# Evidentiality and modality in discourse: the case of conjecturals

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## 1 Introduction

- Evidentials are morphemes which encode the information source associated with a given claim or question:

(1) **Tariana** (Aikhenvald, 2004, pp. 2-3)

Juse irida di-manika-{∅/**mah/nih/si/pida**}-ka
José football 3sg-play-{**vis/nonvis/infer/assum/rep**}-Rec.Past

$p$ = 'José has played football'

Evid = Speaker saw/heard/inferred/assumed/was told that $p$.

We focus primarily on the case of declaratives with evidentials, except when noted otherwise.

- Some terminology:

  - $p$ = scope proposition
  - Evid(p) = evidential proposition
  - At-issue = content which addresses the (immediate) QUD[1]

NB. we take the term 'not-at-issue' to simply be the negation of 'at-issue', rather than something more specific (as in Murray (2010), Rett & Murray (2013))

- We take the following two generalizations to be axiomatic about utterances of sentences with evidentials:

(2) **Evidential axioms:**
  a. **Axiom 1**: $p$ is (at least) typically intended as at-issue.
  b. **Axiom 2**: Evid(p) is (at least) typically intended as not-at-issue.

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[1]We intend QUD in roughly the sense of Ginzburg (1996), Roberts (1996), and other subsequent work. We will assume along with Roberts (1996) that a proposition addresses a QUD iff it entails a partial answer, a decision we discuss in more detail below.

- It seems implausible to imagine that speakers of languages with obligatory evidentials have only conversations whose topics/QUDs have to do with information sources.

- Rather, we assume that speakers at least typically utter sentences with evidentials in conversations where the QUD is about the scope proposition itself.

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**Big questions:**

- What is the source of this at-issue/not-at-issue division? To what extent is it semantically encoded vs. arising via pragmatic inference?

- To what extent does the answer vary from language to language? To what extent does it vary across evidential types within and across languages?

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**Today:** examine these questions, focusing on a particular case study: so-called 'conjectural' evidentials like (3):

(3) **Cuzco Quechua**                                                     Faller (2002)

Para-sha-n -chá
rain-PROG-3-CONJ

p = 'It is raining'
EVID = Reasoning, conjecture

- Of particular interest since CQ -*chá* has been claimed by Faller (2002) to conventionally encode both at-issue and not-at-issue contributions.

**This talk:**

- Argue that conjecturals cross-linguistically are not evidentials at all, but epistemic possibility modals of a certain kind (with no special not-at-issue status encoded).

- Show that independent pragmatic principles can account for their at-issue/not-at-issueness and other core properties.

**Road map:**
**§2** introduces evidentials with a focus on recent literature distinguishing 'epistemic' and 'illocutionary' evidentials;
**§3** argues that conjecturals are possibility modals with evidential restrictions being epiphenomenal;
**§4** shows that independent factors (most notably their subjectivity) are responsible for their distinctive properties;
**§5** extends the argument by showing that a similar modal exists in a language without evidentials: Yucatec Maya *míin*;
**§6** concludes.

# 2 The heterogeneity of evidentials

- This section introduces evidentials and the ways in which they differ across and within languages.

- Reconceive the distinction made in recent literature between so-called 'epistemic' and 'illocutionary' evidentials in terms of semantic vs. pragmatic not-at-issueness.

## 2.1 Typology by evidence type

- The best-known typology of evidentials by evidence type is that of Willett (1988) (though see Matthewson (2011), Smirnova (2013) for critiques):

(4) **Willett (1988)'s typology of evidentials:**
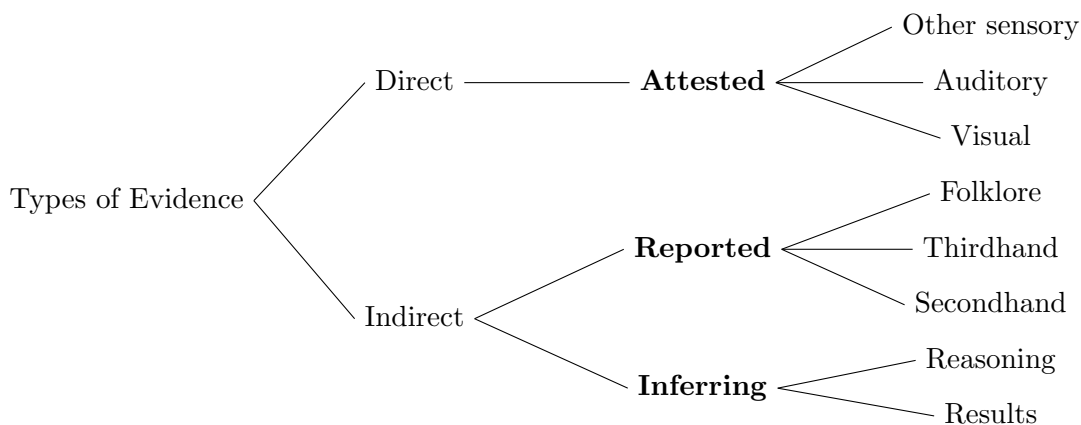


- In this talk, we'll be focused primarily on the branch that Willett labels as INFERRING.

- Within this area, there are two kinds of evidentials which are well-documented and fairly consistent across several unrelated languages[2]:

1. **Conjectural** – CONJ(p): Speaker reasons that $p$ holds, including 'mere speculations, assumptions, hypotheses, . . . deduction, abduction, and induction' (Faller, 2002, p. 21) ≈ Willett's 'Inferring'

2. **Abductive** – ABDUC(p): Speaker has direct sensory evidence for some state of affairs $e$ which would be best explained as a result of $p$ holding (Tatevosov (2003), Krawczyk (2012)). ≈ Willett's 'Results'

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[2]Here, we adopt somewhat different terminology than previous literature, in which different authors have used the term INFERENTIAL to refer to three different classes of evidentials: (i) our ABDUCTIVE evidentials, (ii) our CONJECTURAL evidentials, (iii) the union of these two. Additionally, Willett (1988)'s influential typology uses the term INFERRING in sense (iii). Given this confusion, we will simply refrain from using the term altogether.

