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MODELING INDIRECT EVIDENCE

A thesis submitted in partial satisfaction
of the requirements for the degree of

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in

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by

Benjamin S. Meriçli

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Contents

Modeling Indirect Evidence

Benjamin S. Meriçli

Abstract

This thesis develops a threshold-based semantics for the Turkish indirect evidential marker that predicts unexpected discrepancies in its distribution. The marker's behavior in interrogatives, so-called *interrogative flip*, is shown in turn to follow from the structure of discourse, as formulated by models that incorporate speaker commitment. I first establish that the indirect evidential marks information for which a speaker's evidence is at best second-best, given general knowledge about the world. I then formalize this generalization in modal semantic terms and show that it explains the marker's canonical absence in reports of well-known historical fact, as well as its optional presence in evaluative and mirative expressions. After examining the account's predictions on the level of discourse, I discuss two corollaries: that evidential content in Turkish is not propositional, and that an *at best second-best* account brings to light anaphoric parallels between indirect evidentiality and the present perfect relative tense.
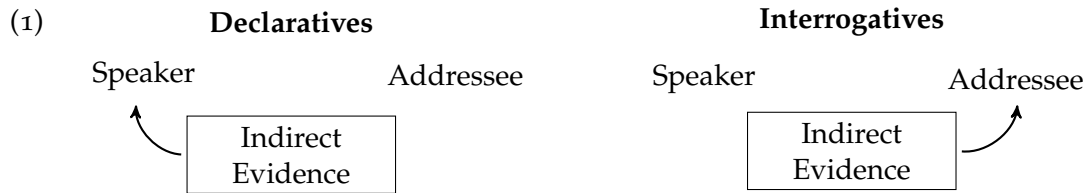
Acknowledgements

1   Introduction

Evidentiality, broadly defined, is the grammatical encoding of the source of the information expressed by a given utterance (Aikhenvald 2004). In Turkish, which exhibits a common variety of the phenomenon known as indirect evidentiality, unraveling exactly what information the evidential marker contributes is not a straightforward task (e.g., Slobin & Aksu 1982, Johanson 2000, Şener 2011). In many contexts, the suffix is interpreted as indicating that the speaker was told the information by a third party (hearsay), or has inferred it from facts at hand. Elsewhere, the suffix serves to express surprise at information whose source sits before the speaker's eyes, or to temper the presumptuousness of judgments and opinions. Well-known historical and scientific facts, on the other hand, are generally immune to the marker.

Indirect evidentiality of the Turkish type, widely but misleadingly construed as distinguishing between witnessed and non-witnessed evidence, is especially characteristic of Turkic, Finno-Ugric, Kartvelian, and Indo-Iranian languages. It is also sparsely attested in languages of Central and North America (de Haan 2013). In such languages, information based on "non-witnessed" evidence is marked, while all other information goes unmarked. Around the world, other varieties of evidentiality mark both classes of information, or instead distinguish between information based on hearsay versus non-hearsay evidence. Finer-grained evidential systems exhibit up to four, perhaps five, distinct markers denoting, for instance, visual, non-visual sensory, inferential, and hearsay evidence (Aikhenvald 2003).

Evidential systems vary enormously in terms of what kinds of evidence, and what combinations thereof, they mark. The morphosyntactic shape of the markers themselves range from verbal affixes, to clausal clitics, to auxiliary verbs and discourse particles (AnderBois 2014). Yet despite the remarkable diversity among the evidential systems of the world, many such systems share a handful of traits all the more remarkable for their universality. First, in languages with grammaticalized eviden-

tial marking[1] an evidential appearing in an interrogative sentence reflects by default the addressee's source of information for the answer (San Roque et al. 2015). This phenomenon, illustrated in (1) and commonly dubbed *interrogative flip*, results in a contrast between interrogatives and declaratives, where the evidential canonically qualifies the speaker's own evidence.

(1)   **Declaratives**   **Interrogatives**

    Speaker   Addressee   Speaker   Addressee

              | Indirect | | Indirect |
              | Evidence | | Evidence |

Second, regardless of the language family or type of evidential system, languages often co-opt the morphology of the present perfect, or forms derived historically from the present perfect, to express "non-witnessed" evidence. While the phenomenon, sometimes called the *perfect of evidentiality*, is commonly introduced as an areal feature of Central Asia, the Caucasus, and the Balkans, it is also attested in the Niger-Congo and Afro-Asiatic language families, not to mention among some Indo-European languages of Northern Europe (Izvorski 1997).

The goal of this thesis is to address two basic questions about indirect evidentiality in Turkish. First, given the observations above, precisely what kind of evidence qualifies as indirect? Second, why does the perspective of the evidential shift from the speaker to the addressee in interrogatives? My claim is that given a comprehensive account of the semantics of indirect evidentiality, the perspective shift observed in interrogative contexts falls out of an independently justified commitment-based discourse model (Gunlogson 2001, Farkas & Bruce 2010). Structural parallels between indirect evidentiality and the present perfect also emerge from the account.

The thesis proceeds as follows. Section 2 introduces declarative and interrogative data exemplifying what I deem *perceptual* uses of the indirect evidential: those in

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[1]The term "grammaticalized" is often used to distinguish between evidentiality as encoded by a dedicated affix or clitic, rather than by lexical or periphrastic means.

which a speaker's evidence neatly qualifies as non-witnessed. In this section, I also briefly discuss aspects of the suffix's morphosyntactic behavior that are relevant for examples throughout the thesis. Section 3 presents a range of *non-perceptual* data that skirt the witnessed/non-witnessed divide, prompting a broader generalization about the nature of indirect evidential content. Section 4 takes an inventory of the theoretical tools already available, concentrating on the modalized approach to evidentiality first framed in Izvorski (1997), as well as the account of evidential interrogatives given in Murray (2010).

A new formal proposal is developed in Section 5, and then applied step by step to the perceptual and non-perceptual data of Sections 2 and 3. Section 6 lays out the commitment-based context structure that I adopt, and then examines the predictions it makes given the semantic account of the previous section, interrogative flip being one among them. Section 7 focuses, through the lens of metalinguistic negation, on the question of whether evidential content in Turkish should be considered propositional. Observations in Section 8 shed light on a formal analogy between the present perfect relative tense and indirect evidentiality, given the analysis in Section 5. This final corollary is inspired by the anaphoric parallel between pronouns and tense first observed in Partee (1973), then extended to modality in Stone (1997). Section 9 concludes with open questions and future directions.

2 Perceptual Uses of the Indirect Evidential

In Turkish, information learned "indirectly" licenses the appearance of an evidential marker: *-mIş*.[2] A primary aim of this thesis is to develop a clear and consistent definition of the term "indirect" in the context of evidentiality in Turkish. Before providing that definition, I present a variety of examples to illustrate the range of meanings that *-mIş* can have, then propose and formalize a comprehensive generalization that captures them. In this section, the data exemplify what I have dubbed "perceptual" uses of the indirect evidential: those that indicate that a speaker has inferential or reportative evidence, as opposed to unmediated visual confirmation, for the proposition expressed by an utterance.

2.1 Declarative Sentences

After bare verb roots, with or without negation marking, *-mIş* is suffixed directly to the stem. After nominals, or verb stems bearing one or more tense, aspect, or modality suffixes, *-mIş* is preceded by the copula: *-Ø-/-y-*.[3] The examples in (2) illustrate the suffixation of *-mIş* to a bare verb root, and also serve to introduce the concepts of inferential versus reportative evidence. When a speaker has inferred that a proposition must hold based on facts at hand, she is said to have inferential evidence for that proposition. When a speaker has received a report about the truth of a proposition from another person, he is said to have reportative (or hearsay) evidence for that proposition. In descriptive accounts of Turkish evidentiality, inferential evidence

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[2]In the Turkish linguistics community, capitalization indicates that a vowel may be realized as one of a set of alternatives determined by the relevant vowel harmonic paradigm, in this case *i* /i/, *ı* /ɯ/, *ü* /y/, and *u* /u/. Following this convention, I refer to the suffix of interest as *-mIş* (/mɪʃ/) when in isolation. A similar convention is used for suffix-initial consonants, which assimilate the voicing of the segment they follow. Hence, the simple past tense suffix is usually referred to as *-DI*, standing in for both *-tI* and *-dI*.

[3]For more information on the morphosyntax of *-mIş*, see section 2.3.

is sometimes termed "result-based," and reportative evidence "information-based" (Göksel & Kerslake 2005).

(2) **Inferential Context:** The speaker notices Hakan's briefcase in the corner of the living room, but has not seen Hakan personally. (**Alternatively:** The speaker hears what he presumes to be Hakan's car pulling into the driveway.)

Reportative Context: Hakan's sister has told the speaker that Hakan came home early, but the speaker did not personally witness Hakan's arrival. (**Alternatively:** Hakan himself has informed the speaker via text message.)

(a) # *Hakan   ev-e   erken gel-**di**.*
    Hakan home-DAT early come-PAST
    'Hakan came home early.'

(b) *Hakan   ev-e   erken gel-**miş**.*
    Hakan home-DAT early come-EVID
    'Hakan (apparently) came home early.'[4]

The example in (3) illustrates the appearance of the copula, here in its phonologically overt form *-y-*, when *-mIş* follows a vowel-final nominal. Note that in (3a), the unmarked counterpart of (3b), the nominal takes no suffix of any sort.

(3) **Inferential Context:** The speaker observes a cow behaving strangely, and believes this might be a symptom of illness.

Reportative Context: The speaker was told by another person that the cow is sick, but may or may not believe so herself.

(a) # *İnek   hasta.*
    cow   sick
    'The cow is sick.'

(b) *İnek   hasta-y-**mış**.*
    cow   sick-COP-EVID
    'The cow is/was (apparently) sick.'

The contexts provided in (3) open the door to a first assumption about the meaning of *-mIş*: perhaps *-mIş* simply serves to indicate doubt on the part of the speaker.

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[4]The English adverbial 'apparently' is not always a satisfactory translation for the content contributed by *-mIş*, but at times I include it to make salient the contrasts between glosses.

This point is often touched on in the descriptive literature. Johanson (2000), for instance, observes that indirect evidentials in the Turkic language family express neither doubt nor confirmation regarding an event. Example (4), drawn from Göksel & Kerslake (2005), shows that the Turkish evidential does not necessarily convey doubt. Here, *-mIş* simply serves to indicate that the speaker's evidence is based on another's report.

(4) (a) **[Ali, to Gül]** *Bahçe-ye   bir ağaç dik-ti-m.*
                garden-DAT a   tree plant-PAST-1S
     'I planted a tree in the garden.'

     (b) **[Gül, to Orhan]** *Ali bahçe-sin-e   bir ağaç dik-miş.*
                Ali garden-3S.POSS-DAT a   tree plant-EVID
     'Ali (apparently) planted a tree in his garden.'

     (c) **[Orhan, to Ali]** *Sen bir ağaç dik-miş-sin,   bana   göster-sene.*
                you a   tree plant-EVID-2S to.me show-2S.IMP
     'You've (I am told) planted a tree. Why don't you show me?'

The data indicate that, in general, the suffix is obligatory independent of a speaker's beliefs regarding the truth of the proposition at issue. One may hold an unshakable belief in a particular proposition, but by virtue of what kind of evidence one has for it, still use *-miş* when asserting it. If a speaker is relaying information about the life of his grandfather, then we observe the contrast shown in (5). Here, (5a) is dispreferred, an expected result given the impossibility of having witnessed one's grandfather's own birth. The speaker may have utter confidence in the proposition expressed, and may have held this belief his entire life. Nevertheless, his evidence is inevitably based on reports and inferences.

(5) (a) # *Dede-m   İstanbul-'da   doğ-du.*
            grandfather-1S.POSS Istanbul-LOC be.born-PAST
     'My grandfather was born in Istanbul.'

     (b) *Dede-m   İstanbul-'da   doğ-muş.*
         grandfather-1S.POSS Istanbul-LOC be.born-EVID
     'My grandfather was (I am told) born in Istanbul.'

While doubt is certainly compatible with *-mIş*, the suffix need not express any doubt on the part of the speaker. In other words, *-mIş* specifies what kind of evidence a speaker has for the proposition at issue; her belief in the proposition itself is left to be determined by the context. In the reportative context given in (3b), for instance, the speaker may not believe that the cow is sick if she does not trust the reporter of the diagnosis; however, if her source is trustworthy, she might just as well believe the assessment without hesitation.[5] Given the data examined so far, an account of the semantics of *-mIş* must preserve the ambiguity that a speaker's evidence can be either inferential or reportative. It also must allow speaker doubt to be determined by context, not by the presence of *-mIş* alone.

We might initially predict that, because one generally has non-inferential, non-reportative evidence for one's own states or actions, predicates inflected for first person agreement do not host *-mIş*. However, *-mIş* can appear on such predicates if the speaker is making an inference about himself or reporting the views of another person. This is the case in (6), an example inspired by Göksel & Kerslake (2005). Here, the speaker is reporting information about herself that is based on the report of another person. Example (6) presents another situation in which *-mIş* can mark a proposition that the speaker herself denies – with respect to (5), example (6) can be said to fall on the opposite end of the spectrum of speaker doubt.

(6) **Context:** The speaker's mother called her stubborn during the course of an argument, and the speaker is relaying the story to a friend.

    Anne-m   *çok*   *kız-dı.*   *Sözde*   *inatçı-y-**mış**-ım.*
    mother-1s.poss   very   get.mad-past   supposedly   stubborn-cop-evid-1s
    'My mom got really mad. I'm supposedly stubborn.'

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[5]I investigate the relationship between doubt, deniability, inferentiality, and reportativity in more detail in Section 6.3. Interesting contrasts, first observed by Şener (2011), emerge when context disambiguates whether a speaker's information is reportative or inferential.

Among languages of the Balkans, the Caucasus, and Central Asia, a morphological distinction between "direct" and "indirect" evidence is often said to constitute an areal feature (for a volume dedicated in part to this topic, see Johanson & Utas 2000). In some languages with grammaticalized evidentiality, such as Tibetan (Garrett 2001), Quechua (Faller 2002), and Cheyenne (Murray 2010), a distinct morpheme may mark information that was witnessed firsthand, or that constitutes "best possible grounds" evidence in the case of Quechua.

It is important to note early on that while *-mIş* conveys indirect evidentiality in Turkish, the simple past tense suffix *-DI* does not necessarily indicate that a speaker's evidence is "direct." Simple past tense is merely the elsewhere case, the unmarked counterpart to *-mIş* when suffixed to a bare verb root. When suffixed to nominals, the absence of any suffix at all serves as the unmarked counterpart to *-mIş*. This is also true of verb stems bearing one or more tense, aspect, or modality suffixes. Johanson (2003) makes this observation as follows.

> "Although the relations between marked and unmarked [evidential] terms vary across [Turkic] languages, the unmarked ones always exhibit neutral uses in cases where the speaker considers the evidential distinction unessential and thus chooses not to use it. The widespread opinion that unmarked items such as *gel-di* 'has come/came' consistently signal 'direct evidence' or 'visual evidence' is incorrect. Unmarked items simply do *not* signal that the event is stated in an indirect way, i.e. acknowledged by a recipient by means of report, inference, or perception." (Johanson 2003, 275-6)

To this observation we should add the caveat highlighted by Göksel & Kerslake (2005), that failing to use *-mIş* when one does not have direct evidence, "is a breach of conversational conventions, because it suggests that a different kind of knowledge (personal experience or observation) is involved." We will see in Section 3 that Johanson and Göksel & Kerslake are both correct, to some extent. The degree to which the omission of *-mIş* constitutes a violation of conversational norms is in fact a matter

of context. As such, I take it that the presumption of direct evidence can arise in the absence of *-mIş* via a process of scalar implicature (Horn 1972). In other words, we need not assume that unmarked forms carry their own (direct) evidential content in Turkish. Instead, in particular contexts an unmarked form may implicate that a speaker possesses direct evidence via competition with the marked form *-mIş*.

Some languages, including St'át'imcets, lack overt "direct" evidence marking, just like Turkish, but nonetheless possess distinct morphemes for reportative and inferential evidentiality (Matthewson et al. 2007). The distinction between the Turkish and St'át'imcets evidential systems is therefore typologically similar to the levels of detail specified by different kinship systems. Just as languages can differ in terms of whether they lexically distinguish older siblings from younger siblings, languages can also differ in terms of whether they lexically distinguish reportative from inferential evidence. Turkish does not, instead subsuming both under the broader category of indirect evidence. It bears noting that evidential systems like that of Turkish are not confined to Eurasia alone. In the substantial typological literature on evidentiality, as noted in the introduction, similar systems have been observed in Northern Europe as well as the Americas (Aikhenvald 2004, de Haan 2013).

2.2 Interrogative Sentences

Cross-linguistically, evidential questions are common. When a language possesses grammaticalized evidentials, as Turkish does, they are rarely banned in interrogatives (San Roque et al. 2015). What is more, when evidentials do occur in interrogatives, the most common pattern is for the evidential to reflect the perspective of the addressee, the person to whom the question is posed (ibid.). That is, the evidential indicates that it is the addressee who possesses indirect evidence. This stands in contrast to the declarative case, where an evidential encodes the speaker's evidence for a proposition, not the addressee's. Referred to as "interrogative flip," the phenomenon is sometimes described in terms of an evidential "anchor," the discourse participant whose per-

spective the evidential takes. That is, in declaratives, the evidential is anchored to the speaker, while in interrogatives, the evidential is anchored to the addressee. Example (7) illustrates a context in which the addressee, not the speaker, is expected to have received direct visual confirmation for the answer he will provide. Here, the simple past tense marker *-DI* is preferred, as in (7a).

(7) **Context:** A babysitter has been watching a child named Hande for the evening. Hande is still young enough that she must be sat in a highchair and fed by someone else in order to eat. (Consequently, at any meal, the person feeding her sees everything that Hande eats.) The mother returns home and asks the babysitter how the evening went.

  (a) *Hande   yoğurd-u-nu   bitir-**di**   mi?*
     Hande   yogurt-3S.POSS-ACC   finish-PAST   INT
     'Did Hande finish her yogurt?'

  (b) # *Hande   yoğurd-u-nu   bitir-**miş**   mi?*
       Hande   yogurt-3S.POSS-ACC   finish-EVID   INT

In (8), on the other hand, the addressee is presumed to have indirect evidence for her response. As such, *-mIş* is preferred. Here, the speaker is aware that the addressee, now the mother, will have inevitably received her information from another source, the babysitter.

