CLASS 2: EPISTEMIC MODALITY AND EVIDENTIALITY

Classic modal account: Epistemic modals are quantifiers over possible worlds, restricted by an epistemic accessibility relation.

(1)   John is not in his office. He ***may/must*** be home.
        In some/all worlds compatible with what is known (e.g., the fact that John is not in his office) John is home

- This account seems to adequately capture the meaning of epistemics, and the duality of possibility and necessity modals.

- It also makes sense of the fact that *must/may* can also express other modal flavors (*deontic, bouletic…*): same lexical entry, different accessibility relations.

However, there are reasons to doubt that epistemics share a lexical entry with other modals.

- Distribution-wise:

1. Systematic scope differences between epistemics and other modals that seem to go beyond differences in accessibility relations.

        Epistemics tend to scope higher than tense, aspect, quantifiers and negation; roots (=*non epistemic*) lower than these elements.

2. More generally, epistemics don't embed easily, not just within their clause: in questions, if-clauses, complements of attitude verbs (Jackendoff 1972, Drubig 2001).

- Function-wise:

1. This difficulty embedding has lead to proposals that deny that epistemics contribute truth conditional content. Instead, epistemics express a speaker's comment/commitment to the proposition expressed by the complement (Halliday 1970, Palmer 2001):

    [Epistemic modality] is the **speaker's assessment of probability and predictability**. It is <u>external to the content</u>, being a part of the attitude taken up by the speaker: his attitude, in this case, towards his own speech role as 'declarer'. (Halliday 1970)

2. This intuition has been formalized recently by:

    - Having epistemic modals modify or perform a different *speech act*, such as a kind of '**doxastic advice**' (Swanson 2006):

(2)   a.   There might have been a mistake.
        b.   *I (hereby) advise you not overlook the possibility that there was a mistake*.

- Treating them as **evidentials** (Westmoreland 1998, Drubig 2001), which are often said *not* to contribute to the truth conditional content of the sentence they combine with, but rather indicate the speaker's grounds for expressing that sentence (cf. Faller 2002).

(3)   *Quechua reportative evidential suffix* si   (Faller 2002)
        Marya-qa yachay wasi-pi-**s** ka-sha-n
        Marya-top know house-loc-**report** be-prog-3
        Assertion: 'Marya is at school'
        Source of evidence: hearsay

Epistemics would be evidentials, indicating the source of evidence as a *deduction* (Drubig 2001):

(4)   John must be home.
        Assertion: 'John is home'
        Source of evidence: deduction

While the **evidential alternative** is appealing, it has the unfortunate consequence of treating the fact that the same lexical items express epistemic and root 'modality' as an accident[1].

⇒   Suspicious given this lexical accident is found in language after language.

We will hence examine the evidence carefully. We will see that:

- Epistemics *do* contribute to truth conditions, in favor of a modal account.

- The evidential alternative does, however, highlight important features of epistemic modality that we need to capture:

    1. Epistemics' distribution is constrained in ways that doesn't fallout straightforwardly from a standard modal account.

    2. There seems to be a tight connection between epistemics and evidentials. Why?

What do evidentials and epistemic modals have in common?

Virtually every possibility has been argued for:

- **Nothing**. Evidentials and epistemics are **distinct categories**, the former encoding *source* of information, the latter, degree of committment (de Haan 1999, Aikhenvald 2004).

- Evidentials and epistemics are **distinct categories,** *but* **they stand in some dependency** (Portner 2007): evidentials impose restrictions on a modal's conversational backgrounds.

- **Epistemics are evidentials** (Westmoreland 1998, Drubig 2001)

- **Epistemics have an evidential component** (Fintel&Gillies 2008, Matthewson *et al.* 2007, Kratzer 2009).

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[1] Drubig (2001) proposes that English and Romance languages are in a historical process of developing an evidential system from modal auxiliaries.

- *Some* **evidentials are epistemic modals** (Izvorski 1997, Garrett 2001, Matthewson *et al.* 2007, Faller 2002, to appear, McCready&Ogata 2007, a.o.)
- *ALL evidentials* **are epistemic modals** (Matthewson 2009, 2010).