(5) **Conjectural**

    a. **Abductive Context:** People are arriving home after a day of berry picking up in the Suskwa. They're carrying buckets of berries, and their hands are all purple.

        mukw =ima =hl     maay'
        ripe= CONJ =CND berries

        'The berries might/must be ripe.'         **Gitksan** (Peterson, 2010, p.60)

    b. **Pure reasoning Context:** You're sitting at home talking about going berry-picking. It's August, and the berries are usually ripe this time of year on the Suskwa.

        mukw =ima =hl     maay'
        ripe= CONJ =CND berries

        'The berries might/must be ripe.'         **Gitksan** (Peterson, 2010, p. 60)

(6)   a. **Abductive Context:** People are arriving home after a day of berry picking up in the Suskwa. They're carrying buckets of berries, and their hands are all purple.

        n'akw =hl     mukw=hl maay'
        ABDUC =CND ripe=CND berries

        'The berries must be ripe.'         **Gitksan** (Peterson, 2010, p.167)

    b. **Pure reasoning context:** You're sitting at home talking about going berry-picking. It's August, and the berries are usually ripe this time of year on the Suskwa.

        # n'akw =hl     mukw=hl maay'
        ABDUC =CND ripe=CND berries

        'The berries must be ripe.'         **Gitksan** (Peterson, 2010, p.74)

Beyond this contrast, CONJ are possible in purely speculative cases:

(7) **Speculation context:** The speaker has no knowledge of whether it is in fact raining and intends to advise the addressee to take an umbrella just in case.

    Para-sha-n- chá
    rain-PROG-3- CONJ

    'It's raining, I conjecture.'         **Cuzco Quechua**, (Faller, 2002, p. 172)

(8) **Speculation Context:** You're thinking about going to bingo tonight. You feel lucky.

    xsta =ima     n'iiy'
    win= CONJ   1sg

    'Maybe I'll win.'         **Gitksan** (Peterson, 2010, p. 58)

| Label | Abductive | Conjectural | Source |
|---|---|---|---|
| Cuzco Quechua | *-chu-sina* | *-chá* | Faller (2002), Faller (2011) |
| Gitksan | *n'akw* | *=ima* | Peterson (2010) |
| St'át'imcets | *-an'* | *k'a* | Matthewson et al. (2007) |
| Central Alaskan Yup'ik[3] | *-llini* | – | Krawczyk (2012) |
| Cheyenne | – | *mó- … -h(an)e-he* | Murray (2010) |

- In a number of languages (e.g. Bulgarian, Estonian, Turkish) a single indirect form has both abductive and reportative uses …

  - …but is infelicitious in 'pure reasoning'/'speculation' contexts (where a modal is used instead).

- I am not aware of a language where a single evidential can be used in both reportative and 'pure reasoning' contexts (whether or not it also covers abductive cases).

- There are no firmly established cases of an evidential which is *semantically* specified for 'pure reasoning'/general knowledge cases.

- Grammars and other descriptive works do mention such evidentials in a number of languages.

- However, in the couple of cases[4] where this has been investigated (most notably Peterson (2010) for Gitksan), the data instead support an analysis where:

  - The putative 'Reasoning' evidential is in fact a CONJ and there is Gricean pressure to use a competing more specific ABDUC in cases where it is applicable.

## 2.2 Epistemic vs. illocutionary analyses

- Cross-cutting the traditional typology based on evidence type, a number of recent works[5] have proposed two different kinds of analyses:

  **Epistemic:** propositional operators contributing quantification over possible worlds.

  **Illocutionary:** speech act operators modifying the (direct) speech act the sentence is used to perform.

- As the names suggest, two very different kinds of analyses have emerged:

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[3]Krawczyk (2012) and Osahito (2012) both mention a morpheme *-lli* which is described as a possibility modal, sometimes glossed CONJ(ECTURE) and translated with English *maybe* and *perhaps*. From the available examples, it appears quite similar to Conjecturals in other languages, though further empirical work is needed.

[4]This is not to say that we can entirely rule out the possibility that there in fact are evidentials which are specifically restricted to inferences based on mind-internal evidence, merely that there is no well-documented case of this sort.

[5]While they differ in their characteriztion of the distinction, these works include: Faller (2006), Matthewson et al. (2007), Murray (2010), and Peterson (2010). While she makes no specific cross-linguistic claims, many of the empirical diagnostics underlying this distinction originate in Faller (2002)'s account of Cuzco Quechua evidentials as illocutionary operators, rather than modals.

## Evidentials as epistemic modals

- One approach claims that evidentials are epistemic modals (Izvorski (1997), Garrett (2001), Matthewson et al. (2007), Peterson (2010))

- Different evidentials encode different specifications of the kind of information the modal base is taken to contain (and/or what propositions are in the ordering source).

- For example, consider Matthewson et al. (2007)'s account of the abductive evidential *-an'* in St'át'imcets[6]:

(9) $[\![\text{ABDUC}]\!]^{c,w}$ is only defined if $c$ provides a modal base $B$ such that for all worlds $w' \in B(w)$, **the perceived evidence** in $w$ holds in $w'$, and $f$ is a function such that $f(B(w)) \subseteq B(w)$.
If defined, $[\![\text{ABDUC}]\!]^{c,w} = \lambda f.\lambda p \forall w'[w' \in (B(w)) \rightarrow p(w') = 1]$

## Evidentials as illocutionary operators

- The second approach treats utterances with evidentials as performing a speech act with the scope proposition, with the evidential modifying this speech act in some way.