(8) **Updated Context** (7): The father returns home and asks the mother for the same information that the mother sought in (7). The father knows that the mother did not feed or witness the feeding of Hande.

  (a) # *Hande   yoğurd-u-nu   bitir-**di**   mi?*
       Hande   yogurt-3S.POSS-ACC   finish-PAST   INT

  (b) *Hande   yoğurd-u-nu   bitir-**miş**   mi?*
     Hande   yogurt-3S.POSS-ACC   finish-EVID   INT
     'Did Hande finish her yogurt?'

We also find that an interrogative cannot "coerce," so to speak, the evidentiality of the addressee's response. Revising the context of example (8), we observe in (9) that when the father uses the simple past *-DI* in his question, the mother will not simply

respond with the same morphology. Instead, her response makes use of the indirect evidential *-mIş*, and provides clarification for the switch.

(9) **Revised Context** (8)**:** The father mistakenly believes that the mother fed Hande and utters the interrogative in (8a), *Hande yoğurdunu bitirdi mi?* The mother responds as follows.

   (a) # *Evet, bitir-di.*
       yes   finish-PAST

   (b) *Bakıcı-ya*   *sor-du-m,*   *bitir-miş.*
      babysitter-DAT ask-PAST-1S finish-EVID
      'I asked the babysitter, and she (Hande) did finish it.'

As noted for the declarative case above, one might expect evidential interrogatives involving verbs with second (or first) person inflection to be unusual, if not impossible. Yet just as in the declarative example (6), context can render such interrogatives appropriate. In (10), the speaker has no evidence for her having finished all of the dessert, and so poses the question to herself with the indirect evidential. Perhaps she is a notorious somnambulist, or was intoxicated the night prior. If, for whatever reason, the addressee lacks "direct" evidence for her response, even when the response regards her own actions, *-mIş* is preferred. In (10), the speaker has inferential evidence for her own actions.

(10) **Context:** The speaker prepared a tray of the Turkish dessert *şekerpare* and left it on the counter in the kitchen overnight. In the morning, the speaker sees that all the pastries are gone, but does not remember having eaten them the night before. She lives alone.

   (a) # *Şekerpare-yi* *bitir-di-m*   *mi?*
      *şekerpare-*ACC finish-PAST-1S INT

   (b) *Şekerpare-yi* *bitir-miş* *mi-yim?*
      *şekerpare-*ACC finish-EVID INT-1S
      'Did I finish the *şekerpare*?'

The same holds for interrogatives involving predicates marked with second person inflection. The question in (11b) implies that the addressee's own evidence for his response must be inferential, and is therefore subtly demeaning.

(11) **Revised Context** (10)**:** The speaker prepared a tray of the Turkish dessert *şekerpare* and left it on the counter in the kitchen overnight. The speaker has one roommate, who she knows was very drunk the night before. In the morning, all of the *şekerpare* have been eaten.

(a) # *Sen şekerpare-yi bitir-**di**-n   mi?*
   You şekerpare-ACC finish-PAST-2S INT

(b) *Sen şekerpare-yi   bitir-**miş** mi-sin?*
   ou   şekerpare-ACC finish-EVID INT-2S
   'Did you finish the *şekerpare*?'

Based on the data presented in this section, an account of *-mIş* must not only explain the reportative/inferential ambiguity and allow for variable speaker doubt: it must also predict interrogative flip. Given the cross-linguistic pervasiveness of interrogative flip in languages with grammaticalized evidentials, any account of indirect evidentiality should have as a central goal the explanation of why evidentials take speaker perspective in declaratives and addressee perspective in interrogatives. As documented in San Roque et al. (2015), a survey article of evidential questions, there do exist languages in which evidentials are said to take speaker perspective in interrogatives (e.g., Yukaghir). There are also languages where an evidential is speaker-oriented in declaratives, but may take either speaker or addressee perspective in interrogatives (e.g., Macedonian). Nonetheless, according to San Roque et al., interrogative flip is "the most common pattern for evidentials cross-linguistically."

2.3 Tense, Aspect, and Evidentiality

So far, I have discussed the meaning of *-mIş* only in terms of what kind of evidential content it contributes. However, comparing examples (2) and (3), among others, makes clear that the tense associated with *-mIş* is not always past. Furthermore, as Göksel & Kerslake (2005, 327-8, 331, 355) show, *-mIş* does not always convey perfective aspect, defined as the presentation of an event as a completed whole – having an identifiable beginning and end point. Whether *-mIş* contributes past tense and perfective aspect depends on the suffix's syntactic position, illustrated by the contrasts

in (12). Following a verb root, as in (12a), *-mIş* conveys past tense (PAST), perfective aspect (PERF), and indirect evidentiality (EVID). Following a nominal, as in (12b), or a verb bearing one of several TAM suffixes, such as the necessitative in (12c), *-mIş* conveys EVID, but contributes neither PAST nor PERF.[6] Example (12a) shows that the copula, which surfaces as *-y-* after vowels, does not precede *-mIş* following a bare verb root.

(12) (a) *Dinle-miş.*
        listen-{PERF/PAST/EVID}
        'He apparently listened.'

     (b) *Hasta-y-mış.*
        sick-COP-{*PERF/(PAST)/EVID}
        'He is/was apparently sick.'

     (c) *Git-meli-y-miş.*
        go-NEC-COP-{*PERF/(PAST)/EVID}
        'He apparently has/had to go.'

In the sentences of (12), *-mIş* creates a finite clause from either a verb root or a stem bearing the copula. However, when following a verb root, the suffix can also be used to create non-finite expressions whose syntactic behavior is similar in many ways to that of nominals. In (13a), the suffixation of *-mIş* to *git-* 'go' results in an expression that modifies the noun *adam* 'man,' just as the adjective modifies *kitap* in (13a'). In (13b), a verb bearing *-mIş* is followed by the infinitival form of the copular verb *olmak* 'be,' similar to the adjective in (13b'). In (13c), a verb bearing *-mIş* is followed by the bound copula *i-*, just like the adjective in (13c').[7] And in (13d) and (13e), as in (13d') and (13e'), *-mIş* is followed by another inflectional affix: the past tense suffix

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[6]The same syntactically conditioned aspectual contrast is found for the past tense marker *-DI*, as discussed alongside *-mIş* in Meriçli (2016).

[7]The copula *-y-/-∅-* historically descends from this bound form, which is now seldom used. The bound form can also host *-mIş* (as *imiş*) and the conditional suffix *-sA* (as *ise*). According to Göksel & Kerslake (2005, 84), *i-* is primarily used when a speaker seeks to (metalinguistically) highlight the identity of the suffix itself.

-DI, or the generalized modality marker (GM) *-DIr*. Here, *-mIş* conveys neither indirect evidentiality (EVID) nor past tense (PAST), but rather only perfective aspect (PERF).

(13)   Non-finite Expressions with Nominal Characteristics

    (a) *sen-i   bırak-ıp   git-**miş** bir adam* (a′) *güzel bir kitap*
       you-ACC leave-CONJ go-PERF a   man   nice   a   book
       'a man who up and left you'   'a nice book'

    (b) *Git-**miş** ol-mak iyi.*   (b′) *Güzel ol-mak iyi.*
       go-PERF be-INF good   nice be-INF good
       'It's good to have gone.'   'It's good to be pretty.'

    (c) *Git-**miş** i-di.*   (c′) *Güzel i-di.*
       go-PERF be-PAST   nice   be-PAST
       'He had gone.'   'It was nice.'

    (d) *Git-**miş**-ti.*   (d′) *Güzel-di.*
       go-PERF-PAST   nice-PAST
       'He had gone.'   'It was nice.'

    (e) *Git-**miş**-tir.*   (e′) *Güzel-dir.*
       go-PERF-GM   nice-GM
       'He went.' (formal registers)   'It is nice.'

The configurations in (13) are only well-formed when *-mIş* is suffixed to a bare verb root. When *-mIş* itself follows the copula, it cannot be used, for example, to create non-finite modifiers or relative tenses. Observe the contrast in (14): in (14b), adding the verb *olacak* 'will be' after what constitutes a finite clause in (12b) results in unacceptability.

(14)   (a) *Dinle-**miş**   ol-acak.*
       listen-{PERF/*PAST/*EVID} be-FUT
       'He will (*apparently) have listened.'

    (b) **Hasta-y-**mış**   olacak.*
       sick-COP-{*PERF/(PAST)/EVID} be-FUT
       Intended: 'He will (apparently) be sick.'

To further clarify the difference between the post-verbal *-mIş* and the post-copular *-mIş*, I provide examples (15) and (16). If *-mIş* is the same suffix in any position, and

the copula *-y-/-∅-* simply allows this suffix to attach to nominals, then we would expect *-mIş* to behave identically in (15) and (16). This is clearly not the case. The post-copular *-mIş* of (16) exhibits different morphosyntactic constraints than the post-verbal *-mIş* of (15). Note also that the pattern of unacceptability that emerges in (16) corresponds exactly to when an evidential (and finite) reading is unavailable for *-mIş* in (15).

(15)   (a) *Pişman   ol-**muş**.*
             regretful be-{PERF/PAST/EVID}
             'He apparently became regretful.'

        (b) *Pişman   ol-**muş** kişi.*
             regretful be-PERF person
             'person who (*apparently) became regretful'

        (c) *Pişman   ol-**muş-tu**.*
             regretful be-PERF-PAST
             'He had (*apparently) become regretful.'

(16)   (a) *Hasta-y-**mış**.*
             sick-COP-{(PAST)/EVID}
             He is/was apparently sick.

        (b) **Hasta-y-**mış**   kişi.*
             sick-COP-{(PAST)/EVID} person *or* sick-COP-PERF person
             Intended: 'person who was sick'

        (c) **Hasta-y-**mış-tı**.*
             sick-COP-{(PAST)/EVID}-PAST *or* sick-COP-PERF-PAST
             Intended: 'He had been sick.'

Given the data of this section, three different varieties of *-mIş* emerge. The two varieties that this thesis is most concerned with are those which convey indirect evidentiality and, incidentally, always result in a finite clause. Following a verb, the evidential *-mIş* contributes PERF/PAST/EVID; following the copula it contributes only EVID. Hence, the post-verbal evidential *-mIş* is the evidential counterpart to post-verbal *-DI*, which expresses PERF/PAST, but not EVID. In its post-copular form, *-mIş*

is strictly evidential. Throughout the thesis, I gloss both only as EVID. The non-evidential *-mIş*, on the other hand, creates a non-finite expression that is syntactically similar to a nominal and can only follow only a bare verb root, not the copula. Given the clear split in their distribution, I treat the evidential (finite) and the non-evidential (non-finite) *-mIş* as distinct morphemes (c.f. Meriçli 2016).

Finally, note that Turkish exhibits both the past perfect and future perfect relative tenses. In (13d) and (14a), for example, the non-evidential *-mIş* is employed in combination with a suffix or separate copular form that specifies either past (*-DI*) or future (*olacak*) absolute tense.[8] Example (13d) gives the past perfect *gitmişti* 'she had gone,' and example (14a) gives the future perfect *dinlemiş olacak* 'he will have listened.' In the sense of Reichenbach (1947), these sentences situate the completion of some event prior to a reference time that is specified by the absolute tense: either before or after the time of utterance. Yet there is no corresponding present perfect in modern Turkish, setting the reference time to include the time of utterance. That is, there is

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[8]The combinatorics of the Turkish verbal projection are beyond the scope of this account, but some familiarity is necessary in order to understand the matter of *-mIş*. Note that the generalized modality marker (GM) *-DIr* does not produce a relative tense in (13e). A suffix in need of more semantic attention, *-DIr* plays different roles in different registers. In formal Turkish, including academic writing and official announcements, *-DIr* can attach to nominals and certain verbal suffixes to indicate, according to Göksel & Kerslake (2005), that "a claim of some significance is being made." It is assumed that the claim is based on some established authority. Beyond this modal flavor, the combination *-mIş-tIr* is interpreted identically to simple past tense *-DI*. In informal Turkish, on the other hand, *-DIr* carries a dubitative sense akin to that of the English adverbials *presumably* and *probably*. Even putting aside the meaning of *-DIr*, the interaction of *-mIş* with other suffixes in the Turkish verbal projection is a vast and complicated subject at the interface of (morpho)syntax and semantics. Like the felicity conditions and discourse effects of the suffix, this topic demands further study and will have to be accounted for in order to produce a more complete semantics of *-mIş*. See Sezer (2001) and Meriçli (2016) for more discussion of the syntax of verbal inflection in Turkish.

no unambiguous translation in Turkish for the English *she has gone*.[9] We will see in Section 4.2 that *-mIş* likely descends from a suffix that once filled that gap.

3   Non-Perceptual Uses of the Indirect Evidential

Upon further inspection, some uses of *-mIş* fail to respect the distinction between eyewitness evidence on the one hand, and inferential or reportative evidence on the other. Perhaps the most obvious discrepancy arises when a speaker uses *-mIş* to convey her surprise at an event she has witnessed firsthand: the so-called "mirative" use. In these cases, *-mIş* serves to indicate that the proposition at issue is counter to the speaker's expectations. Another discrepancy is the use of indirect evidentiality to temper evaluative expressions. That is, a well-timed *-mIş* can render an otherwise arrogant-seeming opinion less presumptuous, or even complimentary. Finally, indirect evidentials are consistently absent in statements of scientific or historical fact, a detail that is often mentioned but not explained in the literature on Turkish.

3.1   Mirative Expressions

The question of how reportative, inferential, and mirative evidence can be said to denote a natural class is not new, even in Turkish linguistics (Slobin & Aksu 1982), and the debate continues in the semantics and pragmatics literature (DeLancey 2001, Peterson 2010, Rett & Murray 2013). Recent typological work suggests that the link between indirect evidentiality and mirativity, like interrogative flip, may constitute a linguistic universal, or at least a very strong cross-linguistic tendency (Aikhenvald 2012). Consequently, the capability to explain this link is one of the desiderata for an account of indirect evidentiality.

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[9]In fact, the present perfect is often a stumbling block for speakers of Turkish while learning English. Simple past tense *-DI* is appropriate in contexts where either present perfect or simple past would appear in English – i.e., in Turkish, no morphosyntactic configuration uniquely situates the utterance time within the reference time of a completed event.

Example (17) offers a typical context in which one might expect to hear the mirative *-mIş*. Note that not only is the event remarked on suddenly; it is also counter to the expectations of the speaker. In situations of surprise, *-mIş* is common but optional, a trait that recurs among the non-perceptual data presented.

(17) **Surprised Context:** Unaware that her addressee was planning to come home early, the speaker answers a knock at the door and, to her surprise, is greeted by her addressee standing on the stoop.

<table>
<tr><td>(a) Erken gel-di-n!
early come-PAST-2S
'You're here early!'</td><td>(b) Erken gel-miş-sin!
early come-EVID-2S
'(It seems) you're here early!'</td></tr>
</table>

Because a speaker can convey surprise without using *-mIş*, we already see that this use differs from the non-mirative case. If a speaker omits *-mIş*, then an utterance expresses no indirect evidentiality. But if a speaker omits *-mIş*, the utterance can still express surprise. That is, given the context in (17), the utterance of (17a) will never be misleading; given the contexts provided in (2) and (3), uttering (2a) or (3a) is. In line with this distinction, Peterson (2013) claims that the mirative interpretation of an indirect evidential such as *-mIş* is "parasitic" on its evidential meaning. This observation is in agreement with the notion that *-mIş* is not specified for reportativity, inferentiality, or mirativity; instead, *-mIş* highlights some more general class of evidence that a speaker has for the proposition at issue. In situations of surprise, as I argue in Section 5.3, claiming to possess this class of evidence can be used for pragmatic effect.

While elusive, mirative questions are attested. In example (18), the speaker recognizes that the addressee is delightfully surprised, but may not be so herself. Turkish appears to differ from at least Cheyenne in this respect, as the latter does not permit mirative evidentials in interrogatives (Rett & Murray 2013).

(18) **Context:** Murat orders escargot while eating dinner at a restaurant with Dila. When the dish arrives, Murat takes a bite and registers an expression of great delight. Dila can ask the following.

(a) *Güzel   mi?*
    good   INT
    'Is it good?'

(b) *Güzel   mi-y-**miş**?*
    good   INT-COP-EVID
    'Is it good?'

One might argue that the context in (18) leaves ambiguous whether or not the speaker is also surprised. If true, this would impede our ability to generalize interrogative flip to mirative uses. The example in (19) makes a more solid case, using a somewhat more convoluted question. Here, the speaker asks a question she herself knows the answer to, and hence *-mIş* must reflect the surprise of the addressee.

(19) **Context:** Speakers A and B are studying for a test. Speaker B has just boasted of her mastery of a particular topic, and then demonstrated it by reciting the details of a complex anatomical process from memory.

A: *Vay be!*
    'Wow!'

B: *Öğren-**miş**   mi-yim?*
    learn-EVID   INT-1S
    'Have I learned it?'[10]

Having established that the mirative use of indirect evidentials is common, and that mirative and perceptual evidentials exhibit the same behavior in questions, I submit that an account of the semantics of *-mIş* should aim to explain the mirative data as well.

3.2   Evaluative Expressions

For a wide range of utterances, the evidence that supports the propositions they express cannot easily be categorized as "witnessed" or "non-witnessed." Evaluative expressions are a case in point. Without diving into the psychology of opinions, I present some examples of the effect *-mIş* has on the communication of them. When

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[10]Spoken Turkish Corpus record 069_090610_00015 (Ruhi et al. 2012).

-mIş appears within evaluative expressions, the evaluation is often coincidental with surprise. This makes separating these two non-perceptual uses of *-mIş* a difficult task. Example (20) illustrates such a scenario: the speaker is expressing not only an opinion about the cake consumed, but also surprise at that opinion.

(20) *Pasta iyi-y-**miş**!*
      cake   good-COP-EVID
      'The cake's good!'

Still, *-mIş* can appear in evaluative expressions with no indication that the evaluation is counter to the speaker's expectations. Example (21) illustrates a scenario in which the speaker comments on the quality of an interlocutor's joke. While the utterance in (21a) runs the risk of coming across as arrogant, the response in (21b) is likely to be perceived as complimentary.

(21) **Context:** Berk makes a joke that alludes to a well-known Turkish short story. Gökhan may respond to Berk's joke as follows.

   (a) *Türk   edebiyat-ı   şaka-sı   iyi-y-**di**.*
        Turkish literature-3s.POSS joke-3s.POSS good-COP-PAST
        'The Turkish literature joke was good.'