The Plan

- Epistemics' contribution to truth conditions
- Epistemics' evidential component
- Evidentials as epistemics

1. Epistemics *do* contribute to truth conditions

1.1. Lack of embeddability?

If an element can be interpreted in the scope of another operator, it contributes to truth conditions.

Drubig (2001): Epistemics are *evidentials*. As such they're part of the extrapropositional layer of clause structure and *take scope over all propositional operators*.

Epistemics scope high within their clause

Epistemics>root modals

(5)   John may have to watch TV.   *epistemic>deontic; *deontic>epistemic*

Epistemic>negation

(6)   John may not watch TV…
        a. … he never knows what's happening on *Lost*.   *epistemic: may>not*
        b. … his dad is very strict.   *deontic: not>may*

(7)   **Malay** (Drubig 2001)
        a. Dia **mesti** tidak belajar.   (*epistemic*)
           he must not study
        b. Dia tidak **mesti** belajar.   (*deontic*)
           He not must study

Epistemics>QPs

Epistemic modals can scope over quantifier subject, while other modals cannot (Brennan 1993):

(8)   a. Every radio may get Chicago stations and no radio may get Chicago stations.
           It's possible that every radio gets C. stations, it's also possible that none of them do.
        b. #Every radio can get Chicago stations and no radio can get Chicago stations.
           Every radio is such that it gets C. stations, and no radio is s.t. it gets C stations.

In fact, epistemics may *have to* scope over quantifier subject (Fintel&Iatridou 2004):

(9)   #Every student may be the oldest student.   [Tancredi 2007]

Epistemics>tense

Epistemics**'** time of evaluation: speech time (in matrix context): (Groenendijk & Stockhof 1975, Iatridou 1990, Abusch 1997, Picallo 1990, Abraham 2001, Stowell 2004).

Scenario: A crime occurred last week. *Last week*, John had a solid alibi: Mary said they were meeting in his office at the time of the crime. But *yesterday*, several witnesses claimed they saw Mary at the library at that time, destroying John's alibi.

(10)   John had to be in his office at the time of the crime.
        *Given what we know **now**, it is necessary that John **was** in his office **then**.*
         Given what we knew **then, it was necessary that John was in his office.*

In this scenario (10) is false: it can't refer to time when John's alibi was solid.

Epistemics do not embed easily

Questions

(11)   May/must John leave early tonight?   **epistemic/deontic*   [Jackendoff 1972]

Antecedents of conditionals

(12)   ?If Max must/may be lonely, his wife will be worried.   [Papafragou 2006]

Complements of attitudes

(13)   a. ?It is surprising that Superman must be jealous of Lois.   [Papafragou 2006]
        b. ?Spiderman told me that Superman must be jealous of Lois.

Counterexamples to non embeddability claims

Within their clause:

Negation (Cormack & Smith 1991, Palmer 2001, Fintel & Iatridou 2003)

(14)   a. Jane doesn't have to be at home.
        b. Jane need not be home.
        c. Jane can't be home.

Tense (Fintel& Gillies 2008, Homer 2009)

(15)   A: [after seeing B looking in a drawer]. Why did you look in there?
        B: My keys might have been in the drawer.
           It WAS possible that my keys were in there

Quantifiers (*each vs. every*) (Huitink 2008)

(16)   Each student may be the oldest student.

In embedded contexts[2]:

Questions

(17)   Must Alfred have cancer?   [Papafragou 2006]

Antecedents of conditionals

(18)   If Paul may get drunk, I'm not going to the party.   [Papafragou 2006]

Complements of attitudes

(19)   a. It is surprising that the victim must have known the killer.   [Papafragou 2006]
        b. The police told reporters that the victim must have known the killer.

(20)   Mary believes that Max must be lonely.   [Portner 2007]

Why should (12)/(13) be worst than (19)/(20)?

Papafragou (2006): The former favor a *subjective* interpretation of modal, the latter an *objective*.