- For Faller (2002), an evidential modifies the *sincerity conditions* of an assertion (illustrated here for the DIRECT evidential[7] in Cuzco Quechua, *-mi*):

(10) Faller (2002)'s semantics for CQ **-mi** DIRECT:
$$\begin{array}{ccc} \text{ASSERT}(p) & & \text{ASSERT}(p) \\ \text{SINC}= \{Bel(s,p)\} & \rightarrow & \text{SINC}= \{Bel(s,p), \text{DIR}(s,\, Bel(s,p))\, \} \end{array}$$

- A more recent illocutionary account, Murray (2010, 2013), defines an update semantics in which evidentials contribute a separate CG update (the 'evidential restriction'), applying prior to the proposal to update the CG with $p$.

- Empirically, there are two primary kinds of evidence claimed to distinguish the two[8]:

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[6]In Matthewson et al. (2007)'s modal semantics is non-standard in two ways which need not concern us here. First, a function $f$ does the work typically played by the ordering source of picking out a particular set of worlds within the modal base. Second, the more flexible nature of $f$ means that, in practical terms, we may end up with either universal or existential modal force (which the authors claim is correct for St'át'imcets).

[7]This is a slight simplification since Faller in fact argues that this morpheme encodes that the speaker has the BEST POSSIBLE GROUNDS, which need not be direct in all cases.

[8]Beyond these two, there are a variety of other diagnostics that have been discussed in previous literature (see Matthewson et al. (2007) for summary). However, several of these have been argued not to distinguish the two kinds even in theory (Matthewson et al. (2007)), and others are only applicable to particular kinds of evidentials. For example, felicity of the evidential in cases where the scope proposition is known to be false has been claimed by Matthewson et al. (2007) to diagnose epistemic/illocutionary status for reportative evidentials. In AnderBois (forthcoming), I argue against even this claim, showing that the cross-linguistic picture outside of St'át'imcets is quite uniform: reportatives of both kinds are infelicitous if the speaker merely has *private* knowledge that the scope proposition is false. Reportatives of both kinds can be felicitous in cases where the disconnect between the speaker's perspective and the reporter's is *publicly available* (e.g. via an explicit denial by the speaker)

**Assent/Dissent:** can basic means of assenting/dissenting (e.g. response particles similar to 'yes' and 'no') target the whole proposition including the evidential's contribution?

**Scope/embeddability:** can the evidential's contribution be semantically embedded or does it obligatorily take wide scope/is scopeless/cannot be embedded?

## 2.3 Reconceiving the epistemic-illocutionary distinction

- Two separable issues:

  - Does the semantics of evidential X involve modality (i.e. quantification over possible worlds)?
  - How does the not-at-issue status of the evidential proposition come about?

- One clear example of the separateness of these issues is Faller (2011), who argues for an illocutionary account in the mold of Faller (2002) ...

- ... where the content of the sincerity conditions of all CQ evidentials are modalized.

- Beyond this, it seems intuitive that the answer to the first question would differ across evidence types (e.g. DIRECT evidentials are less modal-like than ABDUC)

As for the second question, recall the two evidential axioms spelled out at the onset:

(11) **Evidential axioms:**
    a. **Axiom 1**: $p$ is (at least) typically intended as at-issue.
    b. **Axiom 2**: EVID$(p)$ is (at least) typically intended as not-at-issue.

- In illocutionary analyses, both axioms are conventionally encoded in some way: e.g. EVID(p) is *semantically not-at-issue*.

For epistemic analyses, the picture is a bit less clear:

- Izvorski (1997) proposes that the Bulgarian indirect evidential *presupposes* EVID$(p)$, and therefore is also semantically not-at-issue.

- Subsequent works, however, have argued that treating this as a presupposition is implausible since this information is often new (e.g. Faller (2002) pp. 117-118, Murray (2010) pp. 83-85, Matthewson (2010) p. 13, Kierstead & Martin (2012))

- Since Matthewson et al. (2007) appear to argue[9] that the assertion in evidential sentences is that p follows from what has the speaker has heard/abduced/etc, the axioms are not encoded semantically.

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[9]It is not entirely clear to me whether this is how the authors themselves intend the account. On the one hand, they derive certain facts about St'át'imcets modals in ways which seem to make use of the assumption that EVID(p) is presupposed a la Izvorski (1997). On the other hand, they explicitly note that the account is like classical Kratzerian accounts of English and German modals in that it lexically encodes a *restriction* on the modal base, consistent with the interpretation given here.

While the evidential axioms are not then semantically encoded, there is a plausible *pragmatic* story based on this semantics which does:

- Simons (2007) observes that English attitude reports can be felicitously *used* in cases like (12), where the QUD is about the complement rather than the mental state itself (NB. Simons explicitly makes an analogy with evidentials).

  (12)  A: Who was Louise with last night?
         B: Henry thinks/I think that she was with Bill.

- We can extend this observation to uses of English modals such as *might*:

  (13)  A: Who was Louise with last night?
         B: (According to what Henry thinks/I think,) she might have been with Bill.

- We follow Simons (2007)'s approach to (12) to explain the not-at-issue status of the modal in (13) *pragmatically*.[10]

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**Conclusion:** the primary difference between illocutionary and epistemic analyses of evidentials lies in whether the evidential proposition is *semantically* or *pragmatically* not-at-issue.

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# 3  Conjecturals are possibility modals, not evidentials

We return now to our primary focus: conjectural evidentials.

- Conjecturals represent a particularly tricky case since even in illocutionary analyses, conjecturals are consistently analyzed as involving a possibility modal.

