

# Evidence type, evidence location, evidence strength<sup>1</sup>

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## Abstract

This paper investigates the question of whether ‘direct’ evidentials are amenable to an analysis as epistemic modals. Much recent literature advances modal analyses of evidentials, but direct evidentials pose *prima facie* problems for a modal analysis. In particular, typical epistemic modals differ from direct evidentials in that the former disallow direct witness, and convey reduced speaker certainty. In this paper I examine evidential elements in St’át’imcets (a.k.a. Lillooet; Salish), Gitksan (Tsimshianic), Nuu-chah-nulth (Wakashan), Cuzco and Wanka Quechua, English, Nivacle (Matacoan-Mataguan), Cheyenne (Algonquian), Korean, and Tibetan. Based on the data presented, I propose that evidential contributions are more complex than is often assumed. Specifically, there are three different dimensions of meaning which evidentials may encode: (1) Evidence **type** (whether the evidence is visual, sensory, reported, etc.), (2) Evidence **location** (whether the speaker witnessed the event itself or merely some of its results), and (3) Evidence **strength** (the trustworthiness/reliability of the evidence). Each of the three dimensions has direct and indirect values, and particular evidential morphemes may be semantically complex, encoding information about one, two or all three of the dimensions. I then argue that contrary to what we might expect, evidentials which encode direct values on any of the three dimensions are compatible with modal semantics.

## Keywords

Direct evidentials, modals, St’át’imcets, Gitksan, Nuu-chah-nulth, Quechua, Nivacle, Cheyenne, Korean, Tibetan

## 1 Introduction

A much-debated topic in evidentials research is the question of whether evidentials contribute

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There was a decade’s delay between the writing and the publication of this paper, and when it went into production it was not possible to update the references fully or to respond to more recent work. Please see, for example, Murray (in press) and Korotkova (to appear), and references therein, for recent work on evidentials.

epistemic modal semantics.<sup>2</sup> In recent work I have advanced the strong equivalency view in (1):

- (1) All evidentials contribute epistemic modal semantics, and all epistemic modals contribute evidential semantics. (Matthewson 2012)

My goal in the current paper is not to address the modality question directly, by means of the usual barrage of tests for modal contribution (see the works cited in footnote 2 for discussion of these). Instead, I will be concerned with one obvious challenge to the strong equivalency view in (1), namely direct evidentials. The *prima facie* conflict between direct evidentials and the strong equivalency hypothesis is that direct evidentials are often claimed to *strengthen* the proposition expressed (Faller 2002, Murray 2010), yet strengthening seems to be incompatible with the standard view of modality, according to which even a necessity modal claim is *weaker* than its unmodalized counterpart (Kratzer 1981, 1991, although see von Stechow and Gillies 2010 for an opposing view). The question therefore arises of what, exactly, ‘direct’ evidentials are, and whether they really are incompatible with a modal contribution.

In order to investigate this question, I will be looking at evidentials from nine different languages; most of the evidentials to be investigated have some claim to being called ‘direct’. Based on the data presented, I will propose that evidential contributions are more complex than is often assumed. I will argue that there are three different dimensions of meaning which evidentials may encode, as listed in (2):

- (2)
1. Evidence **type**: whether the evidence is visual, sensory, reported, etc.
  2. Evidence **location**: whether the speaker witnessed the event itself or merely some of its results
  3. Evidence **strength**: the trustworthiness/reliability of the evidence

I will argue that each of the three dimensions has direct and indirect values, and that particular evidential morphemes may be semantically complex, encoding information about one, two or all three of the dimensions. I will then argue (in part adapting arguments from Lecarme 2008 and Faller 2011) that contrary to what we might expect, evidentials which encode direct values on any of the three dimensions are compatible with modal semantics.

The paper is organized as follows. In section 2 I present an overview of evidence-type-based analyses of the direct/indirect split. In section 3 I present my three-dimensional proposal, and compare it to other proposals which also involve deconstruction of evidential contributions (those of de Haan 2001 and Waldie 2012). Section 4 presents cases from a range of languages where a plain evidence-type analysis breaks down, and where the three-dimensional approach fares better. I look at evidentials from St’át’imcets, Gitksan, Nuu-chah-nulth, Quechua, English, Nivacle, Cheyenne, Korean, and Tibetan; in each case I argue that a single evidential morpheme

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<sup>2</sup> See Kratzer (1981), Izvorski (1997), Ehrlich (2001), Garrett (2001), Faller (2002, 2003, 2006, 2011), Chung (2005, 2010), McCready and Asher (2006), Portner (2006), Davis et al. (2007), McCready and Ogata (2007), Matthewson et al. (2007), Sauerland and Schenner (2007), Waldie et al. (2009), Murray (2010), Peterson (2010), Speas (2008, 2010), Lee (2011a,b, 2013, this volume), Smirnova (2011), Tonhauser (in press), among others, for discussion.

can contribute information about one, two or three of the dimensions of meaning listed above. Section 5 discusses predictions of the typology which emerges, including predictions about whether direct evidentials of various types could be epistemic modals, and section 6 concludes.