Subjective vs. Objective Epistemics (Lyons 1977)

- *subjective* (based on someone's personal and perhaps fallible evidence)
- *objective* (based on more reliable/complete scientific evidence).

For Lyons, *subjective* epistemics are illocutionary force indicators, which act at speech act level, and hence do not embed. *Objective* epistemics contribute to truth conditions, and can thus embed.

More conservative proposals derive subjective/objective contrast via differences in conversational backgrounds (*in view of what I know/in view of what is known*; Papafragou 2006, Portner 2009).

However, while subjective epistemics may have greater difficulty embedding, even they do embed sometimes, cf. (21).

1.2. Assent/Dissent[3]

If an element can be *questioned*, *doubted* or *disagreed with*, it contributes to the truth conditional content of the proposition expressed.

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[2] Preliminary corpus data show epistemics occur in questions, but are quite rare; they're exceedingly rare in *if*-clauses (virtually no *necessity* modals), but frequent in complements of certain attitude verbs (Wellwood *et al*, *in progress*).
[3] Assent/dissent data may be complicated by the fact that the truth/falsity of an epistemic claim may be relative to the perspective of the sentence's *assessor*, if relativists theories of epistemic modality are right (McFarlane 2996, Egan *et al* 2005, Stephenson 2007, cf. Fintel & Gillies 2008 for a critique and overview).

The content of an *epistemic* can be challenged (Faller *to appear*, Matthewson 2010):

(21)   A: It's snowing down here, so Truckee **must** be buried in snow.

        B: That's not true. A hundred years or so ago, it snowed down here, but not a single flake in Truckee. So it *could* be that it's not snowing in Truckee.

Though, not always:

(22)   A: This professor must be smart.   [Papafragou 2006]
        B: ?Is that so? (=Is it the case that this professor must be smart?)
        C: ?That's not true (=It is not true that this professor must be smart).
        [C': That's not true. He's really dumb.]

Papafragou (2006): *Subjective* epistemics may be harder to challenge, *not* because they don't participate in truth conditions, but because they invoke the speaker's private beliefs. The speaker himself can challenge his own epistemic claim:

(23)   Clark Kent may be Superman. No, that's not right. Clark Kent *must* be Superman.

1.3. Epistemics' contribution to truth conditions

- Epistemics *can* be challenged (assent/dissent), questioned, or negated.

- Epistemics *can* be embedded, and when they do, they are interpreted:

(24)   If Paul might be a terrorist, the FBI must have a file for him.
        = If it's *possible* that Paul is a terrorist…

However, these embedding possibilities are not entirely free. Whence the difficulty embedding?

- **Subjectivity**: If epistemic is interpreted as *subjective*, harder to challenge or question since it invokes private beliefs (Papafragou 2006).

- **Dependency**? Epistemics have anaphoric content explaining their limited distribution?

If epistemics do contribute to truth conditions, whence the propensity to treat them as evidentials?

- Evidentials have an evidential component.
- Evidentials may themselves contribute to truth conditions.

2. Epistemics' evidential component

(25)   a. [Seeing pouring rain] #It must be raining.   [Fintel&Gillies 2008]
        b. [Seeing someone come in with a wet umbrella] It must be raining.

Could (25a) be felicitous because *must p* makes a WEAKER claim than *p* (cf. Karttunen 1972)?

von Fintel and Gillies (2008): No. *must p* doesn't make a weaker claim than *p*:

(26) a. The ball is either in A or in B or in C.
      b. The ball is not in A. It is not in B.
      c. The ball must be in C.

(25a) is infelicitous because *must* signals the **presence of inference** (independent of strength): *must* has an evidential component (e.g., a presupposition).

3. Are evidentials epistemic modals?

3.1. Evidentials

Chafe & Nichols (1986); Rooryck (2001):

- Evidential markers are grammatical categories which indicate how (*source*) and to what extent (*reliability*) speakers stand for the truth of the statement they make.
- Types of evidentiality: immediate evidence (visual/sensory information) or inference (based on (non)observable facts, deduction…)
- Evidentials most often derived by a grammaticalization process from either perception verbs and verbs of saying or personal pronouns (Botne 1995)

It is often assumed evidentials do not contribute truth conditional content, e.g., they are illocutionary modifiers, Faller (2002).