   (b) *Türk   edebiyat-ı   şaka-sı   iyi-y-**miş**.*
        Turkish literature-3s.POSS joke-3s.POSS good-COP-EVID
        'The Turkish literature joke was good. (But who am I to judge?)'

I have included a rather suggestive gloss in parentheses, prefacing the account to follow later in the thesis. Uses of *-mIş* like the one in (21b) are not uncommon. I categorize them as non-perceptual uses of the evidential because the speaker cannot be said to have inferential or reportative evidence for the judgment offered. Given their prominence in spoken Turkish, an account of the semantics of *-mIş* should be able to explain its effect on evaluative expressions as well.

3.3 Optionality and Historical Facts

We have already seen, in the mirative, that sometimes "witnessed" evidence licenses *-mIş*. Conversely, not all "unwitnessed" evidence requires *-mIş*. In example (5), we saw that *-mIş* is generally used when recounting events of a grandparent's life. This is expected, for one cannot have personally witnessed such events. A reasonable assumption would be that in discussing the events of a historical figure's life, one would do the same. However, this is not the case. Historical information almost never bears the indirect evidential in Turkish. Example (22) presents the relevant contrasts, for the case of one's grandfather, the first president of Turkey, and the (less familiar) second president of Turkey. Uttering (22b) with the indirect evidential *-mIş* is unusual, and might give rise to any number of inferences: e.g., the speaker is new to Turkey, did not receive a public education there, or doubts the veracity of the trusted historical canon. Judgments regarding (22c) are less clear-cut and more context-dependent.

(22) **Context:** During the course of a conversation among non-historians about family members, Turkish history, and other subjects, a speaker might utter the following. (Turkish speakers generally find these judgments canonical.)

  (a) *Dede-m*   *Türkiye-'de*   *doğ-*{#*du* / ***muş***}.
       grandfather-1S.POSS Turkey-LOC be.born-{#PAST / EVID}
       'My grandfather was born in Turkey.'

  (b) *Atatürk*   *Selanik-'te*   *doğ-*{***du*** / #*muş*}.
       Atatürk   Thessaloniki-LOC be.born-{PAST / #EVID}
       'Atatürk (Turkey's first president) was born in Thessaloniki.'

  (c) *İsmet* *İnönü* *İzmir-'de*   *doğ-*{ ??*du* / ***muş***}.
       İsmet İnönü Izmir-LOC be.born-{ ??PAST / EVID}
       'İsmet İnönü (Turkey's second president) was born in Izmir.'

One might stipulate away the infelicity of *-mIş* in (22b) by positing an exemption for historical facts, but the lesser-known historical detail in (22c) generally favors *-mIş*. We might assume, then, that only "strong" historical facts are impervious to the indirect evidential. This is an ad hoc explanation, and not satisfying for a semantic account of *-mIş*.

What is more, by carefully tuning the context, we can reverse the judgments in (22a) and (22b). In (23), the student has presumably only recently learned that Atatürk was born in Thessaloniki, and believes she can acquire better evidence than she already has. Given the context, that is indeed her goal. As such, the fact no longer has the status it normally does for Turkish speakers: i.e., it is not universally known and, in a sense, its truth cannot be taken for granted. Note that the generalized modality (GM) marker *-DIr* appears in (23), in Student B's response. Here, it is suffixed to the non-finite post-verbal *-mIş*, which contributes no evidential content.[11]

(23) **Modified Context** (22b)**:** A middle school student (**A**) requests homework help from an online forum called *eÖdev* 'eHomework,' where the titles of students' posts reflect the topics they are requesting help with. Here, Student A's post is shown with the accompanying reply by Student B.

> **A:** *Can-ım   Atatürk   Selanik-'te   doğ-**muş**.*
> dear-1s.POSS Atatürk Thessaloniki-LOC be.born-EVID
> 'My dear Atatürk was (apparently) born in Thessaloniki.'

> **B:** *Evet, Selanik-'te   1881 yıl-ı-nda   doğ-muş-tur.*
> yes   Thessaloniki-LOC 1881 year-3s.POSS-LOC be.born-EVID-GM
> 'Yes, Atatürk was born in Thessaloniki.'

> **A:** *Sağol...*
> 'Thanks...'[12]

Similarly, while utterances like (22a) bear *-mIş* in most readily imagined contexts, scenarios can be generated that favor its omission. In (24), as in arguments, promises, and oaths more generally, omitting *-mIş* allows the speaker to avoid drawing attention to what kind of evidence she may have for the proposition expressed. This example shows that given the same evidence and the same speaker, a proposition for which speakers canonically prefer *-mIş* can be asserted without it.

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[11]For more information on non-finite, non-evidential *-mIş* and the use of the generalized modality marker *-DIr* in academic and official registers, see Section 2.3, footnote 8 in particular.
[12]http://eodev.com/gorev/7264521

(24) **Modified Context** (22a)**:** In an argument about one's regional identity, the speaker is accused of not being an authentic Istanbulite, but rather a mere Ankaran. The speaker lays out her arguments for being a true Istanbulite.

> *Annem İstanbul'da doğ<u>du</u>, babam İstanbul'da doğ<u>du</u>, **nenem, dedem İstanbul'da doğ<u>du</u>**. Ankara'da büyüdüm diye Ankaralı mı oluyorum?*

> 'My mother was born in Istanbul, my father was born in Istanbul, **my grandmother, my grandfather were born in Istanbul**. You're telling me that since I grew up in Ankara, I'm an Ankaran?'[13]

Relatedly, *-mIş* is also optionally used for narrative effect in storytelling. Zeyrek (1990) presents a range of qualitative and quantitative observations about the suffix's function and distribution in Turkish folktales, but this aspect of Turkish evidentiality is typically ignored in formal studies of the phenomenon. An account that accommodates the optionality of the suffix, however, may offer insights into its stylistic function. Zeyrek (1990) also briefly discusses what might be described as an age-off period for indirect evidential marking. For information acquired indirectly, especially widely acknowledged facts about current affairs and history, speakers come to favor the omission of *-mIş* over time. Why this is generally not the case for events in the lives of relatives remains to be explained.[14]

In the descriptive literature, *-mIş* is generally described as distinguishing information for which a speaker possesses evidence that was not witnessed firsthand, with an exception for the mirative case. I have provided support for the claim that this observation is on the right track, but not nearly broad enough. The suffix *-mIş* may sometimes mark propositions for which the speaker clearly has firsthand evidence, as in the mirative case, but it can also be used to weaken the force of evaluative expressions, whose epistemic status evades clear classification as witnessed or non-witnessed. In the same vein, non-witnessed, well-known historical facts generally do not license *-mIş*, as one might expect. Finally, propositions that canonically prefer

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[13]Aslı Göksel, p.c.

[14]Donka Farkas (p.c.) has suggested that this use of *-mIş* is perhaps similar to the "humble" *-mIş* of evaluative expressions, conveying politeness or deference on the part of the speaker.

indirect evidential marking can also lack it in the proper context, and vice versa. All the data presented so far indicate that the felicity conditions of *-mIş* are profoundly context-dependent. In subsequent sections, I will show that they correspond to the following generalization.

(25) CLAIM
    The use of *-mIş* signals that a discourse participant's evidence is **at best** the **second-best** realistically available evidence for the proposition at issue.

4 Existing Accounts

In this section, I discuss previous approaches to the semantics of evidentiality, with special focus on the accounts most relevant to the two main questions of this thesis: what kind of evidence qualifies as "indirect," and why, in interrogatives, is that evidence the addressee's? I first address the notions of illocutionary evidentiality and epistemic evidentiality, a division that I, like Murray (2014a), deem secondary to the broader goal of a unified semantics of evidentiality. Next, I present the modalized approaches to evidentiality that serve as a foundation for my own. Finally, I introduce the only (to my knowledge) extant theoretical account of evidentials in interrogative sentences. I attempt to demonstrate both the considerable progress, and the subtle empirical gaps, that have accompanied each account. In general, no account so far has adequately defined the umbrella term "indirect," addressed the contrasts observed regarding non-perceptual uses of evidentials, or explained the universal prevalence of interrogative flip.

4.1 Illocutionary vs. Epistemic Evidentials

Many recent accounts of the semantics and pragmatics of evidentiality begin by drawing a broad distinction between illocutionary evidentials and epistemic (or propositional) evidentials (e.g., Faller 2006a, Davis et al. 2007, Murray 2014b, AnderBois 2014,

Northrup 2014). These two subtypes of evidentiality are said to be distinguished by a range of interactions with various diagnostics. However, many of the diagnostics target only tendencies exhibited by an evidential system, not hard constraints. For instance, while Cheyenne (illocutionary) evidentials cannot be interpreted under the scope of tense or modals (Murray 2010), some German (epistemic) evidential expressions are freer to do so (Faller 2006b). Similarly, while illocutionary evidentials do not indicate that the speaker is committed to the proposition at issue, epistemic evidentials do commit the speaker in some cases.[15]

Murray (2014a) provides sound arguments in favor of some of the diagnostics used to distinguish these two subtypes of evidentiality, but highlights many ways in which the subtypes themselves are problematic: they simply do not clearly demarcate the data. As such, deeming a particular evidential or evidential system illocutionary as opposed to epistemic amounts to an analytical choice: to treat the evidential as a speech act operator, akin to particles analyzed at the discourse level; or to treat it as part of the proposition itself, akin to tense and modality. Like Murray (2014a), I believe that while both choices have advantages and disadvantages for the task of capturing linguistic generalizations, the ultimate goal should nonetheless be a unified analysis of evidentiality cross-linguistically – to the extent possible.

Because an epistemic (modal) analysis is semantically more basic and therefore offers more predictive power, and because of clear morphological similarities between Turkish suffixes that express evidentiality, aspect, and tense, I follow several influential accounts in choosing to analyze the Turkish indirect evidential as an operator on

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[15]The ability of a speaker to deny the at-issue content of an utterance bearing evidential marking, the deniability diagnostic, is taken as a defining characteristic of illocutionary evidentials. Generally, deniability is considered the gold standard for distinguishing illocutionary evidentials from epistemic evidentials. Nonetheless, when applied to Turkish, the diagnostic hinges on whether *-mIş* is interpreted inferentially (p difficult to deny) or reportatively (p easy to deny). This suggests that the diagnostic is an unreliable litmus test for illocutionary evidential systems. See Section 6.3 for more detail on its application to the case of Turkish.

propositions, not on speech acts (e.g., Izvorski 1997, Matthewson et al. 2007, Faller 2011). By treating the indirect evidential on par with an epistemic modal, we are free to leave its effect on speaker commitment to the discourse model itself, whose structure is independently motivated by arguments unrelated to evidentiality. We are also then able to preserve a linkage between indirect evidentiality and the present perfect, placing evidentials in an anaphoric paradigm alongside pronouns, tenses, and modals. Finally, an epistemic approach harmonizes with Turkish-specific observations regarding the propositionhood of evidential content.[16]

Consequently, I begin from much the same starting point as Izvorski (1997), Matthewson et al. (2007), Faller (2011), and Şener (2011), by defining a modal base for evidential expressions. Unlike these accounts, I reach further back into the definition of the base itself, to more rigorously define exactly what kinds of propositions can serve as evidence for an indirect evidential expression. In so doing, the most fundamental (semantic) contributions of my account are indifferent to the illocutionary/epistemic divide. The denotation I provide is implemented in a modal framework in the spirit of the aforementioned accounts, but deriving the meaning of "indirect evidence," my first aim, is of value to either school of evidentiality.

4.2   Indirect Evidence in Izvorski (1997)

Izvorski (1997) is widely acknowledged as the foundational account of evidentiality within a modal semantic framework. Although the paper focuses on establishing a modal semantics of indirect evidentiality in Bulgarian, it also takes aim at the noted cross-linguistic link between present perfect relative tense and indirect evidentiality. Izvorski sets the stage with the following examples from Bulgarian and Norwegian,

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[16]Section 7 presents evidence that the content contributed by -mIş is not itself propositional, but more similar to that contributed by tense, for instance. See also Şener (2011, 111-114) for a brief argument against an illocutionary analysis of -mIş.

both of which are ambiguous between an indirect evidential and a present perfect reading.

(26) (a) *Az sâm   došâl.*
          I   be-1S,PRES come-P.PART
          'I have come.' / 'I apparently came.'   (Bulgarian)

      (b) *Jeg har   kommet.*
          I   have-1S,PRES come-P.PART
          'I have come.' / 'I apparently came.'   (Norwegian)

This cross-linguistically common pattern, which Izvorski dubs the "perfect of evidentiality" is not confined to any one region or language family. This suggests a formal connection, on the level of both syntax and semantics, between indirect evidentiality and the present perfect relative tense. We already saw in Section 2.3, as well as example (23), that the post-verbal *-mIş* has no evidential interpretation when it forms non-finite expressions. In this position, the suffixation of *-mIş* to a verb root results in clauses that behave in many ways like nominals. This non-finite *-mIş* contributes only perfective aspect. Izvorski includes the following data to illustrate the contrast.

(27) *-mIş* in Participles and the Past Perfect

      (a) *öl-**müş**   adam*   (b) *Gel-**miş**-ti-m.*
          die-PERF man   come-PERF-PAST-1S
          'dead man'   'I had come.'
          ≠ 'man who is apparently dead' ≠ 'I apparently came/had
                                         come.'

Izvorski (1997) also includes two examples of verbs with non-finite *-mIş* followed by the copular verb *ol-* 'be,' which takes the place of the copula in more complex predicates (see Göksel & Kerslake 2005). I include one such example in (28). As noted in Section 2.3, the past and future perfect are constructed using the non-finite, perfective *-mIş*: (27b) illustrates the past perfect, and (28) the future perfect.

(28) *Gel-**miş**   ol-acağ-ım.*
      come-PERF   be-FUT-1S
      'I will have come.'
      ≠ 'I will apparently (have) come.'

Based on the above data, Izvorski makes the claim that the evidential interpretation of *-mIş* is "unavailable in any other syntactic configuration but the one identical to (or derived from) the present perfect."

The caveat "or derived from" is crucial, because modern Turkish lacks a present perfect relative tense. This distinction is important, because the diagnostics that Izvorski uses to identify the present perfect in Bulgarian fail on all accounts for the case of Turkish. One example is the incompatibility of the present perfect, in both Bulgarian and English, with adverbials like *yesterday*, *last night*, and *at 3 o'clock*. In Bulgarian, the indirect evidential is felicitous with such adverbials, but the present perfect is not. In Turkish, these adverbials are felicitous not only, as expected, with the finite evidential *-mIş*, but also with the strictly perfective, non-finite *-mIş*. The data in (29) demonstrate this fact.

(29)   (a) *Dün   ol-muş   bir olay   değil.*
           yesterday happen-PERF a   event not
           'It's not something that happened yesterday.'[17]

       (b) *son şehid-i-ni   henüz dün   ver-miş bir toplum*
           last martyr-3S.POSS-ACC yet   yesterday give-PERF a   society
           'a society that gave up its most recent martyr just yesterday'[18]

That is, we cannot conflate perfective aspect with present perfect relative tense. While non-finite post-verbal *-mIş* conveys the former in modern Turkish, no configuration unambiguously conveys the latter.

Still, this does not entail that the perfect of evidentiality is irrelevant for our purposes. Johanson (2000) claims that in Old Turkic (8th to 13th centuries), the earliest

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[17]http://www.karakartal.com/operasyon-tamamlandiSXHBQ8757SXQ
[18]https://eksisozluk.com/israil-turkiye-savasi–2021435?p=36

Turkic language for which written records exist, the related suffix *-miš* was used as a marker of both indirect evidentiality and "postterminality." The latter, in Johanson's terms, is roughly equivalent to standard conceptions of perfect relative tense, presenting an event "with respect to its relevance to a subsequent observation point," and lacking any evidential content. Johanson translates the postterminal *-miš* using the present perfect in English. He includes the following example from the Old Uyghur (9th and 10th centuries) period of Old Turkic.

(30) *Èl-ig   èt-miš   men.*
     realm-ACC   organize-MIŠ   I
     'I have organized the realm.'   (Old Uyghur)

It seems reasonable to assume, then, that although modern Turkish exhibits no present perfect tense, the perfect of evidentiality is still relevant for an understanding of *-mIş*. In Turkish, as opposed to Bulgarian or Norwegian, the correspondence between present perfect tense and indirect evidentiality is strictly diachronic.

While my account does suggest a formal link between the present perfect and indirect evidentiality, I do not attempt a comprehensive account of how perfectivity, past tense, evidentiality, or all three arise compositionally.[19] The Turkish data in Izvorski (1997) serve primarily to illustrate the complementary distribution of non-finite perfective *-mIş* and finite evidential *-mIş*. The empirical focus of the account is Bulgarian, and the main theoretical weight falls on the formalization of indirect evidentiality in modal semantics. Only after a thorough investigation of the facts of Bulgarian evidentiality, and only in relatively informal terms, does Izvorski return to the topic of the present perfect.

The central analysis in Izvorski (1997) begins by establishing that sentences involving indirect evidentials are of the form $Ev(p)$, where Ev is an indirect evidentiality operator on the at-issue (or "core") proposition p. In Izvorski's view, Ev is a modal,

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[19]Again, Section 2.3 and footnote 8 provide some background. See also Meriçli (2016), for a discussion of how perfective aspect arises in particular.

akin to *must*, whose base has been relativized to the epistemic state of the speaker. As such, the utterance of $Ev(p)$ results in an interpretation that p is possible, likely, or necessary given what the speaker knows. The strength of *Ev* depends on how reliable the source of the speaker's indirect evidence is. Hence, according to Izvorski, uttering $Ev(p)$ contributes the following content to a discourse.

(31) Interpretation of $Ev(p)$

    (a) Assertion: $\Box p$ in view of the speaker's knowledge state

    (b) Presupposition: Speaker has indirect evidence for p

To fill in the meaning of the modal operator *Ev*, Izvorski adopts the enriched modal semantics of Kratzer (1981, 1991) and defines the constrained epistemic modal base $f(w)$, the function that assigns to every possible world w the set of propositions that a speaker knows in w and considers indirect evidence for the at-issue proposition p. The base f is called "constrained" because it is crucially the subset of a speaker's epistemic modal base that is counted as *indirect* evidence for p. Though different accounts differ in precisely how the modal base f is constrained, the notion of a constraint on f is a running theme in every descendant analysis, including mine.