Before we begin, a brief word about terminology, and then about methodology. I will be using the phrase ‘evidential contribution’ to refer to that part of an evidential’s semantics which at first pass we can call ‘evidence source’. For example, the St’át’imcets (Lillooet Salish) reportative *ku7*, illustrated in (3), has an evidential contribution which encodes the fact that the speaker’s source of evidence for the proposition was by report.

- (3)      wá7=**ku7**      ku=sts’éts’qwaz’      l-ta=stswáw’cw=a  
          be=**REPORT**      DET=trout              in-DET=creek=EXIS  
          ‘[reportedly] There are trout in the creek.’                                      (Matthewson et al. 2007:204)

The evidential contribution, which will be my focus in this paper, is separate from a second aspect of the meaning of evidentials, namely information about the status of the proposition they embed. This second aspect of meaning is, according to many analyses, a modal assertion. Thus, the St’át’imcets reportative *ku7* is analyzed by Matthewson et al. (2007) as encoding both a reportative evidential contribution, *and* some epistemic modal truth conditions, such that the embedded proposition is asserted to be at least possibly true. On the other hand, many evidentials have been analyzed as *not* introducing modal semantics, but instead as operating on the speech act level (see the references given in footnote 2 for extensive discussion). I will discuss this second aspect of meaning only in section 5, where we consider the implications of the earlier discussion for the question of whether evidentials also contribute modal semantics.

In terms of methodology, data from languages other than St’át’imcets are all taken from secondary sources. Data from St’át’imcets come from my own fieldwork, unless otherwise stated. Fieldwork consists of in-depth one-on-one elicitation sessions with speakers, involving a standard set of semantic fieldwork techniques (Matthewson 2004, Krifka 2011). The speaker is presented with a discourse context, and then asked either to provide a translation of a target sentence in that discourse context, or to judge the felicity of an object-language utterance in that discourse context. This second technique is called the Felicity Judgment Task by Matthewson (2012); it is similar to the Truth Value Judgment Task used in acquisition research, but does not explicitly ask for a judgment about truth, but only about felicity in a context (which typically entails truth).

## 2      Evidence-type-based analyses of the direct/indirect split

Aikhenvald (2004, 2006) presents a comprehensive discussion of the direct/indirect split; we can characterize her view of the split as an ‘evidence type’ analysis. Under this conception, the definition of ‘direct’ or ‘firsthand’ evidentials is based on the type of evidence source. We find, for example, the proposal that a ‘direct’ evidential is ‘either visual or covering any sensory information’ (Aikhenvald 2004:367). Similarly, in two-term systems which distinguish firsthand vs. non-firsthand, ‘firsthand’ is used when the speaker has sensory experience, while ‘non-firsthand’ is for inference, report, or logical assumption (Aikhenvald 2004:26). In three-term systems with a direct evidential, the direct is used for information ‘based on sensory evidence,

usually visual or auditory’ (Aikhenvald 2004:43). And ‘[i]n systems with three or more terms, the visual or the direct evidential usually covers information acquired through seeing, and also generally known and observable facts. It may be extended to indicate certainty’ (Aikhenvald 2006:323).<sup>3</sup>

Aikhenvald provides (among many other examples) the Wanka Quechua data involving direct evidentials in (4-5). The direct evidential in this language is characterized as conveying that the speaker either saw (4) or heard (5) the event described.

- (4) chay-chruu-**mi** achka wamla-pis walashr-pis alma-ku-lkaa-ña  
 this-LOC-**DIR.EV** many girl-TOO boy-TOO bathe-REFL-IMPF.PL-NARR.PAST  
 ‘Many girls and boys were swimming.’ (I saw them)  
 (Aikhenvald 2004:43, from Floyd 1997:131)

- (5) ancha-p ancha-p-ña-**m** buulla-kta lula-n kada tuta-**m**  
 too.much-GEN too.much-GEN-NOW-**DIR.EV** noise-ACC make-3P each night-**DIR.EV**  
 ‘He really makes too much noise ... every night.’ (I hear it)  
 (Aikhenvald 2004:160, from Floyd 1999)

Other evidence-type-based definitions of the direct-indirect split are found in, for example, Willett (1988), Speas (2004) or Cohen et al. (2010:42). Willett proposes three sub-types of direct evidentials: visual, auditory, and other sensory. Speas argues that ‘[s]entences with direct evidentials convey that the proposition is to be evaluated with respect to sensory data such as seeing or hearing.’ And Cohen et al. (2010:42) state that ‘Direct knowledge refers to any information obtained through sensory devices.’

