

Theories of evidential meaning: Taking stock

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Abstract This paper is devoted to the space of analytical options proposed for evidentiality in formal semantics and pragmatics and to the empirical motivation for those options. It surveys existing approaches to evidential meaning (modal, illocutionary, event-based) and considers two lesser-discussed distinctions between them: A. intensional vs. extensional (with world-shifting vs. without), and B. semantic vs. pragmatic (the evidential signal hard-wired vs. implied). As it turns out, all semantic accounts are intensional and all extensional accounts are pragmatic, even though A and B needn't co-vary. Capitalizing on the research on the modal future (Klecha 2014; Cariani 2021) and on subjective language (Anand and Korotkova 2018; Korotkova and Anand 2021), I offer the following empirical diagnostics that target A and B independently: modal subordination (which diagnoses intensional environments) and interaction with acquaintance inferences of subjective expressions (which diagnoses semantic indirectness), respectively. The paper concludes with a new classification for existing theories whose aim is to carve a way towards a better understanding of evidentiality at the semantics-pragmatics interface.

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The paper is structured as follows. Section 2 surveys prevalent views on evidentiality. Section 3 zooms in on disavowals with hearsay evidentials, a pattern that has been argued to require an illocutionary account but can be handled by a modal one as well. Section 4 offers to construe modality as world-shifting and to diagnose it through modal subordination. Section 5 examines acquaintance inferences and their relation to evidentiality. Section 6 concludes.

2. Approaches to evidential meaning

This section outlines three families of approaches to evidentiality within formal semantics and pragmatics: modal, illocutionary, and event-based. Note that specific implementations in the literature often differ. In particular, requirements associated with evidence or its acquisition are treated as presuppositional below, even though they are typically analyzed as a special not-at-issue contribution (Murray 2014; Roberts 2019; Korotkova 2020).

2.1. Modal accounts

A prominent strand of research, spearheaded by Izvorski’s (1997) work on Bulgarian (South Slavic: Bulgaria), has argued that evidentials—like English epistemic modals *must* and *might* (henceforth M&M)—express the likelihood of a proposition ϕ in light of some body of knowledge and should be attributed the same semantics as M&M (Matthewson et al. 2007; McCready and Ogata 2007; Schwager 2010 a.o.). This view is most commonly couched within Kratzerian semantics, as in (2).

- (2) $\llbracket \text{Ev} \rrbracket^{c,w,f,g} = \lambda\phi. \forall w' \in \cap f_{ep}(w) [\phi(w')]$,
 defined if $\exists q \subseteq f_{ep}(w)$ such that q is indirect evidence for ϕ in w ,
 where $f_{ep}(w) = \{z \mid z \text{ is known in } w\}$ (a classic epistemic modal base) and where $\cap f_{ep}(w) = \{u \mid \forall z \in f_{ep}(w). u \in z\}$ (a set of worlds accessible from w in which the propositions in $f_{ep}(w)$ are true). (based on Izvorski 1997:230; cf. also von Fintel and Gillies 2010:372)

In (2), the evidential is analyzed as a propositional operator that universally quantifies over epistemically accessible worlds. It asserts that ϕ is true in all those worlds. It presupposes that there is a proposition, known in the world of evaluation, that constitutes indirect evidence for ϕ . If the Georgian evidential past is attributed the semantics in (2), then the system correctly predicts that (1a) is defined in Context 2 and 3 in (1), where the speaker has indirect evidence for their claim. A more refined notion of indirect evidence (e.g. von Fintel and Gillies 2010) would further explain why (1a) is undefined in Context 1.

Additionally, English *must* has been recently argued to convey lack of directness, either semantically (von Fintel and Gillies 2010, 2021; Lassiter 2016) or pragmatically (Mandelkern 2019). I come back to this issue in Section 5.

2.2. Illocutionary accounts

Another strand of research, established by Faller’s (2002) work on Cuzco Quechua (Quechuan: Peru), concerns itself with discourse contributions of evidentials. Its primary goal is to implement

not just the semantics proper, but also account for changes that evidential utterances, especially assertions, inflict on the common ground (Murray 2014, 2017; Northrup 2014; Faller 2019 a.o.). (3) below restates (2) using the Table model, a framework that tracks each interlocutor’s discourse commitments (Farkas and Bruce 2010) along with their evidentiary grounds (Faller 2019).

