessary that...
	\Diamond	It is possible that...
Deontic logic	O	It is obligatory that...
	P	It is permitted that...
	F	It is forbidden that...
Doxastic logic	Bx	x believes that...

- deontic, epistemic
- dispositional (*If you must sneeze, use a handkerchief*)
- preferential (*You simply must go to the ball*)



- three-parameter approach: modal force; modal base; ordering source

- accessibility relations (*‘must in view of’*)

$$(3) \quad \llbracket \text{must}(p) \rrbracket = \{w : \forall w' [R_{f,g}(w, w') \rightarrow p(w')]\}$$

- partial ordering on worlds, \leq

- (9) a. She climbed Mount Toby.
b. She must have climbed Mount Toby.

- claim: ordering sources can account for (9b)’s relative weakness. In this case, the source is ‘stereotypical’
- “Universal quantification is then only over the set of closest worlds. Since it is not necessary for w to be an element of the set of worlds that come closest to what normally happens in w , (9b) will not entail (9a) in w ” (ibid.).

2 Background: epistemic modals

- Epistemic modals differ from all other modals at least in terms of their ability to receive a subjective interpretation (see Lasnik, 2005; Stephenson, 2007)
- variously described as sensitivity to a “context of evaluation” (Egan et al., 2005); a “context of assessment” (MacFarlane, 2010); a judge (Lasnik, 2005).¹

- (4) a. Roller coasters are scary...but I dont think of them as such. *objective*
 b. Roller coasters are scary...and I certainly think so. *subjective*
 c. Roller coasters are scary...but most people think they're not. *subjective*

- (5) A: Roller coasters are scary.
 B: No, I think theyre fun/lame! *objective*
 B': Yes, but I think theyre fun/lame! *subjective*

- (6) A: Alfred may be unmarried.
 B: No, I think he's married! *objective*
 B': Yes, but I think he's married! *subjective*

- (another way of thinking of these data: ‘no fault’ disagreement)
- another test: sharing of contents (‘believe the same’ tests; Moltmann, 2010)

- (7) A believes the wine tastes good.
B believes the wine tastes good.
A and B believe the same thing.

- (8) John believes that Mary is there (in New York).
Bill believes that Mary is there (in Boston).
John and Bill believe the same thing.

- Are we sure it's just epistemics? Why?
- Another issue: extra-truth-conditionality (Lyons, 1977; Papafragou, 2006)
 - inability to be directly denied (or agreed with):

¹For a much better handout, see Partee (2009).

- (9) A: John lives in Brooklyn, definitely.
 B: Nuh-uh, John lives in Queens.
 B': #Nuh-uh, its only possible that John lives in Brooklyn.
- (10) A: This professor must be smart.
 B: ?Is that so? (= Is it the case that this professor must be smart?)
 B': ?Thats not true. (= It is not true that this professor must be smart)
- inability to scope under other quantifiers (von Fintel and Iatridou, 2003):
- (11) #Every student may be the tallest person in the department.
- (related:) the co-occurrence of objective and subjective epistemic modals (Lyons, 1977)
- (12) a. He may possibly have forgotten.
 b. He may have forgotten.
 c. He has possibly forgotten.
- ability to occur in antecedents (Papafragou, 2006)
- (13) a. ?If Max must be lonely, his wife will be worried.
 b. ?If Max may be lonely, his wife will be worried.
- weirdness under speaker- and time-of-utterance-oriented emotive factives (Papafragou, 2006)
 [JR: This seems to be specific to epistemic universals]
- (14) a. ?It is surprising that Superman must be jealous of Lois.
 b. ?Spiderman told me that Superman must be jealous of Lois.
- Papafragou (2006) observes: these restrictions are specific to subjective interpretations of epistemics.
- (15) A: It may rain tomorrow. *where A is a meteorologist*
 B: Is that so? (= Is it the case that it may rain tomorrow?)
 B': Thats not true. (= It is not true that it may rain)
- (16) If it may rain tomorrow, people should take their umbrellas.
- (What about the scoping with modals test?)
- (17) Every major city may receive the most rain in the US tomorrow.