After defining f, Izvorski introduces an ordering source $g(w)$, the function that assigns to every possible world w the set of propositions that represent the speaker's beliefs about available indirect evidence for p in w. The set of propositions g imposes an ordering on the set of all possible worlds W as shown in (32a). In prose, a world v is more ideal than a world u ($v <_g u$) if the set of g-propositions (beliefs based on indirect evidence) true in u are a strict subset of those that are true in v.

(32) Izvorski's (1997) Modal Base and Ordering Source

    (a) $\forall u, v \in W : v <_{g(w)} u$ iff $\{p : p \in g(w) \wedge u \in p\} \subset \{p : p \in g(w) \wedge v \in p\}$

    (b) $f(w) = \{q :$ speaker knows q and considers q indirect evidence for p in $w\}$

    (c) $g(w) = \{q :$ speaker believes q with respect to indirect evidence in $w\}$

The evidential proposition $Ev(p)$, then, contributes the denotation shown in (33). In prose, $Ev(p)$ is true in w if and only if p is true in all worlds accessible from w that come closest to the ideal represented by the speaker's beliefs about indirect evidence available in w. Note that $\bigcap f$ is simply the set of all worlds in which all the propositions of f are true.

(33) $\llbracket Ev(p) \rrbracket^{f,g} = \{w : \forall u[(u \in \bigcap f(w) \land \neg \exists v(v \in \bigcap f(w) \land v <_{g(w)} u)) \to u \in p]\}$, $u, v, w \in W$

True to the indirect evidential data, the analysis sketched in (32) and (33) introduces a modal base f that is ambiguous as to whether a speaker's evidence is reportative, inferential, or otherwise, a trait that I carry over to my account. However, this account, and subsequent accounts for which the distinction is relevant, leaves the definition of "indirect evidence" unspecified. That is, the analysis allows for variation in the kind of indirect evidence a speaker might have, but it makes no predictions about what kind of evidence actually qualifies as indirect. As observed in Section 3, creating a definition of "indirect evidence" broad enough to include mirative and evaluative expressions, but narrow enough to (usually) exclude historical facts, is far from straightforward. In Izvorski (1997) and in other accounts both theoretical and descriptive, this definition is either left unaddressed or discussed only informally (e.g., Johanson 2000, Coşkun 2010, Şener 2011).

Also true to the indirect evidential data, the analysis sketched in (32) and (33) introduces an ordering source g that is ambiguous as to whether a speaker strongly believes, moderately trusts, or doubts the at-issue proposition p, again a trait that I carry over. This is made possible in part by relativizing the ordering source g to the beliefs of a speaker. In fact, throughout Izvorski's formalism, both the base f and ordering source g are indexed to a particular speaker: the one uttering the proposition. Izvorski clearly states that the functions f and g are relativized to the knowledge and beliefs of this speaker; however, the relativization is not reflected in the formalism.

The same holds for other prominent accounts, reviewed below, that take Izvorksi's analysis as their starting point.

Another important contribution of Izvorski (1997) is its search for a formal analogy between indirect evidentiality and the present perfect. Using the framework for tense and aspect proposed in Klein (1994), a modification of Reichenbach (1947), Izvorski defines *TSit* as follows: the time at which the core (at-issue) eventuality described by p holds. The modal analog of *TSit*, according to Izvorski, is the set of worlds in which the proposition p is known by the speaker (say, W_p). For the present perfect, the consequent state of the eventuality by definition holds at the time of utterance (*TU*), but the eventuality itself does not: $TSit \not\subseteq TU$. According to Izvorski, this is analogous in the modal domain to $W_p \not\subseteq \bigcap f(w_s)$: i.e., the worlds of W_p are epistemically inaccessible from w_s, the world of the speaker.[20] The speaker does not know p.

Next, Izvorski correlates the consequent state of the eventuality ($CS(e)$) with the set of worlds in which the consequences of p are known by the speaker: say, $W_{p'}$, where p' is the proposition expressed by the utterance *There are consequences of p*. For the present perfect, again by definition, $CS(e)$ holds at *TU*. According to Izvorski, this is analogous in the modal domain to $W_{p'} \subseteq \bigcap f(w_s)$: i.e., the worlds of $W_{p'}$ are epistemically accessible from w_s. The speaker knows that there exist consequences of p. Hence, when we compare the present perfect and indirect evidentiality, the relations between times that the former encodes are analogous to the relations between sets of worlds that the latter encodes.

This analysis of the link between the present perfect and indirect evidentiality hinges on the idea that when a speaker has indirect evidence for p, the speaker does not know p, but knows of p's consequences. It equates direct evidence for p with knowledge of p. I believe that this analysis is on the right track, but underscore the

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[20]At this stage in the analysis, it seems that Izvorski has redefined $f(w)$, originally the set of a speaker's indirect evidence for a proposition, as a plain epistemic modal base: the set of all the propositions that a speaker knows.

difficulty in claiming that a speaker does not *know* a proposition for which she has indirect evidence. A speaker can no doubt know the birthplace of a grandparent based on reportative evidence, or know that a cow is sick based on an inference from observations. Much of what any human being can be said to know rests entirely on evidence of a thing's consequences.

4.3 The Legacy of Izvorski (1997)

A number of researchers have adapted the modal semantics of Izvorski (1997) to languages with finer-grained evidential systems. Matthewson et al. (2007), for instance, develops three distinct accessibility relations to account for the distinct perceived evidence, reported evidence, and inferential evidence morphemes of St'át'imcets. While Faller (2011) replicates this analysis to some extent, it also incorporates a more nuanced semantics of inference and conjecture, for which Cuzco Quechua possesses distinct evidential markers. Matthewson et al. (2007) concludes that evidentials should be analyzed as epistemic modals, but Faller (2011) argues that evidentials and epistemic modals are distinct categories that merely overlap in some cases.

Şener (2011) takes a similar tack for Turkish, defining separate modal bases for reportative and inferential evidence. However, Şener defends this separation based on observations about tense and aspect that I have not found to hold, and provides no unifying principle to explain why reportative and inferential evidentiality are conveyed by the same morpheme. Şener argues that inferential and reportative *-mIş* are distinct morphemes, and that, as opposed to reportative *-mIş*, the inferential *-mIş* is specified for the same tense and aspect as the English present perfect. As proof, Şener provides the example in (34a), which imagines a speaker showing up on the wrong day for an Olympic race featuring the runner Usain Bolt. According to Şener, (34a) admits a reportative reading, but not an inferential one, because of the presence of the time adverbial *dün* 'yesterday.' As noted in relation to example (29), the English present perfect is also incompatible with exact time specifications like 'yesterday.'

(34) (a) *Usain Bolt dün   koş-muş.*
          Usain Bolt yesterday run-EVID
          'Usain Bolt (apparently) ran yesterday.'   (Şener 2011, example (16))

      (b) # *Usain Bolt has run yesterday.*

This would indicate that the inferential *-mIş*, as opposed to the (simple past tense) reportative *-mIş*, is uniquely specified for present perfect relative tense.

However, there is a confound in the data. In (34a), the adverbial *dün* occurs immediately prior to the verb, which is also the canonical focus position in Turkish (Göksel & Özsoy 2000). Consequently, uttering (34a) underscores that the speaker has indirect evidence for strictly the day on which Usain Bolt ran – the rest of sentence being given in the discourse. Imagining a context in which a speaker's evidence for the day of an event is strictly inferential (and not reportative) is not impossible, but certainly difficult, especially in the case of an Olympic race.

Example (35) presents a minimal pair, with slightly more lexical material, in which the time adverbial falls either (a) outside or (b) inside the focus position. Given the context, the inferential interpretation is available for both sentences. The sentence in (35a) is quite natural, but in (35b), the speaker must intend to place contrastive focus on *dün*. This is difficult, because the fact of the mother's having gone shopping must in turn be considered given in the discourse – for instance, the speaker had previously discussed a trip to the supermarket with his mother, but was not sure when she would go. Importantly, the speaker can utter (35a) or (35b) based on inferential evidence.

(35) **Context:** The speaker and a visiting friend wake up, go to the kitchen, and see that the refrigerator is full of food. The refrigerator was empty the previous day, and the speaker's mother is still in bed. The speaker says the following.

      (a) *Anne-m   dün   Migros'a   git-miş.*
          mother-1S.POSS yesterday Migros-DAT go-EVID
          'My mother (apparently) went to Migros (a supermarket) yesterday.'

      (b) *Anne-m   Migros'a   DÜN   git-miş.*
          mother-1S.POSS Migros-DAT yesterday go-EVID
          'My mother (apparently) went to Migros (a supermarket) YESTERDAY.'

Example (35) shows that, according to the time adverbial diagnostic, the inferential use of *-mIş* is not specified for present perfect tense alone. Rather, it behaves identically to the reportative use of *-mIş*.[21] Just like simple past tense *-DI*, the finite, post-verbal *-mIş* is appropriate in contexts where both simple past and present perfect tense would be appropriate in English. Hence, there is no evidence based on tense and aspect to support the claim that the reportative and inferential *-mIş* are distinct lexical items.

4.4 Murray (2010) on Interrogatives

Sentences with evidentials are sometimes analyzed as involving two propositions, one representing the "at-issue" content that falls under the scope of the evidential, and the other the evidential content itself: what kind of evidence the speaker has for the at-issue proposition (e.g., Murray 2010, AnderBois 2014). This distinction, prominent in illocutionary analyses of evidentiality, is illustrated in (36).

(36) (a) p : a proposition (within the evidential's scope)

    (b) $\text{IND}(i,p)$: proposition that speaker i has indirect evidence for p

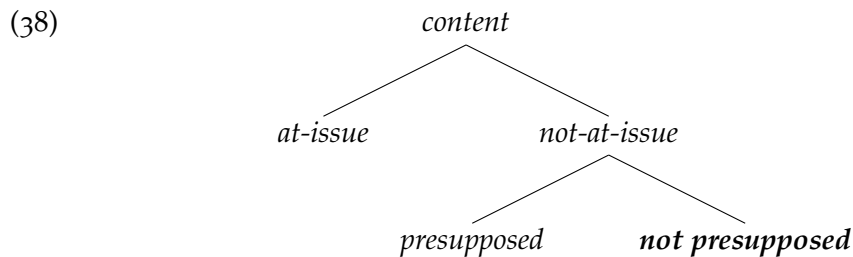   (c) $\text{HRD}(i,p)$: proposition that speaker i has reportative evidence for p

According to the above, example (2b) would contribute two propositions as follows in (37), each with distinct status in the discourse model.

(37) (a) p : those worlds w in which Hakan came home early

    (b) $\text{IND}(i,p)$: those worlds w in which the speaker i has indirect evidence that Hakan came home early

Murray proposes that, in Cheyenne, evidential propositions like $\text{HRD}(i, p)$ do not introduce propositional-level discourse referents. While the propositions they denote

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[21]A context such as the following would license the reportative use of *-mIş* in (35): The speaker's friend informed him that his mother went shopping yesterday, and the speaker relays this information to his father. If *dün* 'yesterday' is focused, then the matter of the mother's having gone shopping must be given in the discourse.

are present, recoverable, and indirectly challengeable in the discourse, they are not easily accessible – not "prepackaged for anaphoric reference." Indeed, Murray shows that HRD(i, p) and and other categories of evidential content behave differently from p under a number of diagnostics: e.g., deniability, challengeability, and ability to resolve questions under discussion. Murray (2014b) convincingly argues that evidentials introduce a special variety of not-at-issue content, meaning information that is "beside the point" of an utterance, but also not presupposed by the utterance (see AnderBois et al. 2015). This distinction may not at first sight be clear, as presuppositions are sometimes also described as not-at-issue, yet evidential content is not presupposed. In (38), the not-at-issue content of interest falls under the bolded node. In the recent literature on evidentials, as in this thesis, the term *not-at-issue* is used to refer to this non-presuppositional, not-at-issue content.

(38)
```
                            content
                          /         \
                  at-issue        not-at-issue
                                  /          \
                          presupposed    not presupposed
```

Not-at-issue, presupposed, and at-issue content constitute formally different objects subject to distinct operations in the framework elaborated by Murray (2010). Where the common ground (*cg*) is the set of salient propositions held jointly to be true by discourse participants, Murray proposes the following distinctions.

(39)   (a) *at-issue* : proposed for addition to common ground (*cg*)

(b) *presupposed* : implicitly reflected in the *cg*

(c) *not presupposed* : added directly to *cg* (sans proposal)

Discourse then proceeds via updates to the information state shared by all discourse participants. These updates come in different varieties, defined in (40), and

can be understood in terms of operations on sets of possible worlds. Here, we manip-
ulate the context set of Stalnaker (1978): the intersection of all the propositions in the
cg, i.e. all and only those worlds where the propositions of the *cg* are true.

(40) (a) *dref* **Introduction**: adds a *dref* to the information state

    (b) **Update to** *cg*: directly constrains the context set

    (c) **Structuring Update**: partitions or proposes to constrain the context set

Each of the updates in (40) result in different discourse effects. For instance, the
at-issue proposition of an utterance introduces a propositional-level discourse refer-
ent and likely one or more individual-level discourse referents (40a). The not-at-issue
proposition of an utterance directly constrains the context set (40b), but does not in-
troduce a propositional discourse referent. Whereas a declarative assertion structures
the common ground (40c) by proposing to constrain the context set, an information-
seeking interrogative question does so by partitioning it.

In combination with the intricate update semantics laid out in Bittner (2011), Mur-
ray is able to capture important generalizations about the not-at-issue nature of evi-
dential content, evidentials' scope interactions, and their function in discourse. Also,
unlike that of Izvorski (1997) and other modal accounts, Murray's formalism easily
lends itself to addressing the behavior of evidentials in interrogatives. Rather than
anchoring the not-at-issue proposition to the speaker, as in HRD(i,p), it can simply be
anchored to the addressee: HRD(u,p). Murray makes use of just this move in order
to propose a detailed update semantics of evidential questions. Suppose a speaker of
Cheyenne asks the polar interrogative question in (41).

(41) *Mó=é-hó'tâhéva-sėstse Andy?*
    y/n=3-win-RPT.3s   Andy
    'Given what you heard, did Andy win?'   (Murray 2010)

Following the question in (41), the information state undergoes a number of suc-
cessive updates. First, the context set is partitioned into the two alternatives p and $\neg p$,

where p is the proposition expressed by 'Andy won.' Next, the not-at-issue restriction is imposed. In this case, however, the restriction does not constrain the context set, because the fact that the addressee has reportative evidence is already part of the common ground. In other words, the context set is contained by the union of the sets HRD(u,p) and HRD(u,¬p).

(42) $cs \subseteq \textsc{hrd}(u, p) \cup \textsc{hrd}(u, \neg p)$

This is an attractive result, but beneath it lurks a crucial assumption: that the *addressee* is the discourse participant who has the reportative evidence when a speaker asks the question in (41). Within the argument of HRD, the switch from i (the speaker) to u (the addressee) does not fall out of more basic principles, either of Murray's account or of the update semantics she adopts. That is, in Murray's analysis of evidential interrogatives in Cheyenne, interrogative flip is not predicted, but stipulated. Given the prevalence of interrogative flip, it would be desirable to derive it rather than stipulate it.

In this section, I have presented influential approaches to evidentiality from opposite ends of the analytical spectrum, from the original account of evidentials as epistemic modals, to a recent analysis of evidentials as illocutionary operators. Despite the wide-ranging theoretical and descriptive contributions of these analyses, several gaps still remain. Although primarily relevant for languages with indirect evidentiality – as opposed to distinct morphemes representing reportativity, inferentiality, etc. – the notion of indirect evidence remains unclear. Furthermore, there is no straightforward way to adapt the accounts presented so far to the non-perceptual cases of Section 3. And finally, the cross-linguistic pervasiveness of interrogative flip remains unexplained.

5 The Meaning of Indirect Evidentiality

In this section, I give a semantic characterization of the type of evidence that *-mIş* requires. That is, I propose a denotation of *-mIş* that aims to more firmly fix the meaning of "indirect evidence," rather than merely presuming that such an epistemic class exists. We already know that this class must contain reportative evidence and inferential evidence. Existing accounts establish this much. But the class must be defined in terms elemental enough to relate to the evidence that speakers take as support for evaluative expressions, expressions of surprise, and historical facts as well. In other words, the data demand that we not take the notion "indirect" for granted. After establishing the denotation of *-mIş*, I demonstrate how it accounts for the perceptual and non-perceptual uses of *-mIş* laid out in Sections 2 and 3. Only once I have fixed the meaning of *-mIş* do I turn to its effects on the discourse context, the topic of Section 6.

5.1 Formalizing the Best Evidence

With a nod to Izvorski (1997), and by extension Kratzer (1991), I assume a possible worlds semantics, where W is the set of all possible worlds and $f_s(w, p)$ is a constrained epistemic modal base: as given in (43), the function that assigns to every possible world w the set of propositions that the speaker s knows in w and considers evidence for the at-issue proposition p. This starting point differs from the starting points of previous accounts in that it does not bake an "indirect" flavor into the modal base. That is, $f_s(w, p)$ is not restricted to containing only what qualifies as *indirect* evidence for p, as in the (more) constrained modal base $f(w)$ of Izvorski (1997) – see (32).[22] Similarly, this starting point involves only one modal base, as opposed to the separately defined bases of Matthewson et al. (2007), Faller (2011), or Şener

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[22]Note that including the at-issue proposition p among the arguments of $f_s(w, p)$ is only meant to make explicit a feature that both my analysis and Izvorski's share: that the modal base is relativized not only to the speaker s and to the world w, but also

(2011). In Faller's case, for instance, the finer-grained morphological paradigm for Cuzco Quechua evidentials justifies the creation of the independent functions $f_{epistemic}$, $f_{perceived}$, and $f_{reportative}$. In Turkish, as in all the languages that Aikhenvald (2003) dubs Type I, these distinctions in evidence type are left to be determined by the context.

(43) $f_s(w, p) = \{q : s \text{ knows } q \text{ and considers } q \text{ evidence for } p \text{ in } w\}$

　　　　"The function that assigns to every possible world w the set of propositions that the speaker s knows in w and considers evidence for p."

In explaining the machinery inside of ⟦ -mIş ⟧, I will use the contrast between (22a) and (22b) to make each step more concrete. The data are given again in (44).

(44)　(a) *Dede-m　　　　　Türkiye-'de　doğ-{#du / **muş**}.*
　　　　grandfather-1s.POSS　Turkey-LOC　be.born-{#PAST / EVID}
　　　　'My grandfather was born in Turkey.'