- (3) Updates with evidentials (where TC_x is the set of propositions the truth of which x is committed to, $IndC_x$ is the set of propositions for which x has indirect evidence, AeC_x is the set of propositions for which x has adequate (good-enough) evidence, and the common ground cg is the set of joint commitments of the interlocutors):

Proposal to update cg with $EV\phi$

Speaker	Table	Addressee
$TC_{Sp} \cup \{\Box\phi\}$	$\Box\phi$	TC_{Ad}
$IndC_{Sp} \cup \{\phi\}$		$IndC_{Ad}$
AeC_{Sp}		AeC_{Ad}
Common Ground		
cg		

Acceptance of the proposal

Speaker	Table	Addressee
$TC_{Sp} \cup \{\Box\phi\}$		$TC_{Ad} \cup \{\Box\phi\}$
$IndC_{Sp} \cup \{\phi\}$		$IndC_{Ad} \cup \{\phi\}$
AeC_{Sp}		AeC_{Ad}
Common Ground		
$cg \cup \{\Box\phi\}$		

In (3), the evidential is analyzed as an operator that interacts with the illocutionary force of an utterance. It puts its scope proposition on the Table (the discourse component responsible for recording issues, typically formalized as a question stack; Roberts 2012) and signals that the speaker is committed to the modal claim based on indirect evidence.² If the proposal is accepted, the Table is cleared, the scope proposition is added to the common ground and the addressee’s commitments are updated accordingly. Depending on information source, evidentials can be associated with commitments of a different type (Faller 2019:22), or even speech acts of a different type in case of hearsay evidentials (Section 3).

Note that a theory can be illocutionary and modal at the same time (many accounts of imperatives are; see Kaufmann 2012). The apparatus of Kratzerian semantics deals mostly with conventional meaning of modal expressions, not their interaction with the structure of discourse. As a result, modal theories of evidentiality that use this apparatus do not have a built-in discourse component. However, some theories have this component (Krifka 2019; Roberts 2019) and others can acquire it by incorporating insights about modal assertions (discussed in Cariani 2020; Rudin 2021) or, example, by adopting a non-Kratzerian view on modality altogether (cf. Yalcin 2007; Swanson 2008). The bottom line is that modal and illocutionary accounts are compatible and should not be treated as opposites.

2.3. Event-based accounts

There is a line of thinking, first proposed by Nikolaeva (1999) for Northern Ostyak (Uralic: Siberia, Russia), that evidential restrictions can be reduced to event mereology (Faller 2004; Koev 2017; Bowler 2018; Altshuler and Michaelis 2020, a.o.; for present purposes, the causal approach in Davis and Hara 2014 also falls into this group). In particular, indirectness has been argued to arise from a non-overlap between the event described by the scope proposition and the event of evidence

2. This is a simplification, as both ϕ can $\Box\phi/\Diamond\phi$ are available for discourse operations (von Stechow and Gillies 2008; Roberts 2019) and thus arguably on the Table.

acquisition (or the lack of overlap with the speaker’s here and now more generally). Consider (4), which is a simplified version of Koev’s (2017) proposal for the Bulgarian indirect evidential.

- (4) $\llbracket \text{Ev} \rrbracket^{c,(w,t),f,g} = \lambda\phi.\exists t' [t' \prec t \wedge \phi(t')]$,
 defined if the speaker acquired p in w at t'' such that $t' \prec t'' \preceq t$. (based on Koev 2017:32)

In (4), the evidential is analyzed as a temporal operator. It asserts that ϕ is true at a time prior to the time of evaluation (the utterance time in unmodified sentences), which is a standard quantificational semantics for the past tense (simplified; see Grønn and von Stechow 2016). It presupposes that the speaker acquired evidence for ϕ after the events of ϕ took place. This latter component accounts for indirect evidential effects without hard-wiring them. For example, the (in)felicity of the Georgian evidential past in different scenarios in (1) could be explained as follows. In Context 1, the snowfall and the speaker’s observing it must overlap in time, which would make the evidential undefined. In Context 2 and 3, on the other hand, the speaker may acquire evidence after the snowfall took place, which would satisfy the definedness conditions and also lead to perceived indirectness.

The event-based view differs from both modal and illocutionary accounts in two aspects. It is extensional, as there is no world-shifting, and pragmatic, as information source restrictions are treated as an epiphenomenon. I discuss each of those properties in greater detail in Sections 4 and 5, respectively. Section 3 below serves as a stepping stone for that discussion: it shows that the choice between modal and illocutionary accounts is largely a matter of taste.

3. Hearsay and disavowal

One of the main empirical arguments for an illocutionary (Section 2.2), rather than modal (Section 2.1), treatment of evidentiality comes from the behavior of hearsay markers. This section refutes the premises of this argument and shows that modal accounts actually can handle the data.

Cross-linguistically, non-hearsay evidentials always require that the speaker endorses at least the possibility of ϕ (Murray 2017:17-21). Hearsay evidentials, on the other hand, do not necessarily require such endorsement and the speaker can follow-up a hearsay claim with an overt disavowal. (5) illustrates the pattern for the Dutch raising verb *schijnen* ‘to be said that’ (see Koring 2013 on Dutch and AnderBois 2014 on other languages).