  - (Faller (2002) for Cuzco Quechua, Murray (2010) for Cheyenne, Peterson (2010) for Gitksan)

- For example, in Faller (2002)'s illocutionary account, CONJ alters sincerity conditions (like other evidentials), but also contributes a modal to the at-issue proposition:

(14)  **Faller (2002)'s semantics for CQ -chá:**

$$\begin{array}{ccc} \text{ASSERT}(p) & & \text{ASSERT}(\diamond p) \\ \text{SINC}= \{Bel(s,p)\} & \rightarrow & \text{SINC}= \{Bel(s,\diamond p),\ Reas(s,\ Bel(s,\diamond p))\ \} \end{array}$$

- In this section, we argue that Conjecturals are best thought of as epistemic possibility modals with their apparent evidentiality due to their rigid *subjectivity*.

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[10] Note that this approach has the potential to address a long-standing issue in the QUD literature: whether entailing a partial answer (as Roberts (1996) holds) is a sufficiently general notion of QUD-congruence or a broader notion is instead needed (as in Ginzburg (1996), Büring (2003)). The approach here would be to claim that the *pragmatically manipulated* at-issue content must entail a partial answer to the QUD (see AnderBois (2014) for discussion and a comparison with Simons et al. (2011)).

## 3.1 Conjecturals are not actually evidentials

- To do this, we will contrast Conj with more clear-cut evidentials, focusing on the minimally different Abduc.

- Beyond the definitional difference discussed above, many authors also stress that Conj and Abduc differ in "the degree of reasoning involved" (Aikhenvald (2004), p. 3)

- Furthermore, Conj can in fact be used in cases where the speaker has other sorts of evidence.

- We saw this above for abductive cases in Gitksan and Murray (2010) makes a similar claim (p. 29) for cases of hearsay.

  - Even more telling are observations like the following (Peterson (2010), p. 234):

    "when they are felicitous in the same contexts, ... *n'akw* [Abduc] is typically translated as *must* while *=ima* [Conj] is translated as *might*"

- Finally, we can note that whereas all of the other major[11] evidential categories involve at least partially mind-external information sources, Conjecturals do not.

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**Claim:** conjecturals do not encode information source in any way, but rather are epistemic possibility modals.

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- To be clear, this is quite different than epistemic analyses of evidentials mentioned above, which do still encode information source.

- This idea is not wholly novel, having been suggested for Cuzco Quechua by Faller (2002), pp. 81-83 and rejected for two reasons:

  1. **Differences w/ English modals:** "This would mean that all English epistemic possibility modals would also be considered Conjectural evidentials", p. 91
  2. **Parallels w/ other CQ evidentials:** "an epistemic modal analysis of *-chá* [Conj] is certainly viable, and if *-chá* [Conj] were the only enclitic of its kind in Quechua, this analysis might be preferable", p. 183

- We address these points below, but first turn to crucial data where Conjecturals including *-chá* pattern with English possibility modals and unlike clear-cut evidentials.

- The data are cases where a single speaker entertains two mutually incompatible possibilities each marked with a conjectural (e.g. $p$ and $\neg p$):

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[11]One possible counterexample are so-called 'ego' evidentials in Tibetan and closely related languages (e.g. Garrett (2001)).

(15) **"Maybe So, Maybe Not"**

    a. **Context:** Inés y Pilar are competing in a race with only one single winner.

        Inés-[chá]    llali-rqa-n    Pilar-taq-[chá]    llalli-rqa-n
        Inés-[Conj] win-Pst1-3 Pilar-Contr-[Conj] win-Pst1-3

        'Possibly Inés won. And possibly Pilar won.'  **Cuzco Quechua**, (Faller, 2002, p. 187)

    b. hla      yukw[=ima]=hl     tim wis ii    neey[=ima] hla     yukw
       Incept Prog=[Conj]=Cnd Fut rain Cnj Neg=[Conj] Incept Prog

       tim  wis
       Fut rain

       'It might start raining and it might not.'    **Gitksan**, (Peterson, 2010, p. 165)

    c. **Context:** All of the trucks are out of the driveway. It's possible that everyone has gone to work, but since it's a holiday, it's possible they went fishing instead.

       yukw[=ima]=hl     tim gahahla̓st-tiit, ii   yukw[=ima]=hl     tim
       Prog=[Conj]=Cnd Fut work.pl-3pl   Cnj Prog=[Conj]=Cnd Fut

       iixw-tiit
       fish-3pl

       'Maybe they're working (today), and maybe they went fishing.'   **Gitksan**, (Peterson, 2010, p. 165)

    d. **Context:** There is some evidence that John has left, e.g. his bag has gone, but maybe he just took his bag to the bathroom

       qwatsáts [k'a]    tu7 k    John, t'u7 sxek   cw7aoz [k'a]   kw  s-qwatsáts
       leave     [Conj] then Det John but maybe Neg   [Conj] Det Nom-leave

       'John may have left, but he may not have left.'   **St'át'imcets**, (Matthewson et al., 2007, p. 58)

- This is in stark contrast to other evidentials, e.g. Abduc, where similar examples are infelicitous:

(16) **#Apparently so, but maybe not**

    a. #hla    [n'akw]=hl     tim wis ii   nee=tii     hla     [n'akw] tim
       Incept [Abduc]=Cnd Fut rain Cnj Neg=Contr Incept [Abduc] Fut

       wis
       rain

       'It might start raining and it might not.'    **Gitksan**, (Peterson, 2010, p. 83)

    b. **Context:** (same as (15d))

       #qwatsáts-as[-án']  tu7 kw  s-John,    t'u7 wa7 [k'a]   sxek
       leave-3Cnj-[Abduc] then Det Nom-John but Impf [Conj] maybe

       k-wa-s          cw7aoz t'u7 k-wa-s          qwatsáts
       Det-Impf-3Poss Neg    just Det-Impf-3Poss leave

       'John apparently left, but maybe he hasn't left.'   **St'át'imcets**, (Matthewson et al., 2007, p. 59)

- Finally, note that outright denials of the scope proposition with CONJ are infelicitous:

(17) **#Maybe so, not**

    a. #hla    yukw $\boxed{\text{=ima}}$=hl      tim wis ii     nee=tii     hla      yukw
         INCEPT PROG=$\boxed{\text{CONJ}}$=CND FUT rain CNJ NEG=CONTR INCEPT PROG

         tim   wis
         FUT rain

         '#It might start raining but it won't.'        **Gitksan**, (Peterson, 2010, p. 166)

    b. #Llave-qa muchila-y-pi=$\boxed{\text{chá}}$     ka-sha-n    ichaqa mana-n aqhay-pi-chu
         key-TOP    backpack-1-LOC-$\boxed{\text{CONJ}}$ is-PROG-3 but     not-DIR there-LOC-NEG

         #'The keys may be/are possibly/probably in my backpack, but they are not
         there'          **Cuzco Quechua**, (Faller, 2002, p. 178)

- To summarize: conjecturals and *might* can mark mutually incompatible possibilities, (18a-18b), whereas clear-cut evidentials cannot, (18c):

(18)    a. CONJ($p$) $\wedge$ CONJ($\neg p$)

      b. $\diamond p \wedge \diamond \neg p$

      c. #ABDUC($p$) $\wedge$ ABDUC($\neg p$)

- Under the received wisdom that conjecturals are evidentials, the question arises:

     – **Why are they unique in allowing for this possibility?**

- My answer: they are unique in that they are not evidentials at all, but rather are possibility modals w/ no information source encoded.

## 3.2   Conjecturals are rigidly subjective

- That evidentials are subjective has been consistently recognized dating back to the earliest descriptions of evidentials.

     – e.g., Boas (1911) (quoted in Aikhenvald (2004)) describes evidential suffixes in Kwakiutl as "expressing the source of subjective knowledge".

- Subjectivity is apparent in illocutionary analyses since evidentials are treated as modifiying the sincerity conditions/commitments of the *speaker*.

- Having argued that Conjecturals are epistemic possibility modals, however, subjectivity can be straightforwardly cashed out via a manipulation of the modal base[12]:

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[12]This formulation is most similar to Faller (2011)'s modal semantics for Cuzco Quechua *-chá* CONJ (see also discussion in Garrett (2001), §2), but differs in that she also includes a (possibly empty) ordering source. Nothing obvious rules out this option, but it is not clear this complication is empirically necessary given the existential force and obligatory wide-scope. One complication we set aside here is whether and how to accommodate variable modal force (see Matthewson et al. (2007), Peterson (2010), and Deal (2011) for recent semantic and pragmatic approaches to this issue).

(19)  $[\![\text{CONJ}]\!]^{w,c} = \lambda p.\lambda w.\exists w'$ consistent with what speaker($c$) knows in $w$ such that $p(w')$

- In the terms used in some of the recent literature on English epistemic modals like *might*, this is a case of *solipsistic contextualism*.

- In contrast, the semantics of English *might* has been an area of active debate (e.g. the papers in Egan & Weatherson (2011), Yanovich (2014)).

- One point of more or less unanimous agreement, however, is that a rigidly subjective semantics of the sort in (19) is not right for English *might*.

  - Instead, it's often claimed that English possibility modals refer to what a salient group knows, what the speaker could know, what they could come to know, ...

- One clear indication of this is the felicity of examples like the following[13], inspired by LSAT Analytical Reasoning questions:

(20)  **Scenario:** Four people – Nancy, Josiah, Fred, and Alejandra – helped each other move exactly three pieces of furniture ...
       **Question:** Which of the following is true?
       **A:** Nancy and Josiah **might** have moved the sofa.
       **B:** Nancy must have been one of the people who moved the piano
       ...

- In §4, we will examine the predictions of this approach for the core properties of conjectural evidentials.

- For now, we simply hope to have made the case that treating conjecturals as possibility modals w/ no information source does not mean assimilating them to English *might*.

**Summary:** Conjecturals exhibit behavior unlike more clear-cut evidentials, which suggests an account of them as rigidly subjective epistemic possibility modals.

# 4  Subjectivity and the properties of conjecturals

- Having proposed a semantics for conjecturals, we turn now to show that pragmatic reasoning based on this semantics accounts for their core properties in discourse.

## 4.1  Responding to conjecturals

- We focus primarily on assent/dissent data, though we also briefly discuss two other aspects of conjecturals: their use in 'conjectural questions' and scope/embedding (see Appendix for more on the latter).

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[13]One apparent exception of note in English is the adverbial modal *maybe*. We leave to future work to determine to what extent *maybe* warrants a similar analysis to conjecturals.

### 4.1.1 Subjectivity and evidence in discourse

- Since Lasersohn (2005), the kinds of (dis)agreement that arise with predicates of personal taste like *fun* and *tasty* has been the object of intensive study.

- One primary focus has been cases of so-called 'faultless disagreement' like (21):

(21) **Scenario:** John and Mary just got off the roller coaster
 Mary: That was fun!
 John: No it wasn't! Gunlogson & Carlson (to appear)

- Gunlogson & Carlson (to appear) observe, however, that such disagreements are sensitive to the *kind* of evidence that the interlocutors can be taken to have in context[14].

- For example, if only Mary went on the roller coaster, it is infelicitous for John to either disagree or agree with this claim:

(22) **Scenario:** Mary just got off the roller coaster, John is standing by the exit waiting for her
 Mary: That was fun!
 John: #No it wasn't! // #Yes, it was! Gunlogson & Carlson (to appear)

- Gunlogson & Carlson (to appear)'s claim: such disagreements are infelicitous in cases where it is clear that the two parties have different *information sources.*

- More specifically, the relevant cases are ones where one party has evidence from personal experience ('ego' evidence) while the other has only direct sensory evidence (e.g. visual) . . .

- . . . and the lexical semantics of the predicates establishes a clear hierarchy between these two.

**Summary:** Based on data from predicates of personal taste, the felicity of (dis)agreement depends on the participants' information sources for the claim.