　　　　$\Rightarrow p_G = \{w : \text{my grandfather was born in Turkey in } w\}$ 　　　　　　(22a)

　　　(b) *Atatürk　Selanik-'te　　doğ-{**du** / #muş}.*
　　　　Atatürk　Thessaloniki-LOC　be.born-{PAST / #EVID}
　　　　'Atatürk (Turkey's first president) was born in Thessaloniki.'

　　　　$\Rightarrow p_A = \{w : \text{Atatürk was born in Thessaloniki in } w\}$ 　　　　　　(22b)

Next, I define the set of propositions $\mathcal{G}(w)$, which represents general world knowledge in w. It contains propositions that qualify as common knowledge in a particular speech community. $G(w)$ constitutes a source of context dependence in the meaning of *-mIş*: it depends on the broad context of utterance that involves who the speakers are and what is generally taken for granted in their speech community. For instance, whether a given proposition is considered a historical fact depends upon speakers' ages, levels of education, and even national origin.

The propositions of $G(w)$ will be generally held facts such as, 'People cannot witness the births of those older than them,' 'There generally exist records one has not

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to the proposition p. In Izvorski (1997), only the dependence on w is made formally explicit.

examined regarding the birthplaces of relatives,' and 'Information about the birth-places of historical figures has typically received heavy scrutiny.' While this is in theory a very large set of propositions, subsequent steps in the derivation will show that its size need not pose a problem. I use the set $\mathcal{G}(w)$ merely as a tool for setting constraints in the framework, and only overtly discuss those elements of $\mathcal{G}(w)$ that are most relevant for illustrating the analysis.

(45) $\mathcal{G}(w) = \{g_1, g_2, g_3, ..., g_n\}$

$g_1 = \{u : \text{people cannot witness the births of those older than them in } u\}$
$g_2 = \{u : \text{there generally exist records one has not examined regarding the birthplaces of relatives in } u\}$
$g_3 = \{u : \text{historical figures' birth records have typically been examined in exhaustive detail in } u\}$
$\vdots$

$\mathcal{G}(w)$ is then intersected with the at-issue proposition p. The result is $\mathcal{I}(w, p)$, intuitively, the set of all inferences that might arise from the utterance of p in w. If p_G is the proposition expressed by 'My grandfather was born in Turkey,' then $\mathcal{I}(w, p)$ contains the inferences 'The speaker did not witness the birth of his grandfather' and 'There likely exist records the speaker has not examined regarding the birth of his grandfather,' among others. If p_A is the proposition expressed by 'Atatürk was born in Thessaloniki,' then $\mathcal{I}(w, p)$ contains the inferences 'The speaker did not witness the birth of Atatürk' and 'All records regarding the birth of Atatürk have likely been examined with scrutiny.'

(46) $\mathcal{I}(w, p) = \{q : u \in \bigcap\limits_{i=1}^{n} (g_i \cap p) \rightarrow u \in q\}$

"Intersect each proposition in the set of common knowledge $\mathcal{G}(w)$ with the at-issue proposition p. Then intersect those intersections. A proposition q is a member of $\mathcal{I}(w, p)$ *iff* all the worlds in the second intersection are also in q."

e.g., $g_1 \cap p_G \subseteq \{v : \text{the speaker did not witness his grandfather's birth in } v\}$
$g_2 \cap p_G \subseteq \{v : \text{there likely exist records the speaker has not examined regarding the birth of his grandfather in } v\}$

$$g_1 \cap p_A \subseteq \{v : \text{the speaker did not witness Atatürk's birth in } v\}$$
$$g_3 \cap p_A \subseteq \{v : \text{all records regarding the birth of Atatük have likely been}$$
$$\text{examined in exhaustive detail } v\}$$

To set the stage for defining precisely what sort of evidence licenses *-mIş*, I introduce $f_0(w, p)$, the partially ordered set of all possible evidence for the at-issue proposition p in w. For either p_G or p_A, f_0 will contain propositions such as those expressed by '*s directly observed p,*' which outranks '*s found previously unexamined records documenting p,*' which might outrank '*s was told by reliable sources over many years that p.*'[23]

(47) $f_0(w, p) = \{q_{best}, q_{best-1}, q_{best-2}, ...\}, \quad q_{best} > q_{best-1} > q_{best-2} > ...$

$q_{best} = \{u : s \text{ saw } p \text{ in } u\}$
$q_{best-1} = \{u : s \text{ found previously unexamined records documenting } p \text{ in } u\}$
$q_{best-2} = \{u : s \text{ uncovered photos and correspondence indicating } p \text{ in } u\}$
$q_{best-3} = \{u : s \text{ was told } p \text{ over many years by reliable sources in } u\}$
$\vdots$

Intersecting f_0, the set of all possible evidence, with $\mathcal{I}$, the set of all inferences that might arise from uttering the proposition in w, eliminates all evidence not consistent with common knowledge in light of the at-issue proposition p. The result is the set of all realistically available evidence, $f_c(w, p)$. I call f_c the set of all "world-compatible evidence," because it contains only that evidence that is compatible with speakers' general knowledge about the world. In (48), I demonstrate the result of intersecting f_0 and $\mathcal{I}$ for the propositions expressed by (22a) and (22b). For p_G, the proposition expressed by 'My grandfather was born in Turkey,' just the topmost element of possible evidence q_{best} is lost. For p_A, however, several elements of possible evidence are eliminated from f_c: q_{best}, q_{best-1}, and q_{best-2}.

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[23]In (47), the expression '$q_{best} > q_{best-1}$' means that q_{best} is more highly ranked than q_{best-1}, reversing the '$<_g$' of Izvorski (1997). I assume that if each proposition is defined with the appropriate degree of specificity, then the ordering remains constant from context to context, and from proposition to proposition. In other words, the proposition expressed by '*s saw p without his glasses on, and has poor eyesight*' is an element of f_0 (say, $q_{best-47}$) distinct from the element q_{best} given in (47).

(48) $f_c(w, p) = f_0(w, p) \cap \mathcal{I}(w, p)$

$\Rightarrow \quad f_c(w, p_G) = \{\cancel{q_{best}}, q_{best-1}, q_{best-2}, q_{best-3}, ...\} = \{q_{best-1}, q_{best-2}, q_{best-3}, ...\}$
for $p_G = \{w : \text{my grandfather was born in Turkey in } w\}$ (22a)

$f_c(w, p_A) = \{\cancel{q_{best}}, \cancel{q_{best-1}}, \cancel{q_{best-2}}, q_{best-3}, ...\} = \{q_{best-3}, ...\}$
for $p_A = \{w : \text{Atatürk was born in Thessaloniki in } w\}$ (22b)

In both cases, while f_c has shed one or more propositions, those remaining retain the partial ordering imposed on f_0. That is, f_c is not only a subset of f_0; the propositions that f_c retains fall in the same relative ordering as in f_0.

Now that the architecture of the account has been established, I claim that the Turkish indirect evidential suffix *-mIş* contributes the following denotation.

(49) $[\![\text{-mIş}]\!]^{s,w} = \lambda p \,.\, [\forall r \in f_s(w, p) \; \exists q \in f_c(w, p) \; s.t. \; q > r]$

$\Rightarrow \quad [\![p_G]\!][\![\text{-mIş}]\!]^{s,w} = 1$ (22a)

$[\![p_A]\!][\![\text{-mIş}]\!]^{s,w} = 0$ (22b)

Hence, $[\![\text{-mIş}]\!]$ indicates that in relation to the very best world-compatible evidence, the speaker's own evidence is at best second-best. For the case of (22a), this means that not only did the speaker not witness her grandfather's birth; she also crucially lacks evidence that she plausibly could have, of the sort that is taken to support trusted historical facts – archival documents, old photos, etc. For the case of (22b), whether the speaker has archival documents or old photos to support her claim is irrelevant, because her finding any that have not already been examined is highly unlikely. In other words, the range of world-compatible evidence available for p_A is constrained relative to that available for p_G.

5.2 Context Dependence

So far, I have shown that the denotation in (49) correctly predicts the contrast between (22a) and (22b). As for (22c), the system works much the same way, except

that the birthplace of İsmet İnönü is not as well known as Kemal Atatürk's. It generally does not qualify as common knowledge in Turkey that when someone provides information about the life of İnönü, no stone has been left unturned regarding that information. Hence, elements that were missing in $f_c(w, p_A)$ are present in $f_c(w, p_I)$, where p_I is the proposition expressed by 'İsmet İnönü was born in Izmir.' The result is that for most speakers the birthplace of İnönü is epistemically more on par with that of their own grandfather. The caveat *most speakers* is important, because for a person who does have more conclusive evidence (an archival reseacher on the matter) or someone not intending to give the impression that it exists (a history teacher), p_I will not favor the use of *-mIş*.

Example (22c) highlights an important element of context dependence in the denotation of *-mIş*. Whether a "better" piece of evidence is thought to exist in support of a given proposition crucially depends on what is taken to constitute general, common knowledge about the world. That is, the propositions that populate $\mathcal{G}(w)$ will be different for different speech communities, speakers, eras, and contexts of utterance. This implies, in turn, that the set of all realistically available (world-compatible) evidence $f_c(w, p)$ will vary along the same dimensions: if $\mathcal{G}(w)$ changes, then so does $\mathcal{I}(w, p)$, which will place different constraints on the set of all possible evidence $f_0(w, p)$ when deriving f_c.

This discussion brings us to the modified contexts of (23) and (24), where a sentence about Atatürk's birthplace appears with *-mIş*, and a sentence about one's grandfather's birthplace appears without *-mIş*: the opposite of what is observed in (22a) and (22b). In (23), Student A reveals that he or she is not certain whether the proposition at issue (p_A) qualifies as a proposition for which elements of possible evidence like q_{best-1} and q_{best-2} are unavailable: an established historical fact. To Student A, it is not clear whether p_A is to be taken as a historical fact; for Student B, however, it is clear. (Recall that *-mIş* contributes no evidential content when followed by the generalized

modality marker *-DIr*.) This is an example of $\mathcal{G}(w)$ depending on the speaker and/or speech community.

As for example (24), similar to the history teacher in the case of (22c), the speaker avoids conceding that she lacks the best world-compatible evidence for p_G by omitting *-mIş*. As a general tendency, *-mIş* is omitted from sentences where it would otherwise appear when the sentence is uttered in the context of an argument, a promise, an oath, or, as we have seen, a history class. Example (24) reiterates that unmarked utterances do not necessarily implicate direct evidentiality. That is, a speaker who omits *-mIş* in the context of an argument is not indicating that a proposition has the evidential status of a historical fact (and therefore lying); rather, she simply chooses not to associate any evidential information with that proposition at all.

One important issue is how one can distinguish between cases where the omission of *-mIş* implicates direct evidence, and cases where it simply conveys no evidential content at all. This issue boils down to a question of whether $f_c(w, p)$, and therefore also $\mathcal{G}(w)$ and $\mathcal{I}(w, p)$, are even necessary to begin with. To eliminate f_c and its component parts from the picture, one must make an analytical choice, instantiated here for the case of reports of well-known historical facts: to interpret the omission of *-mIş* as generating an implicature that the speaker possesses the best realistically available evidence; or to interpret the omission of *-mIş* as an indication that the context renders one's evidence for the proposition irrelevant. As in many analyses along the borderlands of semantics and pragmatics, we reach a fork in the trail: down one path, constraints on varieties of evidence available for a proposition marked with *-mIş* are encoded in the semantics of the suffix; down the other, those constraints are predicted in part by pragmatic reasoning. Though I see arguments in favor of the latter path, I proceed down the former until a clearer explanation for the contrast observed in (22) presents itself. The advantages of a second-best analysis, more of which follow below, do not depend on the adoption of f_c.

5.3 Explaining Mirative Expressions

Having already addressed the confounding historical cases of Section 3.3, the declarative data that remain to be covered are the perceptual uses of *-mIş*, mirative expressions, and evaluative expressions. I have waited until now to discuss the perceptual cases in part because their explanation is trivial. If common knowledge does not rule out the possibility of visual evidence, as is the case in reportative and inferential uses such as (2b) and (3b), then *-mIş* is preferred simply because q_{best}, the proposition expressed by 'the speaker has visual confirmation for p,' is always an element of $f_c(w, p)$. By using *-mIş*, the speaker indicates that q_{best} is not a member of $f_s(w, p)$, which satisfies the denotation in (49). The difficulty with mirative expressions is that the opposite appears to be true. The judgment in (17b) is surprising, so to speak, given our framework. The example is reproduced in (50).

(50) **Surprised Context:** Unaware that her addressee was planning to come home early, the speaker answers a knock at the door and, to her surprise, is greeted by her addressee standing on the stoop.

> *Erken gel-**miş**-sin!*
> early   come-EVID-2S
> '(It seems) you're here early!'   (17b)

How can it be that the speaker's evidence qualifies as indirect simply because the proposition at issue is counter to her expectations? It seems that robust previous evidence for $\neg p$ can somehow interact with the mechanics of *-mIş*. To observe those mechanics in action, the first step is to define a constrained epistemic modal base f_s in terms of the the at-issue proposition.

(51)   (a) $p_{early} = \{w : \text{you're here early in } w\}$

     (b) $f_s(w, p_{early}) = \{q : s \text{ knows } q \text{ in } w \text{ and } q \text{ serves as evidence for } p_{early}\}$

The context in (50) entails that the speaker has the best realistically available evidence for p_{early}: immediate visual confirmation. This evidence is represented by the element q_{best} in $f_0(w, p_{early})$. World knowledge indicates $q_{best} \in f_c(w, p_{early})$ as well.

(52) $f_c(w, p_{early}) = \{q_{best}, q_{best-1}, q_{best-2}, ...\}, \quad q_{best} > q_{best-1} > q_{best-2} > ...$

$\qquad q_{best} = \{u : s \text{ sees } p_{early} \text{ in } u\}$

$\qquad \vdots$

$\qquad q_{best-17} = \{u : s \text{ observes } p_{early} \text{ from afar through a dense fog in } u\}$

$\qquad \vdots$

As in (24), a speaker might omit *-mIş* in the midst of an argument, in order to avoid highlighting that her evidence is less than the world-compatible best. In a sense, the use of *-mIş* in situations of surprise is the converse of what occurs in arguments and promises. Including *-mIş* in (50) allows the speaker to actively deny that her evidence is the best. That is precisely what *-mIş* means, according to the denotation provided.

(53) $\llbracket p_{early} \rrbracket \llbracket \text{ -mIş } \rrbracket^{s,w} = 1 \quad \Rightarrow \quad q_{best} \notin f_s(w, p_{early})$

Yet it is clear that the speaker does see Hakan standing before her, in which case $q_{best} \in f_s(w, p_{early})$ must hold. It appears we have a contradiction, unless the following is true.

(54) $q_{best} \neq \{u : s \text{ sees } p_{early} \text{ in } u\}$

In fact, this is just what we would expect, if a speaker's evidence for $\neg p_{early}$ is so robust that she *cannot believe her eyes.* The speaker makes the claim that, given what she already knows, the proposition expressed by 'I see that you are here early' cannot be reliable evidence. In other words, *-mIş* allows the speaker to indicate that visual confirmation, in this case, does not constitute the highest ranked proposition in f_c: some eyewitness evidence is so difficult to reconcile with a speaker's epistemic state that (at first sight) it is not credible evidence at all. Using *-mIş* in situations of surprise is therefore pragmatically similar to the use of the following expressions.

(55) (a) You're here early! I don't believe it.

(b) It seems you're here early.

(c) Really? You're here early?

Without modifying the account in any way, we obtain an explanation for why it is that a marker usually reserved for non-witnessed information is so commonly used with witnessed but surprising information. Using *-mIş* would normally indicate that the speaker has less than the best evidence for p_{early}, but the speaker does have the the best evidence, as both the speaker and the addressee can see. Hence, the speaker has flouted the Gricean maxim of quality (Grice 1975), giving rise to the implicature that the speaker was not expecting p_{early}. In English, a similar pragmatic calculation could be said to follow from the utterances in (55).[24]

The denotation in (49) essentially formalizes the concept of "psychological distance" introduced by Slobin & Aksu (1982), while rendering their concept of the "unprepared mind" unnecessary for explaining the mirative, at least in the case of Turkish. A proposition for which a speaker lacks the best reasonably available evidence is a proposition toward which a speaker feels "psychologically distant." When *-mIş* receives a reportative or inferential interpretation, the distance stems understandably from lack of visual confirmation. In situations of surprise, however, the speaker uses this presumed distance to implicate unexpectedness.

In order to explain the mirative use of indirect evidentials, Rett & Murray (2013) introduces a special "recency restriction"[25] that accompanies the utterance of any

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[24]An alternative account of the mirative in this framework suggests itself nonetheless. Making use of a concept that I call "epistemic lag," we might claim that in situations of surprise, a sentence expressing the proposition p_{early} is uttered so suddenly and with so much evidence against it, that the speaker's eyewitness evidence for p_{early} has not yet been added to f_s. That is, at the time of utterance, $q_{best} \notin f_s(w, p_{early})$ does hold. Because this explanation verges further into the realm of cognitive psychology and away from that of pragmatics, I leave its elucidation for future work, perhaps in the experimental realm.

[25]The recency restriction is meant to account for the constraint that a speaker cannot felicitously utter an expression of surprise (regarding a particular event) once some

indirect evidential: if a sentence containing an indirect evidential is uttered within some span of time during which the speaker has learned the at-issue proposition, then that proposition cannot be among the expectations of the speaker. In the non-mirative case, Rett & Murray claim, this recency restriction is irrelevant. To distinguish the mirative meaning from the evidential meaning of the Cheyenne narrative evidential *hoo'o*, they posit that a different set of expectations is active in each use. For the suffix's narrative use, the salient expectations are those of the community at the time of a story's narration; for its mirative use, they are those of the speaker at the time of utterance.

Still, Rett & Murray's recency restriction is stipulated into the indirect evidential's discourse effects, and the mechanism that determines whose expectation set is salient is left unspecified. The result is that Rett & Murray's account describes but does not predict the relationship between indirect evidentiality and surprise – it also suggests that what both miratives and indirect evidentials truly encode is information not about evidence, but about expectations. Both of these conclusions oppose the account I have presented so far, which argues that evidentiality really is about evidence, and that the use of an indirect evidential in special contexts can give rise to inferences about a speaker's expectations. In my account, the mirative and evidential *-mIş* have the same denotation.