- (5) Dutch (Germanic: Netherlands)

Het schijnt te sneuwen maar ik geloof daar niets van
 this seem.REP.3SG.PRES to snow.INF but I believe.1SG.PRES there nothing of
 ‘It’s said to be snowing but I don’t believe it’.

The absence of endorsement with hearsay has been claimed to be a problem for modal theories because M&M do not allow flat-out disavowals:³

- (6) # It must/might be snowing but I don’t believe it.

3. *Must*-claims can be followed up with hedges (Lassiter 2016; von Stechow and Gillies 2021). *Might*-modals and weak inferential evidentials (e.g. Cuzco Quechua =*chá*, Faller 2002:138) allow statements of the form $\diamond\phi$ & $\diamond\neg\phi$.

The illocutionary solution to the puzzle maintains that speech acts with hearsay evidentials are not ordinary assertions whose goal is to add ϕ (or its modalized version) to the common ground and to signal the speaker’s commitment to it, as in (3), but rather speech acts of presentation whose goal is to raise a particular issue (see discussion and references in [Faller 2019](#)). According to this view, no contradiction ensues in (5) because no commitment on part of the speaker is signaled in the first place.

I will not discuss the viability of the illocutionary solution here and will concentrate instead on the premises for rejecting the modal option. I will argue that, because the premises are flawed, the modal analysis needn’t be abandoned wholesale.⁴

Before I proceed, one caveat is in order. The lack of endorsement with evidentials has been diagnosed by follow-ups amounting to ‘ ϕ is not the case’ or ‘I don’t believe ϕ ’ ([AnderBois 2014](#)). Asserting $\neg\phi$ asymmetrically entails that the speaker is in a position to assert ‘I don’t believe ϕ ’ (an issue much-discussed with respect to the nature of assertion and Moore’s paradox; [Stalnaker 2000](#); [Williamson 2000](#)), so whenever the former follow-up is possible, the latter will be as well. However, the reverse is not true, for example, only ‘I don’t believe ϕ ’ is allowed in Dutch ([Koring 2013:24](#)). In what follows, I will stick to disavowals that explicitly target the speaker’s belief.

3.1. Force

A common reason to reject the modal option has to do with quantificational force. If, as in (2), evidentials universally quantify over epistemically accessible worlds, then the world of evaluation w is in the quantifier domain and therefore a ϕ -world. However, a weaker analysis does not require that w is included in the quantifier domain, and, as pointed out by [Yalcin \(2007\)](#), Kratzer’s original semantics for M&M incorrectly predicts (6) to be felicitous. [Izvorski’s \(1997\)](#) original modal proposal (7) works the same way.⁵

- (7) $\llbracket \text{Ev} \rrbracket^{c,w,f,g} = \lambda\phi.\forall w' \in \text{max}_{g_{st}(w)} \cap f_{ep}(w) [\phi(w')]$,
 defined if $\exists q \subseteq f_{ep}(w)$ such that q is indirect evidence for ϕ in w ,
 where $g_{st}(w) = \{q \mid q \text{ is normal in } w\}$ (a stereotypical ordering source),
 where $\forall u, v : v <_{g(w)} u$ iff $\{q \mid q \in g(w) \wedge u \in q\} \subset \{q \mid q \in g(w) \wedge v \in q\}$
 and where $\text{max}_{g_{st}(w)}(\cap f_{ep}(w)) = \{w' \in \cap f_{ep}(w) \mid \neg\exists v \in \cap f_{ep}(w).v <_{g_{st}(w)} w'\}$.
 (adapted from [Izvorski 1997:230](#))

The crucial difference between (2) and (7) is the addition of a stereotypical ordering source g_{st} , a function that maps every world w to a set of propositions that represent the normal course of events in w . Epistemically accessible worlds $\cap f_{ep}(w)$ are ordered and worlds verifying more propositions from g_{st} are ranked higher. The evidential operator quantifies over the maximal subset of $\cap f_{ep}(w)$, as determined by the ordering source. Crucially, the ranking may be such that the world of evaluation w is not one of the most normal worlds (for example, if the source of the report is not reliable), which would allow the speaker to assert $\neg\phi$ (or that they don’t believe ϕ) without

4. Some proposals treat hearsay evidentials as strong non-epistemic modals with an informational modal base that represents reports ([Faller 2011](#); [Kratzer 2012](#)). [Faller \(2019\)](#) argues that this move does not fully account for the discourse dynamics of hearsay evidentials but maintains that evidentials cannot be analyzed as epistemic modals. My point is that they can.

5. [Izvorski \(1997\)](#) points out that the hearsay interpretation of the Bulgarian evidential perfect is weaker than the inferential one, but does not discuss explicit disavowals.

contradiction. The behavior of M&M is a separate issue, and one solution is to do away with the ordering source entirely. Of importance here is that the formal toolkit of Kratzerian semantics can easily account for (5).