### 4.1.2 Agreeing and disagreeing with conjecturals

We turn now to apply these principles to conjecturals, given the subjective modal semantics we have proposed.

- Consider a simple example like (23a), with the interpretation given in (23b):

(23) a. Para-sha-n -chá
 rain-Prog-3- Conj
 'Maybe it's raining.' **Cuzco Quechua** (Faller, 2002, p.172)
 b. $[\![(23a)]\!]^{w,c} = \lambda w.\exists w'$ consistent with what speaker(c) knows in $w$ s.t. it is raining i

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[14]See also Garrett (2001), §2.1.3 for broadly similar points regarding ego evidentials in Tibetan.

**Question:** What kinds of responses do we predict to be possible?

- First, recall from §2.3 that depending on the QUD, modals allow for either the entire modalized proposition or its scope to act as at-issue content.

- Therefore, we expect in principle that either (23b) or simply the proposition that it is raining can be responded to in this example.

  - The scope proposition is typically objective, and should therefore be readily available for assent/dissent.

  - The modal proposition, however, is about the speaker's inferences based on their private mental state, in particular, their knowledge.

  - While the speaker has personal knowledge of this, the addressee likely does not.

  - Therefore, we predict that despite being part of the at-issue propositional content semantically, the addressee typically cannot felicitously reply to this.

- These predictions appear to be upheld straightforwardly in Cuzco Quechua (Faller, 2002, p. 179-181) and Cheyenne (Murray, 2010, p. 51).

- For example, Faller reports that the responses in (24b) can only be interpreted as (dis)agreeing with the scope proposition itself:

(24)   a.  Ines-qa    qaynunchay ñaña-n-ta -chá     watuku-rqa-n
          Inés-Top yesterday   sister-3-Acc- Conj visit-Pst1-3

          'Maybe Inés visited her sister yesterday.'

      b.  i.  Mana-n chiqaq-chu
              not-Dir true-Neg

              'That's not true.'

        ii.  Chiqaq-mi
              true-Dir

              'True.'              **Cuzco Quechua** (Faller, 2002, pp. 179-80)

- However, we do predict that it is in principle possible to respond to the modalized proposition provided that two conditions are met:

  1. QUD has to do with what is consistent with the speaker's knowledge.

  2. The relevant knowledge/inferential process is publicly available.

- For St'át'imcets, Matthewson et al. (2007) present just such an example in (25)[15]:

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[15]Matthewson et al. (2007) suggest that this provides evidence of a cross-linguistic difference between Cuzco Quechua and St'át'imcets (Peterson (2010)'s putative example of this sort, p. 134, uses an interrogative in place of (25a) and therefore is not relevant here). This conclusion, however, is premature in our view since the literature does not to our knowledge give examples in Cuzco Quechua meeting the above criteria.

(25) **Mastermind Context:** Imagine a game where someone places some different coloured pegs behind a screen and the other person has to guess the colours and the order after getting some clues. After some rounds where I give my son some hints about the solution, he says:

a. wá7 k'a   i      tseqwtsíqw-a
   be   CONJ DET.PL red-EXIS

   'Maybe there are some reds.'     **St'át'imcets**, (Matthewson et al., 2007, p. 36)

b.  i. wenácw; wá7 k'a
     true    be   CONJ

     'That's right, there might be.'

  ii. wenácw; wá7
     true    be

     'That's right, there are.'

  iii. aoz  kw-a-s          wenácw; aoz  k'a   kw  s-wá7
      NEG DET-Impf-3Poss true    NEG CONJ DET Nom-be

      'That's wrong. There can't be.'

  iv. aoz  kw  s-wenácw; aoz  kw  s-wá7
      NEG DET Nom-true NEG DET Nom-be

      'That's wrong. There aren't.'

- One similar case worth considering is the following example from Cuzco Quechua:

(26) a. Juan-chá vaca-ta-qa  suwa-rq-n
   Juan-CONJ cow-ACC-TOP steal-PST-3

   'Juan stole the cow (it's possible, I conjecture)'

b. Arí. Pay-qa    kan-man ka-rqa-n. Ichaqa mana-n  crei-ni-chu.
   yes he-TOPIC be-IRR  be-PST-3 but    not-DIR believe-1-NEG

   'Yes, he might have been the one, but I don't believe it.'    **Cuzco Quechua**
   (Faller, 2002, p.181)

- This example initially appears to be a counterexample to the above claims since the speaker of (a)'s knowledge/inferential process is not public and salient in the way it is in (25).

- On closer inspection, however, (b) plausibly is not *assenting* to a modal claim, but rather is responding to the scope proposition alone, similar to English examples like (27) with no modal:

(27) **A:** (I think that) it was Juan who stole the cow.
   **B:** Yeah, {it is possible/ it could have been him}, but I don't think it was him.

- More detailed investigation of the response particle *arí* 'yes' and the modal suffix *-man* IRR are needed to confirm this analysis.

- In their absence, however, we tentatively regard this response as targeting the scope proposition, not the modal claim.

## 4.2  Use in so-called 'conjectural questions'

- One further way in which conjecturals behave unlike modals (but like certain evidentials) is in producing unexpected interpretations in interrogative sentences.

- For conjecturals, Littell et al. (2010) show that in many languages, conjecturals in interrogatives give rise to what they call 'conjectural questions':

(28)  a.  Lan=as=há=k'a        kwán-ens-as
　　　　already=3.SBJN=YNQ $\boxed{=\text{CONJ}}$ take-DIR-3.ERG
　　　　ni=n-s-mets-cál=a
　　　　DET.ABS=1SG.POSS-NOM=write-ACT=EXIS
　　　　'I wonder if she's already got my letter.'
　　　　'I don't know if she got my letter or not.'      **St'át'imcets** (Littell et al., 2010)

　　b.  Nee=ima=hl      sdin=hl      x̱biist=a
　　　　YNQ $\boxed{=\text{CONJ}}$=CND be.heavy=CND box=INTERROG
　　　　'I wonder if the box is heavy.'        **Gitksan** (Littell et al., 2010)

　　c.  May-pi $\boxed{\text{-chá}}$      kunan ka-sha-n-ku
　　　　where-LOC-$\boxed{\text{CONJ}}$ now    be-PROG-3-PL
　　　　'Who knows where they are now?'      **Cuzco Quechua** (Faller, 2003)

- Like rhetorical questions, (28) do not require an answer to be felicitous.