5.4 Explaining Evaluative Expressions

We now return to the evaluative use of *-mIş* in (21b), reproduced in (56). As in the mirative case, the appearance of *-mIş* is unexpected because the speaker's experience of the joke is unmediated, and evaluations need not bear *-mIş* in general – see (21a). The speaker appears to have firsthand evidence for the quality of the joke.

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period of time has passed since she learned of that event. It seems to me that there is no obvious argument why this should be deemed a constraint on expressions of surprise, as opposed to a constraint on the notion of surprise itself.

(56) **Context:** Berk makes a joke that alludes to a well-known Turkish short story. Gökhan may respond to Berk's joke as follows.

Türk	*edebiyat-ı*	*şaka-sı*	*iyi-y-**miş**.*
Turkish	literature-3s.POSS	joke-3s.POSS	good-COP-EVID

'The Turkish literature joke was good. (But who am I to judge?)'   (21b)

Recall that, without indirect evidential marking, the utterance in (56) runs the risk of being perceived as arrogant. Adding *-mIş*, however, grants the utterance an air of humility, rendering it more likely to be perceived as complimentary. How do the mechanics of *-mIş* yield this contrast? As usual, we begin by defining a constrained modal base f_s in terms of the at-issue proposition.

(57)   (a) $f_s(w, p_{eval}) = \{q : s$ knows q in w and q serves as evidence for $p_{eval}\}$

    (b) $p_{eval} = \{w :$ the Turkish literature joke was good in $w\}$

What kind of evidence populates $f_0(w, p_{eval})$, $f_c(w, p_{eval})$, and $f_s(w, p_{eval})$? Because the claim expressed by p_{eval} is subjective, the evidence taken to support it will be inherently subjective as well. To possess q_{best} for an evaluative claim such as p_{eval} is to be the ultimate authority on Turkish literary humor. Some realistically available elements of evidence are laid out schematically in (58).

(58) $f_c(w, p_{eval}) = \{q_{best}, q_{best-1}, q_{best-2}, ...\}, \quad q_{best} > q_{best-1} > q_{best-2} > ...$

$q_{best} = \{u : s$ considers self a respected authority on intellectual humor in $u\}$
$q_{best-1} = \{u : s$ cultivates an appreciation for Turkish literature in $u\}$
$q_{best-2} = \{u : s$ can perceive irony in literary references in $u\}$
$\vdots$

As long as q_{best} is plausible given general world knowledge, which it may very well be for any speaker, then $q_{best} \in f_c(w, p_{eval})$. To temper the presumptuousness of the judgment offered, a speaker can choose to indicate that $q_{best} \in f_s(w, p_{eval})$ is false. One way to do this, I have shown, is to use *-mIş*.

(59) $[\![p_{eval}]\!][\![\text{-}mIş]\!]^{s,w} = 1 \quad \Rightarrow \quad q_{best} \notin f_s(w, p_{eval})$

The implication in (59) illustrates the use of *-mIş* to deny that one's evaluation is the most authoritative possible. When a speaker's evidence is subjective, using *-mIş* indicates that even one's best evidence is worse than what would underlie a true expert's opinion. By stating that maximum evaluative authority is not among the pieces of evidence that justify one's opinion, the opinion is softened. Again, this explanation requires no modifications to the account, and explains straightforwardly the effect of *-mIş* on another theoretically challenging, non-perceptual use of the suffix. Accounts that leave the definition of "indirect" unspecified, or define it in terms of witnessed or non-witnessed evidence, cannot straightforwardly capture these facts.

5.5 Initial Predictions of the Account

To sum up, I have proposed a single denotation of *-mIş* that accounts for both its perceptual uses and its non-perceptual uses. The denotation correctly predicts the appearance of *-mIş* when the speaker has reportative or inferential evidence for the proposition expressed, as well as the disappearance of *-mIş* when the proposition at issue is a well-known historical fact. The denotation is flexible enough to explain the context dependence of the distribution of *-mIş* in examples like (22), (23), and (24). Yet it also predicts the suffix's contributions in situations of surprise and evaluative expressions. As the facts of Turkish demand, ⟦ *-mIş* ⟧ is underspecified for reportativity or inferentiality. The denotation accounts for the observation that *-mIş* does not entail doubt, but is compatible with it: depending where in the partial ordering of $f_c(w, p)$ a speaker's best evidence falls, that speaker may have more or less confidence in p. In other words, doubt is not part of the meaning of *-mIş,* but there is considerable overlap between the contexts in which *-mIş* is appropriate and those where doubt is appropriate. This account also makes the prediction, as do modal accounts of evidentials in general, that the content contributed by *-mIş* is not propositional.[26]

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[26]I address the question of the propositionhood of *-mIş* with greater empirical rigor in Section 7.

Finally, this account makes an interesting prediction about cases when a speaker has absolutely no evidence for the proposition at issue p. While one very bad piece of evidence may be better than no evidence at all, the state of having no evidence is a special type of f_s. Just like the less-than and greater-than relations in mathematics, the ordering operator '$>$' is only defined over pairs of arguments, which in its case must be propositions. This fact has the following consequence.

(60) $f_s(w, p) = \{\emptyset\} \;\Rightarrow\; [\![p]\!][\![\,\text{-}mI\c{s}\,]\!]^{s,w}$ undefined

In other words, when a speaker has no evidence whatsoever for the proposition at issue, $[\![\,\text{-}mI\c{s}\,]\!]$ is undefined. This observation is relevant for the canonical scenario in which a speaker asks an (unbiased) information-seeking question: generally, the speaker has no evidence for or against the propositions at issue following such a discourse move. Hence, we would expect that *-mIş* can never be indexed to the discourse participant asking a question. In other words, the at best second-best account rules out the possibility of *-mIş* taking speaker perspective in interrogatives, a desirable consequence in light of interrogative flip.

Because *-mIş* is an operator on propositions, it makes sense that the non-finite, nominal-forming *-mIş* of Section 2.3 contributes no evidential content. When the non-finite *-mIş* is suffixed to a verb root, the expression that results has the semantic type of a property, not a proposition. Consequently, given the denotation in (49), the property denoted in (15) by *pişman olmuş* 'who has become regretful,' for instance, could not take on an evidential meaning, even if we were to consider the finite and non-finite varieties of *-mIş* the same suffix. No such conflict arises for the post-verbal and post-copular *-mIş* that do contribute evidential content. When affixed to a verb root or the copula, the evidential *-mIş* results in an expression with the semantic type of a proposition.

This account captures a cross-linguistic generalization about a broad class of evidential systems that mark "indirect" evidence differently than "direct" evidence. Lan-

guages for which the account is directly relevant are those of Aikhenvald's (2003) Type I category: those with marked/unmarked evidential systems that are by and large identical to that of Turkish. However, the account here is of interest for other evidential systems as well. For example, in Cuzco Quechua, which has distinct markings for direct, inferential, conjectural, and reportative evidence, the denotation of *-mIş* in (49) may provide a natural way of defining what evidence qualifies as direct. Interestingly, Faller (2002, 2011) describes the direct evidential of Cuzco Quechua as indicating that a speaker has "best possible grounds" (BPG) for making a claim. For many propositions, this simply means visual confirmation. When talking in Cuzco Quechua about thoughts or plans that another person has expressed, however, a speaker will use BPG evidential marking. According to Faller (2011), this is because the thinker's own report of a thought is the best possible grounds one can have for knowing about that thought. At first sight, it seems that BPG evidence may be the epistemic complement of *-mIş*-type evidence. If, upon closer examination, this is shown to be the case, then the facts of Cuzco Quechua would suggest that the denotation in (49) offers insights that go beyond Type I evidential systems like that of Turkish.

6   Indirect Evidentiality in Discourse

Several previous studies have shown the appropriateness of commitment-based discourse models for addressing topics in the literature on evidentiality. Proposing a revised version of the discourse model developed in Gunlogson (2001), Gunlogson (2008) suggests that such a route might prove fruitful. Davis et al. (2007) strays somewhat from Gunlogson's framework, but nonetheless makes ample use of the notion of speaker commitment. Adopting a variety of Gunlogson's framework as refined by Farkas & Bruce (2010), the analysis in AnderBois (2014) takes aim at a phenomenon AnderBois dubs "reportative exceptionality."[27] Northrup (2014), working within the

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[27]This term stands for the observation that propositions marked for reportative evidentiality are cross-linguistically more amenable to the deniability diagnostic than

illocutionary evidential school, further develops the Gunlogsonian model to examine evidential discourse particles in Japanese. While Davis et al. (2007) proposes a probabilistic pragmatic account of evidentiality, the authors nonetheless speculate that a "more narrowly semantic account," for instance one based on modality, could predict the same pragmatic effects. Showing that is precisely the aim of this section, beginning with interrogative flip.

6.1   A Commitment-Based Discourse Model

Like AnderBois (2014), I adopt the variety of discourse model pioneered in Gunlogson (2001, 2008) and developed further in Farkas & Bruce (2010). One of the model's primary contributions to work on discourse structure is the introduction of a formalism for keeping track of the public discourse commitments that speakers make independently of one another. This move allows the model to dive deeper into the mechanics of discourse than others that keep track of only what propositions have been accepted as true by both speakers: the common ground (*cg*) of Stalnaker (1978). In a commitment-based discourse model, the *cg* is equivalent to the set of all propositions to which both speakers have expressed a public commitment.

An innovation of Farkas & Bruce (2010) is the formal notion of the Table, which keeps a running log of information that, akin to the Question Under Discussion of Ginzburg (1996) and Roberts (1996), has not yet either been confirmed, rejected, or set aside by all the discourse participants. Hence, the discourse is only in a "stable" state when the Table is completely empty. Although Farkas & Bruce add syntactic objects paired with their denotations to the Table, I use a simplified Table that records only denotations. I assume, along with Farkas & Bruce, as well as Murray (2010) and by extension Hamblin (1971), that the denotation of a polar interrogative consists of

propositions marked for other kinds of evidentiality. I take a closer look at reportative exceptionality in Turkish and its consequences for speaker commitment in Section 6.3.

two complementary alternatives. For a polar interrogative question denoting $\{p, \neg p\}$, uttered at a stable state in the conversation, we have the following discourse structure.

(61)

speaker (s)	**Table**		**addressee** (a)
DC_s	$\{q, \neg q\}$		DC_a
Common Ground cg		**Projected Set** ps	

DC_s : $\{p : p$ is a public commitment of s, not shared with $a\}$

cg : $\{p : p$ is a joint commitment of s and $a\}$

Table : $\{p :$ neither p nor $\neg p$ follows from $cg\}$

ps : $\{p : p \in q \cup cg$ or $p \in \neg q \cup cg\}$

While the projected set (ps) is irrelevant for the account at present, the general notion of projection in discourse will be of interest later in the thesis. Note that the ps is always recoverable if the Table and the cg are known. Crucial for my analysis is an understanding of how the discourse effects of the speech acts of assertion and question differ. Farkas & Bruce (2010) provide a clear account of this distinction within their model. Again stripping away some of their stack-based formalism, that account is as follows in (62). It is important for both Farkas & Bruce and for my own analysis that the discourse effects shown in (62) correspond specifically to falling declaratives in the case of assertion, and rising polar interrogatives in the case of question.

(62) (a) **Assertion:** $\{p\}$ is added to DC_s and Table $\qquad ps$ becomes $\{p \cup cg\}$

(b) **Question:** $\{p, \neg p\}$ is added to Table $\qquad ps$ becomes $\{p \cup cg, \neg p \cup cg\}$

Importantly, rising polar interrogative questions add nothing to either the speaker's public discourse commitments (DC_s) or the addressee's (DC_a). They only add their denotation to the Table. Falling declarative assertions, however, add the proposition expressed by the declarative to DC_s and to the Table, while leaving DC_a untouched. Hence, after both questions and assertions, the state of the discourse is unstable. In the case of an assertion, a singleton set $\{p\}$ must be removed from the Table, while in the case of a question, the set $\{p, \neg p\}$ must (eventually) be removed. Following

a falling declarative, the discourse can be canonically[28] returned to a stable state if the addressee adds $\{p\}$ to DC_a. Following a polar interrogative, the discourse can canonically begin the process of reverting to a stable state in one of two ways.

(63) (a) **Confirmation:** $\{p\}$ is added to DC_a and **Table**

  (b) **Reversing:** $\{\neg p\}$ is added to DC_a and **Table**

The discourse moves in (62) and (63) show that questions *project* addressee commitment. Following the addressee's response, the speaker must then (canonically) add whatever the addressee added to the Table to his own discourse commitments, DC_s. At that point, a joint commitment to either p or $\neg p$ has been established, and the Table is cleared.

6.2 Predicting Interrogative Flip

Unlike other accounts of the discourse effects of evidentials (Davis et al. 2007, AnderBois 2014), I offer no special treatment to sentences involving grammaticalized evidential markers. Treating *-mIş* as an operator on par with modality and tense permits us to have a speaker commit to the entire proposition, including *-mIş*, expressed by a given utterance. To distinguish this proposition from the at-issue proposition p, I introduce the variable p_{ev}, which makes explicit that the content contributed by Izvorski's (1997) $Ev(p)$ is itself propositional. It is the proposition expressed by *p-mIş*.

(64) $p_{ev} := $ *p-mIş*

  (a) **Assertion:** $\{p_{ev}\}$ is added to DC_s and Table ps becomes $\{p_{ev} \cup cg\}$

  (b) **Question:** $\{p_{ev}, \neg p_{ev}\}$ is added to Table ps becomes $\{p_{ev} \cup cg, \neg p_{ev} \cup cg\}$

According to (64), the discourse effects of propositions bearing *-mIş* are exactly the same as those of any other proposition, which we saw in (62). This result is attractive

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[28]I caveat these discourse moves as "canonical" because other options, which I will ignore, do exist. For instance, the addressee might reject the assertion and both participants might agree to disagree.

from the standpoint of maintaining a simple and straightforward discourse structure. Yet it also yields desirable results for an account of *-mIş*.

Following the utterance of p_{ev}, what predictions does such an account make about speaker commitment to the at-issue proposition p? It only predicts that commitment to p will vary, which is exactly what is needed. When her evidence is, say, inferential, the speaker makes a commitment to p based on whatever independently motivated pragmatics of inference we choose to adopt. And when her evidence is reportative, the speaker may or may not commit to p, depending on how much credence she gives to the reporter. These details, however, must be disambiguated by the context, for *-mIş* contributes only the denotation in (49). According to that denotation, *-mIş* provides information about a speaker's evidence for p. In committing to p_{ev}, the speaker commits to the truth of that information: $\llbracket$ *-mIş* $\rrbracket^{s,w}$, applied to the at-issue proposition p.

Now recall the schematic in (1), reproduced in (65), which illustrates to which discourse participant *-mIş* is anchored in declaratives versus interrogatives. I have dotted the arrow for the interrogative case, because the availability of indirect evidence is only presumed, rather than professed.

(65)　　　　　　　**Declaratives**　　　　　　　　　　　　**Interrogatives**

Speaker　　　　　　　　　Addressee　　　　Speaker　　　　　　　　Addressee

┌─────────┐　　　　　　　　　　┌─────────┐
│ Indirect │　　　　　　　　　　│ Indirect │
│ Evidence │　　　　　　　　　　│ Evidence │
└─────────┘　　　　　　　　　　└─────────┘

If in committing to p_{ev}, a discourse participant commits to having a particular kind of evidence, then it comes as no surprise that *-mIş* is anchored to the discourse participant who commits to p_{ev}. The figure in (66) is meant to clarify the correlation between discourse commitment and evidential anchor in declaratives and interrogatives.

(66)   **Declaratives**   **Interrogatives**

Speaker   Addressee   Speaker   Addressee

| Commitment | | Commitment |
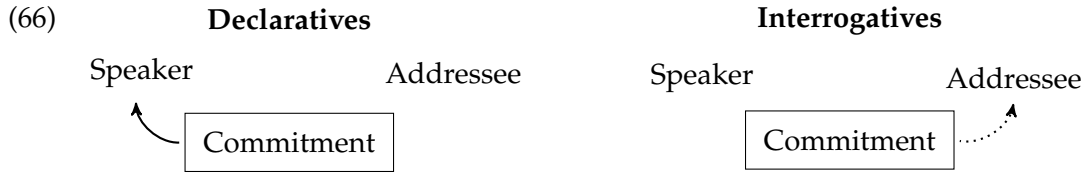
As noted in reference to (63), questions commit neither the speaker nor the addressee to p or $\neg p$, but rather project commitment to one of the alternatives on the part of the addressee. Hence, analogous to the presumption of indirect evidence in (65), the arrow for the interrogative case is dotted to reflect projected, as opposed to actual, commitment.[29]

We can make the discourse effect of *-mIş* explicit with a small addition to (49). The index s, which is misleading in the interrogative case, has been replaced in (67) with a less biased letter, κ. Given the semantics of *-mIş* and the structure of discourse, κ will always be indexed to the discourse participant who commits to p_{ev}.

(67) $[\![\,\text{-}mIş\,]\!]^{\kappa,w} = \lambda p\,.\,[\,\forall r \in f_\kappa(w,p)\ \exists q \in f_c(w,p)\ s.t.\ q > r\,],\ p\text{-}mIş \in DC_\kappa$

Recalling (60), *-mIş* is undefined when a speaker has no evidence at all for p. This is a sensible result for declaratives, which indicate that a speaker's evidence for a claim is of a certain type. For polar interrogatives, however, this formal constraint reveals a deeper implication: given that *-mIş* is acceptable in polar interrogatives, and that the speaker may have no evidence to decide either alternative, p or $\neg p$, the modal base of *-mIş* in polar interrogatives must not be the speaker's. Hence, the semantics of *-mIş* and the structure of the discourse model, both motivated by independent ends, are in harmony on the matter of polar interrogatives: the former rules out speaker perspective, and the latter demands addressee perspective. Consequently, the condition added to (67), while illustrative, is technically unnecessary: the structure of discourse will ensure $p\text{-}mIş \in DC_\kappa$.

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[29]The problem of projected and actual commitments is not a problem for the account. A simple extension of the discourse model is proposed in Section 6.4 to capture this distinction.

In conclusion, interrogative flip follows from the account presented here. Because the evidential anchor is always associated with the discourse participant who commits to the proposition at issue, we need not separately stipulate, as in Murray (2010, 2014b), that the anchor is the addressee in interrogatives.