3.2. The knower

Another reason to reject the modal option has to do with the nature of the knower. The literature on evidentiality has been tacitly assuming that epistemic modals encode the *speaker's* knowledge. Disavowals like (5) show that hearsay evidentials don't, a fact that supposedly makes them unlikely epistemic modals. However, M&M, unlike, for example, the modal expression *for all I know*, do not always track the speaker's knowledge (though they can; [Tancredi 2007](#)) and may refer to the pooled knowledge of a group of individuals, sometimes even excluding the speaker altogether ([von Stechow and Gillies 2008](#); [MacFarlane 2014](#) a.o.). In line with this view, it is therefore entirely possible to analyze hearsay evidentials as epistemic modals with non-autocentric readings. (8) is a relativist account along the lines of [Stephenson \(2007\)](#) that anchors knowledge to a judge j , a parameter of evaluation that can be the speaker or a third party, depending on the context and grammatical environment:

- (8) $\llbracket \text{EV} \rrbracket^{c, \langle w, j \rangle, f, g} = \lambda \phi. \forall w' \text{ compatible with what } j \text{ knows in } w, \phi(w'),$
 defined if $\exists q \subseteq f_{ep}(w)$ such that q is indirect evidence for ϕ in w .
 (based on [Stephenson 2007:502](#))

Because (8) commits the judge, but not necessarily the speaker, to ϕ , (5) is predicted to be felicitous. This sketch of a semantics raises the following issues. First, the evidence holder has been argued to always be anchored to the speaker in root declaratives ([Korotkova 2019](#)), and it isn't clear if the knower and the evidence holder are the same (see discussion in [Anand and Korotkova 2018](#); [Korotkova and Anand 2021](#)). Second, a known problem for simple-minded relativism about epistemic modality is the infelicity of disavowals with M&M. But (8) serves as a proof of concept.

Most accounts of hearsay disavowals relativize evidentials to an individual other than the speaker. [Smirnova \(2012\)](#) treats cases like (5) as attitudes *de dicto*, [AnderBois \(2014\)](#) analyzes them as perspectival shift to the reporter, and [Faller \(2019\)](#) splits the speaker's discourse roles into the person who is uttering the sentence and the person whose discourse commitments are reflected. The semantics in (8) performs the same in a manner that has been independently proposed for epistemic modals and thus demonstrates that disavowals can be analyzed within modal accounts.

3.3. Assertion

Another argument against a modal analysis has to do with the nature of speech acts performed by hearsay evidentials. If the speaker does not endorse ϕ , they cannot sincerely assert ϕ , and statements like (5) have been argued to be associated with a speech act of a different type ([Faller 2002, 2019](#); [Murray 2014, 2017](#)).

This argument rests on two assumptions about at-issue content and evidentiality. First, it is commonly assumed that only at-issue content is assertable ([Farkas and Bruce 2010](#); [Murray 2014](#) a.o.). Second, it is commonly assumed that the evidential signal is conventionally marked as not-at-issue (presuppositional in my presentation) and that the only assertable contribution of evidential utterances is their scope proposition (modalized or not). This reasoning requires to treat cases like

(5) not as assertions, given that the only assertable contribution is cannot be asserted. However, there is an alternative explanation.

The evidential signal can be analyzed as having a variable discourse status (Roberts 2019; Korotkova 2020). In particular, the hearsay requirement of Dutch *schijnen* (that the speaker has reportative evidence for ϕ) has been shown to be relevant to the question-under-discussion under some circumstances (Korotkova 2020:15), a property that makes it at-issue in question-based frameworks (Beaver et al. 2017). It is therefore possible to treat cases like (5) as another instance of the hearsay requirement becoming at-issue and (5) as an assertion about what the speaker heard (much like ‘I hear ϕ ’). Because no special speech act is needed, a modal account will suffice.

This section demonstrates that illocutionary accounts are not superior to modal accounts as far as disavowals with hearsay evidentials are concerned. In particular, known problems for the modal view can be solved by treating hearsay evidentials as weak modals, as non-autocentric modals or as modals with a variable at-issue status of the evidential requirement, in addition to treating them as informational modals, as has been proposed before. The overarching goal is to cast doubt on the modal-illocutionary dichotomy and to show that there is no empirical argument in favor of either view (see Korotkova 2021 for the same conclusion based on syntactic embedding and Matthewson 2020 on direct evidentiality).