This is supported by the fact that they tend not to interact with other elements in the clause, nor embed, nor be questioned or denied directly.

We now turn to evidence that evidentials *do* contribute to truth conditions, and should be treated as *epistemic modals*.

We'll consider Matthewson's (2010) claim that *ALL* evidentials are epistemic modals, i.e., quantifiers over possible worlds, which indicate source of evidence via a presupposition. Differences amongst evidentials due to differences in conversational backgrounds.

3.2. Truth conditional contribution?

At first hand, evidentials look like they do not make truth conditional contributions:

- They tend to have widest scope:

E.g., Quechua reportative outscopes negation (Faller 2002)

(27) Ines-qa mana-**s** qaynunchaw nana-n-ta-chu watuku-sqa
      Ines-top not-**rep** yesterday sister3-acc-neg visit-past2
      'Ines didn't visit her sister yesterday'.

   (i)   Speaker has reportative evidence that Ines did not visit her sister.
   (ii) #Speaker does not have evidence that Ines visited her sister yesterday.

- They cannot be challenged:

(28) Ines-qa qaynunchaw nana-n-ta-**s** watuku-sqa   [Faller 2002]
      Ines-top yesterday sister3-acc-**rep** visit-past2
      'Ines visited her sister yesterday (reportedly).

(29) Mana-n chiqaq-chu. Manta-n-ta-ll-n watuku-rqa-n
      Not-bpg true-neg. mother3-acc-lim-bpg visit-past1-3
      'That's not true. She only visited her mother.

(30) Mana-n chiqaq-chu. #Mana-n chay-ta willa-rqa-sunki-chu
      Not-bpg true-neg. Not-bpg this-acc tell-past1-3s2o-neg
      'That's not true. You were not told this.

However, Matthewson (2010) argues that:

- If an evidential can't scope under some element, this doesn't necessarily mean that it's not a propositional level operator (cf. some modals can't scope under negation).
- The fact that the reportative cannot be challenged or negated is expected under a modal analysis, where the source of evidence is *presupposed*, and hence cannot be challenged, and will project through negation.

Do we have cases of embedded (and interpreted) evidentials?

Antecedents of conditionals
(Lilloet Salish direct non visual sensory evidential *lakw7a*, Matthewson 2010)

(31)   You want your daughter to collect the eggs, but she is lazy. She doesn't want to go outside. You are sitting around, then there is a squawking from the henhouse. Your daughter says:

   Daughter: lan lakw7a wa7a iks-am ti tsiken-a
               already lakw7a impf egg-mid det chicken-exis
               '*It sounds like the chicken laid an egg*'.
   You: Ih-lan-as lakw7a wa7a iks-am, nas zam' ats'x-en!
               If-already-3sbjn lakw7a impf egg-mid go after.all see-dir
               '*If it sounds like the chicken laid an egg, then you just go and check it*'.

Complement of attitudes: While many languages do not allow evidentials in complement clauses (Abkhaz, Qiang, Eastern Pomo, Tariana, Jarawa -- Aikhenvald 2003), some do:

Tibetan: complements of verbs of speech and doxastics (Garrett 2001), but not other attitudes (*know, understand, see, hope*).

(32) a. yang.chen dge.rgan **red**
          Yangchen teacher **[ind cop]**
          Yanchen is a teacher *hearsay/inference*
          Speaker has hearsay evidence

    b. bkra.shis kho yang.chen dge.rgan **red** bsam-gi-'dug
       Tashi   he Yangchen teacher **[ind cop]** think-[dir-imp]
       Tashi thinks that Yanchen is a teacher *hearsay/inference*
       Tashi has hearsay evidence

Bulgarian: complements of verbs of speech (*say, read, mention*, *know, discover, dream*), but not *think, believe* or *see* (Schenner & Sauerland 2007).