- Unlike them, however, they convey that neither the speaker nor the addressee are expected to know the answer (i.e. 'who knows?').

We analyze 'conjectural questions' as follows:

- The felicity conditions of questions includes that the speaker not know the answer (cf. Groenendijk & Roelofsen (2009)'s maxim of inquisitive sincerity).

- As we have seen, it is typically obvious that the addressee is not in a position to answer the question.

- Therefore, the question serves to highlight that the answer to the question is unknown to speaker and addressee as described by Littell et al. (2010).

We will leave a detailed comparison with Littell et al. (2010)'s account to future work, but will simply note that their account has far more crucial assumptions:

1. A semantics where conjecturals contribute an evidential presupposition.

2. A particular way of calculating the presuppositions of questions.

3. A Gricean manner implicature based on the speaker not using the competing ordinary question.

## 4.3 Scope and embedding

Beyond the two properties discussed above, there is one other core difference claimed between epistemic and illocutionary evidentials: the ability to take narrow scope relative to other operators.

- In particular, it has been claimed that illocutionary conjecturals always take widest scope/are scopeless, while epistemic ones can take narrow scope in some cases.

- While acknowledging the importance of such data, we leave a detailed investigation to future work since several aspects of the empirical picture are not clear at this time (See Appendix for further discussion):

    1. syntactic properties of conjecturals (e.g. are they syntactically embeddable?).
    2. general principles of syntax and scope-taking in these languages.
    3. to what extent scope is sensitive to pragmatic factors like QUD and subjectivity.

# 5 A conjectural in a language without evidentials

- We have argued that what have been traditionally regarded as conjectural evidentials are not evidentials at all, but rigidly subjective epistemic possibility modals.

- We expect, therefore, to find conjecturals in languages without clear-cut evidentials.

- In this section, we briefly show that this expectation is confirmed in Yucatec Maya by the epistemic modal *míin*.

Unlike the languages considered so far, Yucatec Maya does not have any clear-cut DIR, REP, or ABDUC evidentials.

- Previous literature is unanimous in describing *míin* as a possibility modal, using glosses like 'maybe', 'perhaps', and 'might'.

- Vapnarsky (2012) has recently described *míin* as being subjective in contrast to the objective possibility modal *wal(e')*.

- Comparing it to conjecturals, then, we find that it shares the same basic properties outlined above:

**<u>Felicitous in reasoning and speculation of all sorts:</u>**

(29)   a. **Abductive context:** I am inside in a room with no windows and have no knowledge of the weather outside. You come in sopping wet and I say to a friend:

   | Míin | táan | u | k'áaxal ja' |
   |------|------|---|------|
   | CONJ | PROG | A3 | fall   water |

   'It might/must be raining outside.'

b. **Pure reasoning context:** There is a new pepper in the market. I have experience with other peppers which look similar and are spicy, but I've never had this one.

| Míin | jach páap | le | iik-a' |
|------|-----------|-----|--------|
| CONJ | very spicy | DEF | chile-PROX |

'It might be really spicy.'

c. **Speculation context:** We are flipping a coin with two sides: águila y sol (eagle or sun). Before the coin is revealed, you say:

| Míin | águila | k-u | luubul. |
|------|--------|------|---------|
| CONJ | águila | IMP-A3 | fell |

'Maybe it landed heads (águila).'

## Infelicitous with direct evidence:

(30) **Context:** We are outside under the sun.

| #Míin | k'iilkab | k-u | beet-ik |
|-------|----------|------|---------|
| CONJ | heat/humidity | IMP-A3 | make-STAT |

Intención: #'It might be hot/humid out.'

## Direct denials infelicitous:

(31) #Míin táan u k'áaxal ja', {ba'ale'/pero} ma' (táan u k'áaxal ja')
     CONJ PROG A3 fall water but NEG PROG A3 fall water

#'It might be raining, but it's not.'

## Incompatible conjectures felicitous:

(32) a.

| Míin | t-a | k'ajóol-t-aj, | míin | ma' | t-a |
|------|-----|---------------|------|-----|-----|
| CONJ | PFV-A2 | know-TRANS-STAT | CONJ | NEG | PFV-A2 |

k'ajóol-t-i'
know-TRANS-NEG.CL

'Maybe you were familiar with it, maybe you weren't familiar with it.' Narraciones Mayas, p. 62

b.

| Míin | yan u k'áaxal ja', | míin | ma' |
|------|--------------------|------|-----|
| CONJ | FUT A3 fall water | CONJ | NEG |

'Maybe it will rain, maybe it won't.'

## Assent/dissent targets scope proposition:

(33) a. A:

| Míin | j-bin | Jo' | Magdalena. |
|------|-------|------|-----------|
| CONJ | PFV-go | Mérida | Magdalena |

'Magdalena went to Mérida, I think.'

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b. B: #Ma', ma' k-a     tukl-ik      bey-o'
     No     Neg Imp-A2 pensar-Stat así-Distal

   #'No, you don't think that (way).'

## Embedding/scope:

- *Míin* typically cannot occur in embedded positions, e.g. as in (34)

- However, there is a clear syntactic explanation: elements higher than foci (e.g. topics) do not occur in embedded clauses.

(34)  *T'aan-aj-en      yéetel tuláakal le     | míin | yan ti'-o'ob   le      k'oja'an-il-o'
      speak-Stat-B1 with    all          Def Conj exist Prep-Pl Def sick-Rel-Distal

      Intended: *'I spoke with everyone who might be sick.'