One major conceptual difference between modal accounts and illocutionary accounts is that the latter (especially Faller 2019) put front and center public discourse commitments, a property that has been argued to define speech acts (Geurts 2019 a.o.). The presence of commitment, and not mere belief, has been argued to distinguish imperatives from otherwise similar deontic modals (Condoravdi and Lauer 2017) and speech predicates from otherwise similar doxastics (Anand and Hacquard 2014). It may be possible that hearsay evidentials, understood in a broader context of speech reports (cf. Bary 2021), differ from non-hearsay evidentials in that they refer to commitments rather than just mental states (see also Korotkova 2017; AnderBois 2018 on quotative uses that distinguish hearsay evidentials). However, I am not aware of empirical evidence that would require this—and even disavowals like (5) target belief, not commitment. Until such evidence becomes available, I maintain that the choice between modal and illocutionary theories of evidentiality is at present a matter of taste, much like the choice between quantificational and pronominal theories of tense has been argued to be before Sharvit (2013).

4. Modality and modal subordination

The relationship between evidentials and epistemic modals has been the subject of heated debates. On the one hand, there is a typological tradition of treating evidentiality as a sub-category of epistemic modality (Palmer 1986, among many others). On the other, Aikhenvald (2004) has shown that evidentiality can be a distinct category. However, the issue is less straightforward from the vantage point of *semantic* theory. It is well-known that semantic categories do not always map onto morphosyntax. For example, the same semantic mechanisms have been argued to be responsible for temporality in languages with and without tense (Bittner 2014). It is therefore necessary to furnish a semantic argument for treating—or not treating—evidentials as modals, which in turn requires a working definition of modality.

Consider the debate on the semantics of the future (see [Cariani 2021](#)). English *will*, for example, can be treated as a purely temporal operator, or as a modal operator with a temporal component. In this literature, modality is understood qua world-shifting, as opposed to time-shifting associated with tenses. Conceptualizing modality this way is applicable to a variety of modal expressions regardless of their syntactic category (and they often differ from M&M, [Arregui et al. 2017](#); [Lassiter 2017](#)) and is not tied to a particular framework (provided that possible worlds are used at all).

I propose that the same definition of modality should be adopted in the debate on the semantics of evidentiality. Approaches to evidential meaning then fall into two major groups: intensional (with world-shifting) and extensional (without world-shifting). Both modal (Section 2.1) and illocutionary (Section 2.2) accounts are intensional as evidentials may shift the world at which their scope proposition is evaluated. The pragmatic approach in [Mandelkern \(2019\)](#) belongs to this group as well, as it is compatible with any standard semantics for *must*. Event-based accounts (Section 2.3), on the other hand, are by definition extensional as evidentials are treated as relating events of the same world.⁶

Following [Klecha \(2014\)](#) and [Cariani \(2021\)](#), I propose to use modal subordination as an empirical diagnostic of world-shifting. Modal subordination is a contextual dependency where a modal is restricted to the same set of worlds as those introduced in preceding discourse by another intensional operator, e.g. disjunction or another modal ([Roberts 1989](#)). (9) illustrates.

- (9) a. If John bought a book_{*i*}, he'll be home reading it_{*i*} by now.
 b. It_{*i*} #is/✓will/✓must /✓could be a murder mystery. (adapted from [Roberts 1989:683](#))

The pronoun *it* can refer to its antecedent in the scope of a conditional (9a) only if *it* itself is embedded under a modal (*will/must/could*), while the non-modalized assertion (*is*) incorrectly presupposes the existence of a book in John's possession in the world of evaluation and not just in book-buying worlds introduced by the conditional. As discussed at length in [Klecha \(2014\)](#); [Cariani \(2021\)](#), a non-modal analysis of *will* makes incorrect predictions, so *will* must be a modal.

Compare the data in (9) to the behavior of English *by* temporal adverbials. Although associated with an epistemic flavor, such adverbials are analyzed as extensional operators ([Altshuler and Michaelis 2020](#)), which correctly predicts the lack of modal subordination. (10) demonstrates.

- (10) By Friday, Magda submitted a paper_{*i*}. It_{*i*} was on modality.

Let us now turn back to grammatical evidentials. The difference between intensional vs. extensional approaches to evidential meaning has mostly gone under the radar (though see [Koev 2017](#), discussed below), and data from modal subordination have only been used occasionally ([McCready and Ogata 2007](#); [Smirnova 2012](#); [Lee 2013](#); [Faller 2014](#); [Koev 2017](#)). At the same time, such data are helpful in choosing between different analytical options.

Consider Georgian. As discussed in Section 2, Georgian evidentiality is amenable to a modal (broadly construed) account or to a purely event-based account. Any account with world-shifting (such as 2 or 3) predicts that the evidential past (1a) would trigger modal subordination, unlike the neutral past (1b). An event-based account along the lines of (4) predicts that the two forms would behave the same. (11) shows that such an account overgenerates for Georgian. Much like in (9),

6. Note that just like epistemic modals can have a temporal component ([Condoravdi 2002](#)), modal evidentials can have an event component ([Matthewson and Hirayama 2019](#)). The opposition here is between approaches with vs. without world-shifting.

anaphora in (11) is felicitous only if the pronoun *mas* ‘it’ is embedded under the indirect past,⁷ but not under the evidentially-neutral past. I thus conclude that the Georgian evidential past has to have a modal operator in its semantics.