6.3 Predicting Commitment

The previous section proposes that in asserting p_{ev}, a speaker's commitment to p remains ambiguous unless the speaker's evidence is specified by the context. This context dependence of commitment is perfectly tenable for the case of reportative evidence: a speaker κ may or may not believe the reported information, depending on κ's trust in the person who reported it, or how many people were involved in the chain of transfer from the observation of the event to κ. We therefore expect a speaker to be able to utter p_{ev} and then deny p given the proper (reportative) context. With inferential evidence, however, the expectations are not so clear. Scholarly work on the compatibility of doubt with modals of inference such as *must* is in no short supply (e.g., Karttunen 1972, Kratzer 1981, von Fintel & Gillies 2010). It is generally accepted that assertion of the inference of a proposition, e.g., $must(p)$, can result in a "weaker" claim than assertion of the proposition itself. Yet even this is context-dependent, since mathematical and syllogistic inferences are perfectly "strong." Regardless, contradicting one's own inference is markedly odd. I illustrate the contrast between reportative and inferential evidence with a pair of English examples that recreate the illustrative contexts in (2).

(68) (a) According to Bert, Rhonda came home early. But I don't think so.

(b) ?? Judging by that briefcase over there, Rhonda came home early. But I don't think so.

The contradiction in (68b) might be possible in a carefully constructed scenario in which the speaker suspects he is being tricked. In this case, he distances himself from

the inference, as if it were the inference that a reasonable (but not so savvy) person might make under the same circumstances. The same "distancing" is not necessary in the case of reportative information.

Because the Turkish indirect evidential can indicate either inferential or reportative evidence for a proposition, we might expect a disambiguating effect to emerge when a speaker contradicts a proposition bearing *-mIş*. In example (69), adapted from Şener (2011), we observe just that. Given reportative evidence, the speaker can contradict a statement bearing *-mIş*, but given inferential evidence, she cannot.

(69)   *Sinan bisiklet-ten düş-**müş**, ama gerçek-te   öyle bir şey   yok.*
       Sinan bike-ABL   fall-EVID but reality-LOC such a   thing nonexistent
       'Sinan (apparently) fell off the bike, but in reality there's no such thing.'

    (a) ✓ **Reportative:** The speaker was told that Sinan fell off the bike.

    (b) # **Inferential:** The speaker saw Sinan getting up from the ground with his bike cast aside and school supplies strewn about.

As noted above, AnderBois (2014) christens this contrast "reportative exceptionality," and presents a comprehensive typological survey showing its attestation in languages throughout the world. In any given language, whether the reportative evidential has been analyzed in epistemic or illocutionary terms, whether it must take widest scope or not, whether it is described as a verbal affix, clausal clitic, auxiliary, or discourse particle, and regardless of the existence or size of a larger evidential paradigm in the language, the overwhelming trend is for reportative evidentials to permit denials as in (69). In contrast, all other varieties of evidential are markedly impervious to the same test.

The contextual disambiguation in (69) confirms that reportative exceptionality in Turkish cannot be due to the semantics of *-mIş*, but rather must be due to the pragmatics of asserting a proposition for which one has reportative evidence. If it is sensible to assume that such pragmatic principles vary only minimally by speech community, then it stands to reason that reportative exceptionality, as AnderBois (2014) argues

as well, is not a consequence of the semantics of reportative evidentials. As for the pragmatics of asserting a proposition for which one has inferential evidence, this is a topic ripe for experimental work, a suggestion to which I will briefly return at the close of this thesis.

6.4 Projecting Commitment

I have argued that anchoring *-mIş* to the speaker who commits to *p-mIş* is a move justified by both the semantics of *-mIş* and the nature of discourse. The result is an explanation for the existence, and prevalence, if my proposal is generalizable cross-linguistically, of interrogative flip. Still, there is a hitch: at the moment that the interrogative $\{p_{ev}, \neg p_{ev}\}$ is place on the Table, the addressee has not yet committed to p_{ev} or $\neg p_{ev}$. In the model of Farkas & Bruce (2010), a rising polar interrogative commits neither discourse participant to either alternative.

(70)   At the time of utterance: $\forall \kappa \in \text{DISCOURSE}, \neg(p_{ev} \in DC_\kappa \vee \neg p_{ev} \in DC_\kappa)$

Thus, immediately after a polar interrogative question has been posed, the condition in (67), $p_{ev} \in DC_\kappa$, is not satisfied. It has already been noted in the context of (63) that interrogatives project commitment on the part of the addressee. In order to formalize projected commitments, however, we must slow down our model. An analog does exist in Farkas & Bruce (2010): the projected set (*ps*) projects the common ground (*cg*) after every discourse move. Making the assertion *p* projects a common ground in which *p* is added to *cg*: $\{\{p\} \cup cg\}$. Asking the question $\{p, \neg p\}$ projects two common grounds: $\{\{p\} \cup cg, \{\neg p\} \cup cg\}$. In the same vein, we can project DC_κ after every discourse move.

The notion of projection set, of course, skips a step. As was explained at the beginning of this section, an element of *ps* can only become the new *cg* following one or more public discourse commitments issued by each speaker. In the case of a falling declarative assertion, the addressee must (canonically) commit to the propo-

sition placed on the table. In the case of a rising polar interrogative question, the addressee must (canonically) commit to one of the alternative propositions on the Table, and then the speaker must do the same. The *ps* projects joint commitments, but joint commitments actually arise incrementally. By taking the *ps* as inspiration and defining "projected commitment sets" PC_s and PC_a, we can begin to build a more incremental account of the discourse effects of indirect evidentials. Like the *ps*, but more dynamic, the PC_s and PC_a are updated following each move in a discourse.

(71)　(a) **Assertion** (by *s*): PC_a becomes $\{\{p\} \cup DC_a\}$

　　　(b) **Question** (by *s*): PC_a becomes $\{\{p\} \cup DC_a, \{\neg p\} \cup DC_a\}$

When speaker *s* asserts *p*, a list of addressee public discourse commitments DC_a is projected in which *p* is added to the current DC_a: $PC_a = \{\{p\} \cup DC_a\}$. When speaker *s* asks $\{p, \neg p\}$, two different lists of addressee public discourse commitments are projected: $PC_a = \{\{p\} \cup DC_a, \{\neg p\} \cup DC_a\}$. Now that we have slowed down our discourse model, we define the interaction of DC_κ and PC_κ with any operator according to the following principle.

(72)　CLAIM

　　In satisfying the domain of any function $\mathcal{F}(\kappa, w, p, ...)$, $p \in (DC_\kappa \cup PC_\kappa)$, first scan DC_κ for *p*, then scan PC_κ for *p*, $\forall \kappa \in$ DISCOURSE.

The condition in (72) demonstrates that our explanation of interrogative flip can retain formal rigor. In the case of an assertion, the speaker commits to p_{ev} in tandem with uttering it. Therefore, the domain of $[\![$ *-mIş* $]\!]^{\kappa, w}$ is satisfied in that instant. In the case of a question, the speaker commits to neither p_{ev} nor $\neg p_{ev}$, and so $[\![$ *-mIş* $]\!]^{\kappa, w}$ must scan PC_κ $(\forall \kappa)$ to satisfy its domain. While (72) might at first sight seem unsatisfyingly ad hoc, it manages to express what is potentially a primitive maxim about the way discourse works: if an expression must be anchored to a committing party, anchor it to the party who commits first. Testing this maxim against other indexical phenomena could offer interesting insights into the structure of discourse.

6.5 Evidential Tag Interrogatives

One of the modifications that Gunlogson (2008) makes to the original discourse structure of Gunlogson (2001) is the addition of the role of "source." For Gunlogson, a source is the originator of a proposition in the discourse: a discourse participant s is a source of p if $p \in DC_s$ and s's commitment to p depends on no other participant's testimony. While Gunlogson shows that the notion of source can be used to profitable effect in explaining certain restrictions on the use of rising declarative questions, it is of limited use to an account of evidentiality, because the Gunlogsonian source is a strictly discourse-internal notion. Gunlogson also introduces the notion of contingent commitment, which is rebranded by Farkas & Roelofsen (2016) as conditional commitment. Glossing over some of the formal differences between the accounts, a discourse participant whose commitment to p is contingent on another participant's commitment to p as source has a conditional commitment to p. Commitments that are not conditional are actual.

Farkas & Roelofsen (2016) use various diagnostics to establish that (rising) tag interrogatives of the form shown in (73) have the same semantics as rising polar interrogatives, but different conventional discourse effects. Among the effects that Farkas & Roelofsen cite is the addition of the highlighted[30] alternative p to the speaker's conditional commitments, marked for moderate to high epistemic authority.

(73) It's a bit too expensive for us, isn't it?

Turkish tag interrogatives are similar to their English counterparts in structure, with a declarative clause followed by an interrogative clause. Rather than an interrogative with verb phrase ellipsis, as in the English case, the interrogative clause in Turkish consists of the nominal negation marker followed by the interrogative marker *mI*. In Turkish, tag interrogatives exhibit the same behavior as polar interrogatives

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[30]For more details on the concept of "highlighting," see Roelofsen & Farkas (2015). In a positive polar or tag interrogative $\{p, \neg p\}$, it is the proposition p.

with respect to *-mIş*. The perspective of the evidential shifts from the speaker to the addressee. Hence, the judgments in (74) and (75) match those of the polar interrogative examples whose contexts they share, (7) and (8).

(74) **Context:** A babysitter has been watching a child named Hande for the evening. Hande is too young to feed herself. (Consequently, at any meal, the person feeding her sees everything that Hande eats.) The mother returns home and asks the following.

> *Hande* *yoğurd-u-nu* *bitir-{ di /#miş },* *değil* *mi?*
> Hande yogurt-3s.POSS-ACC finish-{PAST / #EVID} NEG INT
> 'Hande finished her yogurt, no?'

(75) **Updated Context** (74)**:** The father returns home and asks the mother for the same information. The father knows that the mother did not witness Hande's eating.

> *Hande* *yoğurd-u-nu* *bitir-{ #di / miş },* *değil* *mi?*
> Hande yogurt-3s.POSS-ACC finish-{#PAST / EVID} NEG INT
> 'Hande finished her yogurt, no?'

The tag interrogative data allow us to refine the findings of the previous section according to the augmented discourse models of Gunlogson (2008) and Farkas & Roelofsen (2016). To frame the observations in terms of these analyses, one only need state that *-mIş* is anchored to the discourse participant who makes an *actual* commitment to p_{ev} – in Gunlogsonian terms, commitment as source. Still, the technical term "source" must be used cautiously in the context of evidentiality, because the discourse participant committing to p_{ev} is by definition not the source of evidence supporting the at-issue proposition p.

7 On Propositionhood

This section and the next address two questions that suggest themselves in the course of any analysis of indirect evidentiality, but which are neither directly related to the core data dealt with in the thesis nor of immediate relevance for solving the problem

of interrogative flip. The first question is to what extent the content contributed by -*mIş* is propositional and independent of the at-issue proposition *p*. I provide evidence that the meaning of *-mIş* is no more propositional than the meaning of tense, aspect, or modality.

7.1 Metalinguistic Negation and the Banality of EVID

Murray (2010, 2014b) proposes an update semantics to account for the discourse effects of evidentials in Cheyenne. A declarative sentence contributes a proposal to update the common ground, the at-issue proposition introduces discourse referents of various classes, and the evidential proposition is directly imposed upon the common ground. Interrogatives, on the other hand, partition the common ground rather than updating it. Murray (2014b) argues that evidential content in Cheyenne is not-at-issue, with findings that resemble those of AnderBois et al. (2015) for appositives and parentheticals. Like appositives and parentheticals, Cheyenne evidentials are said to contribute a proposition (e.g., $\textsc{hrd}(i, q)$) that directly constrains the context set. This proposition is not accompanied by a propositional-level discourse referent.

Evidentiality is cross-linguistically commonplace. Around a quarter of the world's languages incorporate evidentiality into their inflectional systems (Aikhenvald 2004). Many other languages have optional or obligatory adverbials for conveying similar information (e.g., English *apparently*). In Turkish, the morphosyntax of evidentiality is largely identical to other markers of tense, aspect, and modality. While somewhat restricted, Turkish *-mIş* can occur in embedded clauses (Coşkun 2010, Schenner 2010) and conditionals, and, as we have seen, it is common in interrogatives. We might ask, then, whether all sorts of tense, aspect, and modality should in general be analyzed as contributing a proposition (e.g., $\textsc{ind}(i, p)$ for the case of *-mIş*) to the discourse, imposed directly on the context set, with no accompanying discourse referent.

For instance, standard analyses do not hold that past tense inflection contributes a distinct proposition (with no accompanying discourse referent) in the interrogative

in (76) – a plausible exchange over the phone. An addressee can, with some effort, respond to such an assertion with (76a). This signals that the addressee is pointing out some misunderstanding on the part of the speaker. (For instance, the addressee has not yet left the party, but has instead stayed later than she intended.) Claiming that such a challenge allows the addressee to target a normally inaccessible not-at-issue proposition seems counterintuitive. Explicitly, the addressee rejects the tense of the interrogative; implicitly, she nonetheless affirms some portion of the interrogative's at-issue content. Note that one could not, even with great strain, respond with (76b). In other words, unlike the rejection in (76a), we cannot explicitly *affirm* the tense of the interrogative's verb while implicitly rejecting the proposition at issue.

(76) Was the party fun?

    (a) No. It IS fun.   (b) # Yes. It WAS boring.

    The same asymmetry obtains in the rejection or affirmation of an utterance's evidential content in Turkish. In the examples in (77), the most natural responses have been omitted to conserve space: those answers for which the polarity of the verb matches that of the polarity particle, and for which the verbs in both the interrogative and its response match in evidentiality. Note that the felicity of each of the responses in (77) is improved by following up with an explanation (shown in parentheses) of how the addressee's epistemic state differs from that which the interrogative would presuppose. Capital letters are used to indicate focus. The interrogative that initiates example (77) lacks evidential marking. The response in (77a) shows that one can explicitly confirm (using a polarity particle) the at-issue content *p* while implicitly (using *-mIş* vice *-DI*) rejecting the use of simple past tense *-DI*. One can also explicitly reject *p* while at the same time implicitly rejecting the use of simple past tense, as in (77b). Explicitly rejecting the use of *-DI* (using a polarity particle) while implicitly confirming *p* (by omitting negation marking) is marked, as in (77c), and requires focus on the morphosyntactic position that hosts the problem suffix. In contrast, explicitly confirming the use of *-DI* while implicitly rejecting *p* is impossible.

(77) *Berat tatlı getir-**di** mi?*
Berat dessert bring-PAST INT

'Did Berat bring dessert?' $p = \{w : \text{Berat brought dessert in } w\}$

   (a) *Evet, getir-**miş**. (Kaya öyle söyle-di.)*
      yes bring-EVID (Kaya such say-PAST)
      'Yes, she (apparently) brought it. (Kaya said so.)'

   (b) *Hayır, getir-me-**miş**. (Kaya öyle söyle-di.)*
      no   bring-NEG-EVID (Kaya such say-PAST)
      'No, she (apparently) didn't bring it. (Kaya said so.) '

   (c) *?? Hayır, getir-**MİŞ**. (Kaya öyle söyle-di.)*
         no   bring-EVID (Kaya such say-PAST)
      'No, she (APPARENTLY) brought it. (Kaya said so.)'

   (d) *# Evet, getir-me-**Dİ**. (Ben gör-dü-m.)*
        yes   bring-NEG-PAST (I   see-PAST-1S)
      Intended: 'Yes, she did not bring it. (I saw.)'

An analogous pattern emerges among possible responses in an exchange initiated with an interrogative bearing indirect evidential marking, as in (78).

(78) *Berat tatlı getir-**miş** mi?*
Berat dessert bring-EVID INT

'Did Berat (apparently) bring dessert?' $p = \{w : \text{Berat brought dessert in } w\}$

   (a) *Evet, getir-**di**. (Ben gör-dü-m.)*
      yes bring-PAST (I   see-PAST-1S)
      'Yes, she brought it. (I saw.)'

   (b) *Hayır, getir-me-**di**. (Ben görd-ü-m.)*
      no   bring-NEG-PAST (I   see-PAST-1S)
      'No, she (definitely) didn't bring it. (I saw.)'

   (c) *?? Hayır, getir-**Dİ**. (Ben gör-dü-m.)*
         no   bring-PAST (I   see-PAST-1S)
      'No, she (definitely) brought it. (I saw.)'

   (d) *# Evet, getir-me-**MİŞ**. (Kaya öyle söyle-di.)*
        yes   bring-NEG-EVID (Kaya such say-PAST)
      'Yes, she (apparently) didn't bring it. (Kaya said so.) '

The judgments for each of the responses to (77) and (78) are summarized in the table in (79).

(79)

		Explicitly Affirm	Explicitly Reject	Implicitly Affirm	Implicitly Reject	
(a)		p			PAST/EVID	✓
(b)			p		PAST/EVID	✓
(c)			PAST/EVID	p		??
(d)		PAST/EVID			p	#

There is an asymmetry in the interaction of *-miş* with the polarity particles *evet* 'yes' and *hayır* 'no.' If we assume that the use of *hayır* in (77c) signals an instance of *metalinguistic negation*, in which a discourse participant objects to an utterance on grounds beyond its propositional content (Horn 1985), then an explanation becomes available: because there is no *metalinguistic confirmation* analog to metalinguistic negation, no such device can render examples like (77d) and (78d) felicitous. This explanation is all the more convincing with an eye to the English data of (76).

Murray (2010, 2014b) defines the semantic contribution of Cheyenne evidentials as a proposition that lacks a discourse referent and directly constrains the context set. The data summarized in (79) do not endorse such an account for Turkish. If, on the other hand, we assume that the content contributed by *-mIş* is on the same order as that contributed by PAST and other inflectional affixes, then we trivially predict why evidential content introduces no propositional-level discourse referent: it is not propositional. We also predict the asymmetry observed in (79), where a negative polarity item (*hayır*) can via metalinguistic negation single out not-at-issue content that a positive polarity item (*evet*) cannot. If the not-at-issue content that *-mIş* contributes is not propositional, then what is it? Like modality, aspect, or tense, and as the denotation of (67) makes clear, the evidential content of *-mIş* is only one component of the larger proposition p_{ev}. Still, as discussed in the next section, the similarities between tense, aspect, modality, and indirect evidentiality reach even deeper than observations about propositionhood.