- There is one systematic exception to this generalization, which are expressions of inexact quantity such as (35)

(35)  T-in       bis-aj       | míin | jum-p'éel       tambor ja'
      Pfv-A1 bring-Stat | Conj | one-Cl.Inam barrel   water

      'He brought around a barrel of water.'                    Narraciones Mayas, p. 189

- Finally, one point of difference between *míin* and many of the conjecturals above is that *míin* is ungrammatical in interrogatives.

- Instead, there is a grammaticized conjectural question marker of sorts, *keensa'* borrowed from Spanish *quien sabe* 'who knows':

(36)  Keensa'     bix kuxl-ik      bey-o'
      who.knows how live-Stat like.that-Distal

      'Who knows how they live like that?'                      Narraciones Mayas, p. 199

**Summary:** Yucatec Maya *míin* has the same major properties as other conjecturals despite the absence of clear-cut evidentials in the language.

# 6  Conclusion

- We began the talk with a series of big questions:

  - To what extent is at-issue/not-at-issueness of evidentials semantically encoded (illocutionary analyses) vs. arising pragmatically (some epistemic analyses)?
  - How does this differ across languages and across evidence types?

- Conjecturals present an interesting case since they have received illocutionary analyses in some languages, yet clearly seem to contribute to the propositional content.

**This talk:** resolve this conflict by treating conjecturals as rigidly subjective epistemic possibility modals w/ no information source encoded.

- Their more illocutionary-like properties, most notably assent/dissent data, can be explained by independently motivated pragmatic reasoning related to subjectivity.

- The literature is fairly unanimous in acknowledging the subjectivity of evidentials, but we hope to have shown here that its ramifications have been underappreciated.

Finally, although we have analyzed one class of apparent evidentials as modals, we believe our account actually casts doubt on epistemic accounts of clear-cut evidentials.

- First, clear-cut evidentials consistently disallow $\text{EVID}(p) \wedge \text{EVID}(\neg p)$ uses cross-linguistica (cf. 'maybe so, maybe not' data).

- Second, since clear-cut evidentials all require mind-external evidence, the pragmatic reasoning we have proposed for Conjecturals will not be generally applicable.

- Last, even in the case of conjectural modals, we have suggested that *objective* modal responses plausibly target the scope proposition, not the modal one.

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# Appendix: further thoughts on scope/embeddability

The other major property claimed to distinguish epistemic and illocutionary evidentials is whether or not the element takes obligatory wide scope (or alternatively is scopeless).

- We should note that authors working on English (e.g. Papafragou (2006)) have claimed that apparently 'subjective' uses of English *might* are distributed similarly.

- While this perhaps gives hope that the scope facts with conjecturals might be given a semantic explanation of sorts, there are several intersecting issues which make it unclear what body of data are to be accounted for.

1. **Role of syntax**

    - For many cases, not enough is known about the syntax nor its relationship to scope-taking in these languages more generally.
    - Therefore, it is not clear to what extent there are synchronic semantic facts to be explained.
        - For example, Murray (2010), p. 66 notes that the conjectural in Cheyenne makes use of the same morphosyntactic slot as the 'dependent clause suffix'.
        - Similarly, we have argued for YM that embedding of *míin* Conj is impossible for independent syntactic reasons.
        - There are, then, no (synchronic) scope facts to be explained here in these cases.

2. **Pragmatics of subjectivity**

    - Given the pragmatics of subjectivity we have described, it is clear that many kinds of embedding will only be sensible to use in very particular contexts.
    - For example, imagine a conjectural in the scope of an attitude verb analogous to *think* or *say* . . .
    - . . . since the conjectural is by hypothesis rigidly speaker-oriented, such a sentence would mean something like '$x$ thinks that I think that . . .'.
    - This is clearly a possible meaning, but may be improbable for many examples without contextual support[16].

3. **Shifting perspectives**

    - Finally, the cases where narrow scope interpretation of embedded conjecturals are claimed to be possible (Gitksan and St'´t'imcets), the interpretation reported is not the one we would expect:

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[16]This is especially so if these data are being obtained in part through the use of translation tasks using words like English *might* since speakers may be comparing the two and English *might* is not rigidly subjective as discussed above.

(37) **Context:** Lémya7 was babysitting your nephew and niece and she noticed at one point that the boy had a red mark on his face and his sister was looking guilty. She tells you when you get home what she noticed. Then you tell the mother of the kids:

tsut s-Lémya7      kw   s-tup-un'-ás         k'a    s-Maria     ta
say   Nom-Lémya7   Det   Nom-punch-Dir-3Erg   Conj   Nom-Maria   Det
sésq'wez'-s-a
younger.sibling-3Poss-Exis

'Lémya7 said that Maria must have hit her younger brother.'

[k'a relates to Lémya7's belief; Lémya7 has evidence]

- Two ways to approach such data:
- First, it could be that the putative conjectural interacts semantically with the matrix subject, *Lémya7*
  - While this approach is espoused for these data by Matthewson et al. (2007) (and by Peterson (2010) for Gitksan), this would seem to suggest that *k'a* is no more subjective than English *might*.
  - We cannot rule this out at present, but simply note that outside of these examples, the same authors emphasize the subjective nature of both conjecturals and more clear-cut evidentials.
- Second, it could be that such examples are instances of quotation or free indirect discourse of some sort (see Lim & Lee (2012) for a similar claim for other evidentials in Korean).
  - On such a view, then, examples like (37) are not truly embedded (not narrow scope) in the relevant sense.
  - One point in favor of such an approach: no other embedded environments are claimed to be possible for St'át'imcets (Matthewson et al. (2007)) and Gitksan (Peterson (2010)).

Without a better understanding of these independent factors, we leave the questions of scope and embedding to future work.