(11) Georgian

Context: The speaker sees gardening tutorials on Nana’s desk and soil in the basement.

- a. nana-s xe_i daurgia
 nana-ERG tree.NOM plant.IND.PST
 ‘Nana planted a tree, I infer’.
- b. mas-ze_i #dasaxldnen / ✓dasaxlebulan cixv-eb-i.
 in-it inhabit.3PL.PST / inhabit.3PL.IND.PST squirrel-PL-NOM
 ‘Squirrels # inhabited / ✓apparently inhabited it’.

To my knowledge, of evidentials for which an event-based account has been proposed, the data on modal subordination have only been collected for Japanese (McCready and Ogata 2007) and Bulgarian (Smirnova 2012; Koev 2017). Thus, McCready and Ogata show that Japanese inferential *youda* behaves like English modals, a fact not explained by the non-modal approach in Davis and Hara (2014). For Bulgarian, consider (12).

(12) Bulgarian

Context: You arrive home and find a cake on the table. You infer that your roommate Ivan made it. Later you say:

Ivan napravi-l torta_i. pro_i be-še ostaven-a na masa-ta v kuxnja-ta.
 Ivan make-IND cake pro be-PST left-F on table-DEF in kitchen-DEF
 ‘Ivan made a cake. It was left on the kitchen table.’ (adapted from Koev 2017:25)

The null pronoun in (12) (Bulgarian is a subject-drop language) refers to an antecedent superficially embedded under the indirect evidential. Koev (2017) argues that the evidential is therefore not a modal operator, otherwise anaphora would not be possible in (12). Let us take a closer look. Anaphora in (12) is felicitous due to the specific reading of the indefinite DP *torta* ‘cake’: the context states that a cake exists in the world of evaluation. Crucially, such cases are not instances of modal subordination, unlike (9) and (11) in which the antecedent is restricted to the worlds introduced by the first intensional operator. (13) corrects this:

(13) Bulgarian

Context: The speaker sees cookbooks on Ivan’s desk and a dirty baking sheet in the sink.

Ivan napravi-l torta_i. Tja_i #e / ✓bi-l-a v kuxnja-ta.
 Ivan make-IND cake she be.3SG.PRES / be-IND-F in kitchen-DEF
 ‘Ivan made a cake, I infer. It #is / ✓apparently is in the kitchen.’

In (13), the second evidential is needed for the anaphora to go through, as predicted by the modal accounts in Izvorski (1997) and Smirnova (2012). I thus conclude that the Bulgarian evidential is intensional, after all.

To sum up, evidentials have often been treated as modals, but it is not always clear how modality is construed and diagnosed. Owing to the research on the modal future, this section takes

7. The second evidential is also interpreted inferentially in this discourse.

world-shifting to be a basic property of modality. In light of this view, both modal and illocutionary accounts turn out to be modal at heart, while event-based accounts are ultimately non-modal. The data on modal subordination (9-13) offer a testing ground for those theories: intensional operators are predicted to block anaphora, while extensional operators are predicted to allow it. Another standard test for intensional environments, the availability of *de re* construals, is not applicable to evidentials. Testing for *de re* requires multiple perspectives, and evidentials have been argued to be always speaker-oriented in root declaratives (Korotkova 2019).⁸ Weak evidentials, which allow statements of the form $EV\phi$ & $EV\neg\phi$ (see fn.3), clearly are intensional, otherwise such statements would be contradictory (see also discussion in Cariani 2021). But for evidentials that don't allow such statements modal subordination is the best test.

One concern here is the behavior of direct evidentials, which signal that the speaker has firsthand, often perceptual, experience with the predjacent. A priori, one expects such evidentials to pattern with bare assertions, provided that the language in question has assertions without evidential marking (not all do; Aikhenvald 2004). If so, either (i) direct, but not indirect, evidentials are extensional (cf. direct perceptual vs. epistemic uses of English *see* and *hear*; Barwise 1981), or (ii) direct evidentials introduce vacuous intensional quantification (see Matthewson (2020) for a general discussion of direct evidentials as modal expressions). That said, I maintain that modal subordination is a useful empirical tool that should be applied more widely in theorizing about evidentiality.

5. Acquaintance inferences

Another formal property that distinguishes modal & illocutionary accounts on the one hand and event-based ones on the other is the source of evidential restrictions. The former constitute the semantic view on evidentiality and hard-wire the evidential signal as a constraint on the type of evidence—direct, inferential, hearsay etc—the speaker (in root declaratives) has to have in order for the utterance to be felicitous in a given context (as in 2,3). The latter analyze the evidential signal as a by-product of event mereology. In particular, a range of expressions have been argued to encode a non-overlap in time and/or space between the event of the scope proposition and the speaker's here and now (as in 4). The indirect flavor in those cases is derived through implicature reasoning.