8 On the Present Perfect

The second question is to what extent the account presented here sheds light on the overlap observed cross-linguistically between expressions that convey present perfect tense and expressions that convey indirect evidentiality. As mentioned above, Turkish no longer exhibits a dedicated present perfect relative tense. However, as noted in the discussion of the Old Uyghur example (30), the evidential *-mIş* appears to have descended from a relative tense similar to the English present perfect, as in Bulgarian, Norwegian, and other genetically unrelated languages. This section demonstrates that indirect evidentiality in Turkish has more formally in common with the present perfect than first meets the eye.

8.1 The Anaphoric Parallel Between Evidentiality and Tense

Stone (1997) presents a number of arguments in favor of an anaphoric approach to modality, in contrast to or augmenting the analysis presented in Kratzer (1981, 1991) in terms of modal bases and ordering sources. Citing modal subordination (Roberts 1986) and the parallels illustrated in (80) through (83) below, Stone (1997) argues that by treating scenarios as entities that are introduced into the discourse context and to which modals can refer anaphorically, we can streamline the semantics of modality. The analysis draws inspiration from Partee (1973, 1984), which propose a parallel approach for times and tense. While the analysis presented in this thesis so far does not make use of the same dynamic semantic formalism, it turns out to be very much in the spirit of Stone's account. Rather than varieties of scenario, evidential expressions introduce elements of evidence into the discourse, make reference to them, and encode relations between them in the same way that different temporal expressions encode relations between times.

Stone (1997) founds his anaphoric case for modality on a range of data from Partee (1984) that illustrates the anaphoric parallel between temporal interpretations of

clauses and referential interpretations of pronouns. I replicate these examples below, including corresponding sentences in Turkish that extend the parallel to the evidential domain. The first such example demonstrates that both tenses and pronouns can be used to refer to a specific object made salient by the context. As Stone (1997) notes, each sentence in (80) can be said felicitously out of the blue: in the same sense that *she* can refer to the significant woman in the speaker's life and *didn't* can refer to the most recent time that the speaker left his home, *-mIş* can refer to the weather report. Just as an interlocutor can reliably guess the referent of *she* based on knowledge of the speaker's relationship status, or the time at which the speaker neglected to turn off the stove based on his recent arrival at work, she can also reliably guess that the speaker learned of tomorrow's forecast from the radio weather report based on the knowledge that this is where the speaker always finds such information.

(80) (a) She left me.

(b) I didn't turn off the stove.

(c) *Yarın   yağmur   yağ-acak-**mış**.*
     tomorrow   rain   precipitate-FUT-EVID
     'It's (apparently) going to rain tomorrow.'

Pronouns, tenses, and evidentials can also refer to definite referents introduced earlier in a discourse. In (81), *Sam* passes along a referent to *he*; *when John saw Mary* passes along a referent to *crossed*; and *I spoke with Can* passes along a referent to *-mIş*. That is, the first sentence in (81c) introduces grounds for Can's receipt of reportative evidence; the second sentence refers back to that evidence with *-mIş*.

(81) (a) Sam is married. He has three children.

(b) When John saw Mary, she crossed the street.

(c) *Can-'la   konuş-tu-m.   Seda film-i   beğen-**miş**.*
     Can-with   spoke-PAST-1S   Seda film-ACC   like-EVID
     'I spoke with Can. Seda (apparently) liked the movie.'

Similarly, pronouns, tenses, and evidentials can refer to indefinite entities in the discourse, as in (82). The (a) and (b) examples are again taken from Partee (1984) via Stone (1997). Just as the *it* in (82a) refers to an indefinite donkey and the *-ed* in (82b) refers to an indefinite time, the *-mIş* in (82c) refers to an indefinite piece of inferential evidence – in this case, the unspecified evidence that led the speaker to infer Hakan's being at home.

(82)   (a) Pedro owns a donkey. He beats it.

    (b) Mary woke up some time during the night. She turned on the light.

    (c) *Garip bir şey   gör-dü-m.   Hakan   ev-de-y-**miş**.*
       odd   a   thing see-PAST-1S Hakan house-LOC-COP-EVID
       'I saw something odd. Hakan is (apparently) home.'

Stone (1997) also notes another parallel, wherein reference is not possible if the examples in (80) through (82) are slightly modified. Reference fails when the referent present cannot satisfy a presupposition introduced by an anaphoric element. In (83c), the first sentence establishes that the speaker's evidence is firsthand, but in the following sentence, *-mIş* fails to satisfy this presupposition.

(83)   (a) # Pedro owns a donkey. She beats it.

    (b) # When John saw Mary, she crosses the street.

    (c) # *Hakan-'ı   gör-dü-m.   Bura-da-y-**mış**.*
       hakan-ACC see-PAST-1S here-LOC-COP-EVID
       'I saw Hakan. He's (apparently) here.'[31]

In Stone's efforts to establish a formal semantic parallel between tense and modality, he takes into account not just tenses in the absolute sense (past, non-past, future, etc.), but also in the relative sense: any relation that specifies a configuration between

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[31]Of course, all three of these examples, from Partee's through mine, become problematic when pressure is applied. The *she* of (83a) could certainly refer to a special woman in Pedro's life. The speaker in (83b) could be effecting a storytelling style mid-sentence. And the speaker in (83c) could be indicating surprise at Hakan's presence.

intervals in time. Hence, Stone includes perfect tenses in the discussion, and examines the present perfect in particular. The analysis adheres to a system along the lines of Reichenbach (1947), in which a tense morpheme determines a relation between the time of an event $t(E)$ and two other times, the utterance or speech time $t(S)$ and the reference or topic time $t(R)$. While Reichenbach's reference time $t(R)$ is equally well-known for its ingeniousness and its vagueness, $t(R)$ is typically described as the time interval during which the event described remains relevant.[32]

The following configuration is said to be shared by all perfect relative tenses: $t(E)$ precedes $t(R)$. In the present perfect in particular, $t(R)$ contains $t(S)$, producing the desired effect that an event reported in the present perfect is completed, but retains relevance at the time of speech. We can represent the configuration of the three key times $t(E)$, $t(R)$, and $t(S)$ for the present perfect tense as in (84). In prose, the event time ends before the reference time, and the reference time extends from after the event's completion up to and including the time of speech.

(84)   **Temporal Relations: Present Perfect Relative Tense**

$$t(E) < t(R) \leq t(S)$$

Given the apparent descent of the evidential *-mIş* from a non-evidential present perfect tense, the relation in (84) has special relevance for this account. Izvorski (1997) relies on a similar relation to sketch a correlation between states and sets of worlds. However, as discussed in Section 4.2, that correlation equates a speaker's having indirect evidence for a proposition with the speaker's not knowing the proposition. It also fails to explain the relationship between the time intervals for which temporal relations like (84) are defined, and the consequent state of an event, the formal object

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[32]Klein (1992) introduces a modified system involving a topic time (TT), roughly analogous to the reference time. TT is defined as "the time for which, on some occasion, a claim is made." I leave for future work the comparison of the advantages of either system in explaining the present perfect/indirect evidentiality connection.

that Izvorski actually focuses on.[33] Taking a different approach, I highlight instead a structural correspondence between time intervals and sets of evidence.

Recall the various sets of propositions from which the denotation of *-mIş* in (67) is constructed: the committing discourse participant's evidence for p in w, $f_\kappa(w, p)$; all realistically available (world-compatible) evidence for p in w, $f_c(w, p)$; and all possible evidence for p in w, $f_0(w, p)$. If we use $max[f]$ to specify the best-ranked (closest to $q_{best} \in f_0$) element in each set, then *-mIş* determines the relations between f_s, f_c, and f_0 shown in (85). In reading the inequalities in (85), '$<$' corresponds to 'is lower ranked than,' according to the partial ordering imposed on f_0 in (47). The relation in (85) describes the range of evidence that a speaker can have for p, depending on whether f_c contains the best-ranked element of f_0, as in the case of (2b), or lacks it, as in the case of (22a).

(85) **Evidential Relations: Indirect Evidentiality**

$$max[f_s(w, p)] < max[f_c(w, p)] \leq max[f_0(w, p)]$$
$$\Rightarrow f_s(w, p) \subset f_c(w, p) \subseteq f_0(w, p)$$

The relations in (84) and (85) reveal that present perfect tense and indirect evidentiality impose analogous configurations on the anaphoric atoms they manipulate: in the case of the present perfect, significant intervals of time, and in the case of indirect evidentiality, significant intervals of evidence. This result provides a formal linkage

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[33]Quite in contrast with Izvorski (1997), Koev (2011) presents convincing evidence that indirect evidentiality in Bulgarian is completely determined by the temporal relationship between the topic time of an event (according to the Kleinian (1992,1994) definition) and the time at which that event was learned. While Koev briefly mentions Stone's anaphoric parallels, he makes no mention of how amenable his own analysis could be, in the spirit of Izvorski (1997), to understanding the cross-linguistic link between the present perfect and indirect evidentiality. Koev claims that the absence of the Bulgarian indirect evidential (-∅) is a direct evidential that indicates the learning event coincides with the event itself. The account is therefore, at first blush, not applicable to Turkish, given the non-perceptual uses of *-mIş* and the omission of the suffix in assertions of well-known historical facts.

between the meaning of present perfect tense and the meaning of indirect evidentiality. It also reinforces the anaphoric parallels observed in (80) through (83). What is more, given the structural analogy that Stone (1997) captures between modality, tense, and pronominal anaphora, the extension of the same analogy to indirect evidentiality supports a modal, as opposed to illocutionary, analysis of *-mIş*.

In both present perfect tense and indirect evidentiality, the object of interest is at best the second-best possible on some scale given a key limiter. For the present perfect, the object of interest is the time of an event; for indirect evidentiality, it is the committing discourse participant's evidence for a proposition. For the present perfect, the scale is all relevant times ordered from the time of the event to the time of speech; for indirect evidentiality, it is all possible evidence ordered from the speaker's evidence to the best possible evidence. For the present perfect, the limiter is a constraint that present (absolute) tense places on $t(R)$ with respect to $t(S)$ (i.e., $t(R) \leq t(S)$); for indirect evidentiality, it is a constraint that $\mathcal{G}(w)$ (world knowledge) places on f_c with respect to f_0 (i.e., $max[f_c] \leq max[f_0]$).

In other words, present perfect tense and indirect evidentiality arrange different elements into identical arrangements. If tenses and evidentials refer respectively to atoms of time and evidence, then we might expect that a tense marker and an evidential marker that are diachronically (or synchronically, in some languages) related perform similar operations upon those atoms. This is just what we observe in (84) and (85). In light of the cross-linguistic tendency of indirect evidential marking to morphologically co-occur with and be diachronically descended from the present perfect, the analogy between (84) and (85) can be said to support an *at best second-best* account of the phenomenon.

The relation explained here is purely analogical, and makes no direct link between the present perfect and the time course of events, their results, and the apprehension of those results by a speaker. While a firm diachronic explanation of the descent of indirect evidentials from the present perfect is likely beyond our reach, it may very

well be the case that indirect evidentials at least originated as a way of asserting propositions by reference to one's own conscious apprehension of their results – an informal notion in line with ideas put forward in Johanson (2000) and Johanson (2003). This is close to what Koev (2011) formalizes for a purely synchronic analysis of the Bulgarian indirect and, according to Koev, direct evidentials. If the Turkish *-mIş* truly did begin as a kind of "abductive inference" suffix, by which causes are inferred (really, guessed) based on their results,[34] then descent from the present perfect is natural: the present perfect simply states that the results of an event hold at the present. What, then, is the minimal formal step needed to translate present perfect tense into abductive inference? This exciting work is left for the attention of a future study.

9 Conclusion

I have focused here on two generalizations about the Turkish indirect evidential marker that have received little attention in existing work. The first, that indirect evidentiality has no consistent correlation with non-witnessed evidence, highlights the need for a denotation of *-mIş* that no longer leaves the definition of "indirect" up to intuition. The second, that the anchor of the evidential shifts to the perspective of the addressee in interrogatives, demands an explanation on principles basic enough to predict its status as a cross-linguistic default. I have made a first attempt at felling both birds with one stone – and a discourse model. That is, the semantic account I propose succeeds in adding several more steps between the unconstrained intuitions of the analyst and the felicity conditions of the evidential marker. In concert with an independently motivated commitment-based discourse model, it also predicts interrogative flip.

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[34]For more on the notion of abductive reasoning, see Hintikka (1998). My thanks to Lauren Winans and Sergei Tatevosov for independently, and almost simultaneously, bringing the notion of abductive reasoning to my attention.

In excursions from the main mission, the account also proves helpful in modeling observations about commitment and propositionhood, and sheds light on anaphoric parallels between tense, modality, and evidentiality. In particular, the correlation between the present perfect and indirect evidentiality is reflected in a formal analogy between the temporal and evidential relations that each encodes. Much work remains to be done, beginning with a definition of '$>$', the central processing unit behind the denotation in (67). As envisioned in this thesis, it is a partial ordering based on what is perceived to be common knowledge. The discussion here, I hope, pushes further open the door to an experimentally grounded, probabilistic approach to the study of evidentiality. Such work, perhaps in the image of recent research on *must* by Degen et al. (2015), would ideally test neither the type nor the "strength" of the evidence that licenses indirect evidential marking, but rather the relationship of that evidence to whatever a majority of speakers judge to be the best for a given stimulus.

One potential design for a useful study could be as follows. Naive speakers of Turkish are presented with a claim and asked to provide, in free response format, a sentence that serves as evidence for the claim. After minimal vetting by human reviewers, the speaker-generated evidence/response pairs are presented to other speakers of Turkish, who are asked (i) to determine whether it is possible to have better evidence for the associated claim; (ii) if not, to provide a piece of evidence that they would rate worse than the evidence presented; and (iii) if so, to provide a piece of evidence they would deem the best possible. In a final step, other Turkish speakers are presented with a piece of speaker-generated evidence, then asked to complete a sentence, representing the associated claim, whose verb has been left blank. The hypothesis is that *-mIş* will be preferred for evidence previously rated as suboptimal, and that simple past tense *-DI* will be preferred for evidence previously rated as best possible. Such an experiment could be used not only to test the accuracy of this account, but potentially also to probe *-mIş* for finer-grained distinctions in evidence type.

Difficult empirical questions also remain. One omission in this thesis and others is the challenging topic of the behavior of the finite, evidential *-mIş* in embedded contexts. Şener (2011, 90-94) shows that the perspective of *-mIş* can be interpreted either in terms of the speaker or of the subject of the sentence. I have found similar results, with a bias toward speaker-perspective, for examples such as (86). Here, *-mIş* is dispreferred if the speaker has direct evidence but the subject of the sentence has indirect evidence. Conversely, *-mIş* is preferred if the speaker has indirect evidence but the subject has direct evidence.

(86) **Context:** Cengiz and his friend İlhan have attended their department's graduation ceremony. They both see how may students have graduated, but their friend Zeynep does not attend and does not know the number of graduates. The next day, Cengiz and İlhan have one conversation, and Zeynep and her friend Hande have another.

  (a) **Cengiz (who did attend), to İlhan:**

  Zeynep   gel-me-di.   Kaç   kişi   mezun
  Zeynep   come-NEG-PAST   how.many   people   graduate
  ol-{du / ??muş}   bil-mi-yor.
  be-{PAST / ??EVID}   know-NEG-PROG
  'Zeynep didn't come. She doesn't know how many people graduated.'

  (b) **Zeynep (who did not attend), to Hande:**

  Cengiz   git-ti.   Kaç   kişi   mezun   ol-{??du / muş}
  Cengiz   go-PAST   how.many   people   graduate   be-{??PAST / EVID}
  bil-iyor.
  know-NEG-PROG
  'Cengiz went. He knows how many people graduated.'

Many variables might come into play in determining the behavior of *-mIş* in contexts such as (86). A possible starting point for a more in-depth study could be the kind of embedding verb used: e.g., *know*, *say*, *wonder*, *hear*, etc. Coşkun (2010) presents a wide variety of examples of *-mIş* in embedded contexts, but does not specify to whom, in each example, the evidential is anchored. Schenner (2010) provides similar evidence. Coşkun and Schenner's data serve to demarcate the kinds of embedded

contexts where *-mIş* can occur, but do not fully articulate how *-mIş* is interpreted in those contexts. This is another area where an experimental study might yield insightful results. In laying out an experimental methodology for investigating perspective shift, Harris & Potts (2009) provides the needed point of departure.

Another interesting puzzle that this thesis has not taken aim at is the question of whether or not the (PAST)/EVID specification of the post-copular *-mIş* arises compositionally from the combination of the post-verbal *-mIş*, which is specified for PERF/PAST/EVID, and the copula *-y-/-∅-*. Due to clear differences in the morphosyntactic distribution and semantic type of finite (evidential) and non-finite (non-evidential) *-mIş*, I have argued in line with Meriçli (2016) that treating those two suffixes as separate lexical items is reasonable. However, the question of whether the evidential *-mIş* should be treated as the same lexical item after both verb roots (as in *gel-miş* 'he apparently came') and the copula (as in *hasta-y-mış*, 'he is apparently sick') is left unaddressed. An informed answer to this question must take not only *-mIş*, but all the suffixes of the Turkish verbal projection into account. For instance, an interesting parallel emerges from the observation that whereas the post-verbal past tense suffix *-DI* is specified for PERF/PAST, its post-copular counterpart, according to Göksel & Kerslake (2005), conveys only PAST. As in the case of *-mIş*, perfective aspect is lost by the post-copular *-DI*.[35]

A final note, only recently brought to the author's attention, concerns what *kinds* of inference *-mIş* felicitously encodes. Deduction, induction, abduction: awareness

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[35]Meriçli (2016) proposes that bare verb roots lacking any aspectual specification take perfective aspect as a default. An investigation of imperatives and other occurrences of bare verb roots could shed light on this hunch. In such an account, *-mIş* and *-DI* contribute no aspect: perfective aspect arises for lack of any overt specification. Why *-mIş* also conveys past tense in the post-verbal position would remain unexplained, but might be derived, again, by a default analysis: PAST is the default tense for non-tensed expressions with PERF aspect. In other words, *-mIş* and *-DI* are relatively vacuous. The former conveys only EVID and the latter only PAST, in any morphosyntactic position. Their aspectual and tense specifications arise from a chain reaction sparked by the requirement for tense and aspect in finite clauses. In this analysis, the copula itself *-∅-/-y-* is specified for imperfective aspect.

is growing in the semantic and pragmatic literature that certain modal operators are limited to denoting only very specific flavors of inference – or speculation, more properly, in the case of induction and abduction. A different approach to the semantics of *-mIş* might, in taking stock of these distinctions, come even closer to an explanation of the present perfect connection. In the meantime, I argue, the second-best account is the best we've got.

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