3 Hidden indexical accounts

- cf. Relativism
 - Lasnik (2005); Stephenson (2007); von Fintel and Gillies (2008, 2010, 2011): hidden indexical accounts of subjectivity (from von Fintel and Gillies (2011), ask me about inaccuracies):
- (18) For a context of utterance c ; an index of evaluation i consisting of a pair of an evaluation world w' and an evaluation time t^i ; a contextually supplied group G_c and a function f_x which delivers the set of worlds compatible with what x knows:
- a. $\llbracket \text{may } \phi \rrbracket^{c,i} = 1$ iff $\forall x \in G_c : \exists w' \in f_x(i) : \llbracket \phi \rrbracket^{c,\langle w', t^i \rangle} = 1$
 b. $\llbracket \text{must } \phi \rrbracket^{c,i} = 1$ iff $\forall x \in G_c : \forall w' \in f_x(i) : \llbracket \phi \rrbracket^{c,\langle w', t^i \rangle} = 1$

- inter-theoretical differences:
 - judge parameters
 - centered worlds
- similarities:
 - truth evaluation wrt some judge;
 - some assumption about autocentric perspective
- Papafragou (2006): an extension to apparent extra-truth-conditionality (following Lyons, 1977)
 - Lyons (1977) suggested that subjectively interpreted epistemic modals are performatives, functioning at the speech-act level to express the speakers belief in the reliability of the proposition expressed. His analysis of the subjective/objective ambiguity was thus a scopal one.
 - “[I]f Lyons proposal is on the right track, the traditional claim that epistemic modality does not contribute to propositional content needs to be reformulated. According to the new (weaker) version of the claim, it is only subjective epistemic interpretations which fall outside the propositional content of the utterance” (p1692).

4 Problems

“Naturally, there are several differences between epistemic modals and the class of performatives. For instance, epistemic modal verbs lack syntactically parenthetical uses; more importantly, they do not involve a verbal act but rather a mental act of evaluation of a state of affairs (cf. Nuyts, 2000; Faller, 2002). Nonetheless, crucially, both subjective epistemics and performatives are tied to the here-and-now of the conversational exchange. In this sense, subjective epistemic modals are close to a class of mental verbs such as *think*, *infer*, *conclude* and *conjecture*, even though not illocutionary force indicators themselves.” (Papafragou, 2006, 1696)

- (19) a. ?It is surprising that John must live in Brooklyn.
 b. It is surprising that I think that John lives in Brooklyn.
 c. It is surprising that it follows from what I currently know that John lives in Brooklyn.
- (20) ?Bill finds it surprising that John must live in Brooklyn.
- (21) a. What a teacher (*I conclude) John is!
 b. What a charmer (*I infer) John will grow up to be!
 c. (Just think of it!) How terribly much money (*I conjecture) he might have!
- (22) a. (Given what I know,) What a teacher John must be!
 b. (Given what I know) What a charmer he could grow up to be!
 c. (Just think of it!) How terribly much money he might have!

5 A solution?

- an informal suggestion that there’s a parallel with exhaustivity in questions (formalism hijacked from George, 2011)

(23) a. Who came to the party?
 b. John, Sue and Bill.

(24) a. Where can John buy an Italian newspaper?
 b. On Main Street.

(25) $\llbracket \text{Who came to the party?} \rrbracket$
 $= \{p : \exists S[p = \lambda w.(S = \lambda x.\llbracket x \text{ is a person who came to the party} \rrbracket^w)]\}$

(26) $\llbracket \text{Where can John buy an Italian newspaper?} \rrbracket$
 $= \{p : \exists x[p = \lambda w.\llbracket \text{John can buy a newspaper at } x \rrbracket^w)]\}$

- two interpretations of *might*:
 1. the speaker is committed to there being a possible world in which it rains tomorrow in the set of all worlds epistemically accessible to her
 2. the speaker is committed to there being a raining world in a subset of this set
- two interpretations of *must* (in e.g. *John must live in Brooklyn*):
 1. the speaker is committed to the claim that all worlds epistemically accessible to her are worlds in which John lives in Brooklyn
 2. the speaker is committed to the claim that all worlds within a particular subset of those epistemically accessible to her are worlds in which John lives in Brooklyn
- extra-truth-conditionality arises when an inherently vague modal base is invoked
 - parallel: only clearly specified (not ambiguous or underspecified) content can be denied
 - needed: independent examples, perhaps from relative clauses
- worries: negating subjective (possibility) epistemics

6 Things to wonder about

- the differences between epistemics and PPTs (Stephenson, 2007)
 - PPTs can have non-subject-oriented readings, epistemics cannot
- (27) A: Hows that new brand of cat food you bought?
 B: I think its tasty, because the cat has eaten a lot of it.
- seeming independence of the two judge parameters
- (28) The cat food might be tasty.
- subjective meanings wrt explicit valuation of the judge (e.g. *tastes good to John*)
- difference between *must* and *may*, empirical and theoretical (*must* is anaphoric to some deduction in the discourse; Stone, 1994)
- what, explicitly, causes extra-truth-conditionality
- the relationship between the meanings in (1)

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