A common empirical argument for the semantic view comes from cancellability. Unlike classic implicatures (Sadock 1978), the indirectness of the Bulgarian (Izvorski 1997) or the Georgian (Korotkova 2020) evidential is not cancellable, as evidenced by the infelicity of follow-ups such as 'In

8. Hearsay evidentials have been analyzed as introducing more than one perspective (Section 3), which makes testing for *de re* possible. Consider the case of German reportative *sollen*. While intensional based on modal subordination (Faller 2014), it blocks a *de re* construal in (i), like Free Indirect Discourse and unlike regular speech reports. I leave a thorough investigation of this pattern, in German and across languages, for future research.

- (i) Context: The speaker knows that John is constantly confusing President Ipsum and Dean Lorem at his university. He reports: "Lorem finally resigned" and says that he saw a picture of Lorem under the headline "Resigned".

#Ipsum / ✓Lorem soll sein Amt niedergelegt haben.
 Ipsum / Lorem REP.3SG.PRES his job resign.PRT have.INF
 '#Ipsum (de re) / ✓Lorem (de dicto) has resigned, I hear.'

(the context taken from Anand and Korotkova 2021:ex.43)

fact, I saw it’. However, some implicatures have been argued to be non-cancellable (Lauer 2014), a view that Mandelkern (2019) advocates for the indirectness of English *must* (von Fintel and Gillies (2021) disagree). To sum up, evidence from non-cancellability is inconclusive. Capitalizing on the research on subjective language (Anand and Korotkova 2018; Korotkova and Anand 2021), I propose instead to gauge semantic indirectness through acquaintance inferences.

First, consider subjective *find*-verbs. Across languages, such verbs are associated with an Acquaintance Inference (AI), a requirement that the attitude holder has firsthand experience with the complement (Anand and Korotkova 2018; Korotkova and Anand 2021).

(14) I find food in this restaurant authentic, #though I haven’t tried it.

(Korotkova and Anand 2021)

Korotkova and Anand (2021) show that indirect evidentials and epistemic M&M are systematically banned under *find*-verbs, as (15) illustrates for Dutch. The ban is attributed to an evidential conflict between the AI and the complement, which only arises with expressions that semantically encode indirectness, but not, for example, with probability operators (*likely*, *probably*).

(15) Dutch

#Magda vindt dat
 Magda find3SG.PRES COMP
 de thee heerlijk schijnt te / moet / zou kunnen zijn.
 DEF tea delicious REP.3SG.PRES to / must / shall can.INF be.INF
 ‘Magda is of the opinion that the tea is said to / must / might be delicious’.

(adapted from Korotkova and Anand 2021)

Second, consider the AI of predicates of personal taste, such as *fun* and *delicious* (Pearson 2013; Anand and Korotkova 2018; Ninan 2020 a.o.). As with *find* (14), the AI of *delicious* cannot be cancelled outright (16a), but it can disappear in the presence of certain operators (16b), a phenomenon that Anand and Korotkova (2018) dub ‘AI obviation’.⁹

(16) a. Baked tofu is delicious, #though I haven’t tried it.

b. Baked tofu must/might be delicious, though I haven’t tried it.

Anand and Korotkova (2018) analyze obviation as an update of evidentiary grounds for a claim and argue that it arises with expressions that tolerate or require lack of directness, including M&M, hedges (*I’m sure*), counterfactuals and indirect evidentials in, e.g., Turkish and Bulgarian (17):

(17) Bulgarian

torta-ta bi-l-a vkusn-a no ne ja opita-x.
 cake-DEF be-IND-F tasty-F but NEG she try-PST
 ‘The cake is tasty, I hear/infer, though I haven’t tried it.’

Another line of research argues that obviation is due to the presence of intensional operators (Klecha 2014; Ninan 2020; Cariani 2021). However, not all intensional operators are obviators, for

9. Predicates like *delicious* allow non-autocentric uses whereby the opinion is not that of the speaker in root declaratives or the attitude holder in attitudes (Stephenson 2007; MacFarlane 2014 a.o.). The AI is also non-autocentric in such cases (Anand and Korotkova 2018, 2021). (16a) and (18) are felicitous if used non-autocentrically, but become bad once the follow-up targets the experience of the relevant third party.

example, *find* (typically analyzed as an intensional quantifier) and *know* are not (18). The pattern falls out naturally under the evidential account of obviation.

(18) Magda knows/finds that this tea is delicious, #though she hasn't tried it.