German *sollen*:   complements of verbs of speech, doxastics, *know*, but not *see* (Schenner & Sauerland 2007).

Japanese: hearsay *sooda* can appear in complements of verbs of speech (but not *know, think, see*) (Schenner &Sauerland 2007, Kishida 2010).

- Evidence that (some) evidentials embed, and contribute to truth conditions.
- If Matthewson is right, potential differences between epistemics and evidentials could be reduced to differences in conversational backgrounds: all evidentials may be modals.

3.3. Remaining differences between epistemic modals and evidentials

3.3.1. Distribution

While some evidentials can appear in complements of attitudes, their presence in such complements is even more restricted than epistemics.

- o Japanese (Schenner & Sauerland 2007, Kishida 2010): epistemics can appear in complements of various doxastics and speech verbs, hearsay evidential *soda* can only appear in complements of *hear* and *say*.

It's not entirely obvious at this point what could explain the differences in distribution, if evidentials are epistemic modals, though, to be fair, it's not entirely clear what underlies the limited distribution of epistemics themselves (see Thursday's lecture).

3.3.2. Shiftability

Epistemic modals always shift (Speas 2004, Stephenson 2007) in attitude contexts:

(33)   It must be raining.   ***speaker's*** epistemic state
(34)   John thinks that it must be raining.   ***John's*** epistemic state

Evidentials sometimes do shift obligatorily (e.g., *Tibetan*), but not always: *Bulgarian evidentials* typically do **not** shift (Schenner and Sauerland 2007, 2010).

Testing shifting in embedding: mismatches between speaker and subject's source of evidence.

(35)   *Scenario*: Milena told Maria that Todor has red hair and she believes her. Maria says: '*Todor has-REP red hair*'. I saw Todor's hair with my own eyes.

    a.   Maria kaza ce Todor ima cervena kosa
         Maria said that Todor has-DIR red hair.
    b.   *Maria kaza ce Todor ima**l** cervena kosa
         Maria said that Todor has-REP red hair.

Reportative (-l) *cannot* receive a shifted interpretation under *say*.

3.4. Evidentials ∎ Epistemics?

Are *all* evidentials epistemic modals? Should every morpheme *described* as an evidential be given the same semantics?

> 'The primary job of evidentials is to classify evidence for what is being said as direct, indirect or hearsay (…). The primary job of epistemic modals is to assess the truth of propositions against a range of possibilities projected from this evidence. There are two distinct jobs to be done then. The two jobs may be assigned to a single lexical item, and they often are. We may call those items 'modals' or 'evidentials' depending on the other members of the paradigm'. Kratzer (2009)

We've seen evidence that evidentials do embed and contribute to truth conditions, though in more restricted ways: some evidentials (hearsay) resist embedding to a greater extent than others (inferentials). A further potential difference is in the shiftability of the modal/evidential.

- o Conservative view : *some* evidentials are epistemic modals.
- o Radical view : *all* evidentials are epistemic modals (Matthewson 2010).

Why bother with the more radical view?

Learnability advantage: a unified analysis greatly lessens what looks like cross-linguistic variation, and reduces learnability problem of evidentials to learning conversational background restrictions.

An alternative view: Evidentials and epistemic modals are distinct categories, one encoding *source* of evidence, the other *commitment* (strength), but they stand in some dependency.

Portner (2007): evidentials impose restrictions on an epistemic's conversational background.

- o This could explain why epistemic modals seem to have an evidential component, without forcing them to *be* evidentials: some selectional requirement would force epistemics to be associated with a (covert) inferential evidential.

4. Conclusions

- Epistemics and evidentials are closely related and may even be one and the same.

- Epistemic modals are modals: they describe possibilities/necessities given a body of evidence.

- Yet, epistemics' distribution is limited in puzzling ways:
  - o Why should epistemic scope high within its clause?
  - o Why should epistemic modals have difficulty embedding?

Reading next time: Kratzer 1991, Hacquard 2010