Furthermore, as [Muñoz \(2019\)](#) shows for Standard Tibetan (Tibetic: the Tibet Autonomous Region), direct evidentials do not obviate the AI and exhibit the same pattern as in (18). The intensional account of obviation would force an extensional treatment of such evidentials, while the evidential account is equally compatible with an intensional treatment of direct evidentiality (see [Section 4](#) and extensive discussion in [Matthewson 2020](#)).

To recapitulate, both restrictions on *find*-complements and AI obviation have been argued to be semantic, rather than pragmatic, and to have evidential underpinnings. I propose, following [Korotkova and Anand \(2021\)](#), that acquaintance inferences can thus be helpful in adjudicating between theories of evidential meaning.

First, all accounts that treat indirectness as inferential and/or hearsay evidence for the scope proposition ([Sections 2.1, 2.2](#)) straightforwardly predict that indirect evidentials would be banned under *find*-verbs, as in (15), and would obviate the AI of predicates of personal taste, as in (17). Second, the pragmatic approach in [Mandelkern \(2019\)](#) treats the semantic import of bare assertions and *must*-claims as roughly the same, which, in turn, incorrectly predicts that *must*-modals would embed under *find*-verbs and would not give rise to AI obviation.¹⁰ Finally, event-based accounts of indirectness ([Section 2.3](#)) might be able to handle some data as they do not entirely circumvent evidential restrictions in semantics, but rather deconstruct them (cf. [Matthewson's \(2020\)](#) notion 'evidence location').

The accounts in [Anand and Korotkova \(2018\)](#) and [Korotkova and Anand \(2021\)](#) use distinguished modal bases for direct knowledge ([von Stechow and Gillies 2010](#)) and are as such intensional. However, it is in principle possible to reformulate their insights in event talk by treating the AI as an experiential requirement (cf. [Bylinina 2017](#); [Charlow 2019](#); [Muñoz 2019](#)). Not all direct evidence is perceptual ([Faller 2002](#)), but perceptual evidence, such as being in contact with an event or its parts, is a prototypical case of direct evidence. Lack of directness can then be compositionally achieved through world-shifting (one cannot be in contact with an event of a different world, assuming that events are world-bound), but also through manipulating the event structure. In particular, event-based accounts in fact semantically encode lack of direct perceptual evidence because they require a non-overlap between the event of the predjacent and the event of evidence acquisition (different approaches achieve it via different formal means, but the gist remains the same). Using such evidential with *delicious* is therefore another way of saying that the speaker has not tried the object in question, which predicts obviation to be possible. Given that such operators can be construed as extensional ([Section 4](#)), this is another argument for an evidential, rather an intensional, account of obviation. As for evidential restrictions on *find*-complements, accounting for their semantic composition is more involved and goes beyond the scope of this paper. Future research will determine whether events are enough or worlds are required, but, as [Korotkova and Anand \(2021\)](#) emphasize, the infelicity of (15) is due to a conflict in evidence and thus can be used a diagnostic of indirectness.

Capitalizing on the research on subjective language, this section shows that acquaintance in-

10. The intensional account of obviation is compatible with Mandelkern's approach, but, unlike the evidential account, it does not explain why *must*-modals are systematically banned under *find*-verbs.

ferences, previously linked to semantic indirectness, can shed light on evidential meaning more generally. Relevant data may not always be available. For example, English taste predicates are individual-level (Pearson 2013; Anand and Korotkova 2021) and thus incompatible with change-of-state adverbials, so it is impossible to check whether pragmatically indirect *by*-phrases (Altshuler and Michaelis 2020) give rise to AI obviation. Likewise, evidentials may not be embeddable for syntactic reasons (Korotkova 2021), so it is impossible to check their behavior under *find*-verbs—and not all languages have such verbs to begin with. But when available, the data on acquaintance inferences offer a novel way of looking at the semantic vs. pragmatic divide in the domain of indirectness.

6. Outlook

The overarching goal of this paper is to elucidate conceptual issues surrounding evidential meaning in general and the modal-illocutionary dichotomy in particular. First, the paper shows that modal accounts can handle hearsay disavowals, which have been argued to require an illocutionary approach, and thus differ from illocutionary accounts mostly conceptually (in other words: illocutionary accounts = modal ones + commitments). Second, the paper focuses on two lesser-discussed distinctions between existing accounts: intensional vs. extensional and semantic vs. pragmatic.

	Intensional (with world-shifting)	Extensional (without world-shifting)
Semantic (ev.signal hard-wired)	Modal (Section 2.1) Illocutionary (Section 2.2)	
Pragmatic (ev.signal not hard-wired)	Mandelkern (2019)	Event-based (Section 2.3)

Existing theories have been motivated by superficially different data. The proposed classification identifies consequential differences between those theories and can serve as a tool in investigating the scope of actual variation—across and within languages—in evidential meaning, a task I leave for future research.

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