Evidence-type-based conceptions of evidential contributions are also pervasive in that they form the basis of most people’s definition of what it means to be an evidential. Murray (2010:1) writes that ‘Evidentiality is the encoding of information source, which can be direct (e.g., visual, auditory) or indirect (e.g., based on reports, inference, conjecture).’ Similarly, Davis et al. (2007:3) claim that ‘Uttering *S[ev]* commits the speaker to the existence of a situation in which he receives **ev-type** evidence for [S].’ Lee (2011b:287) writes that evidentiality ‘specifies the source of information conveyed in an utterance ... such as direct observation, inference, or hearsay.’ Faller (2003) even argues that Cuzco Quechua *-sqa*, an element which initially looks evidential-like, should *not* be classified as an evidential precisely because it does not fit into an evidence-type system. Faller argues that unlike evidentials, which in assertions encode the speaker’s type of source of information, *-sqa* does not restrict the evidence source, but only locates the event outside the speaker’s perceptual field at topic time. (Unlike Faller, I would analyze *-sqa* as an evidential; it is simply one which encodes the evidence location dimension.)

### 3 Proposals to deconstruct evidential contributions

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<sup>3</sup> This last statement suggests an opening for an evidence strength dimension, and we will see in section 4.4 below that Aikhenvald gives data compatible with an evidence strength analysis for Quechua. However, as in the quote here, Aikhenvald views these uses as ‘extensions’ of the core meaning of the evidential.

Although evidence type clearly plays a role in distinguishing evidential contributions, it is not the only dimension of meaning which evidential contributions convey. As indicated above, I propose that evidential contributions can encode up to three distinct dimensions, repeated in (6):

- (6)
1. Evidence **type**: whether the evidence is visual, sensory, reported, etc.
  2. Evidence **location**: whether the speaker witnessed the event itself or merely some of its results
  3. Evidence **strength**: the trustworthiness/reliability of the evidence

As mentioned above, the evidence type dimension is the typical first-pass idea of what an evidential does. Reportatives are good examples of the evidence-type dimension: they encode that the speaker has (only) reported evidence for the proposition. The second dimension, evidence location, is based on ideas found in Nikolaeva (1999), Faller (2003), Chung (2005, 2012), and Speas (2008, 2010). This is the idea that some evidentials care about the location of the speaker at the time of the event itself, and specifically whether the speaker was in a position to witness the event itself, or only some results (or precursors) of the event.<sup>4</sup> For example, Faller (2003:29) writes about Cuzco Quechua *-sqa* that it ‘specifies the spatial location of [the event] *e* in relation to the speaker such that *e* is outside the speaker’s perceptual field. No reference is made to the type of source of information by which the speaker acquired the proposition *p* describing *e*.’ As noted above, this leads Faller to conclude that *-sqa* is not an evidential. However, we will see several evidentials below which encode information about evidence location.

The third dimension, evidence strength, encodes the speaker’s judgment about the trustworthiness or reliability of the evidence, and correlates closely (but not completely) with the notion of speaker certainty.

We can now speculate that evidentials might encode either direct or indirect values on each of the three dimensions. This leads us to predict at least six types of specification, as outlined in (7). Below, we will see examples of evidentials from various languages which will fill in all the cells.<sup>5</sup>

(7)

	DIRECT	INDIRECT
EVIDENCE TYPE	e.g., sensory	e.g., inference, report
EVIDENCE LOCATION	event itself	results/precursors
EVIDENCE STRENGTH	best	not best

<sup>4</sup> ‘Results’ should be understood broadly as covering any observable evidence of the event which is not the event itself.

<sup>5</sup> Martina Faller asks (p.c.) whether it is appropriate to use the labels ‘direct’ and ‘indirect’ for the evidence strength dimension. It is not a crucial part of my proposal that these terms be used. I am keeping the labels for now, because I will argue below that some evidentials which are called ‘direct’ in the literature, in fact only encode a high level of evidence strength. My point is therefore that evidentials which have been called ‘direct’ are not a homogeneous class.

I am far from the first to have proposed that evidential contributions are non-monolithic. For example, Willett (this volume) observes that ‘Several cross-linguistic studies (e.g. Palmer, 1986; Willett, 1988; Bybee, Perkins and Pagluica, 1994 have shown that the speaker’s judgement as to the epistemic value of the proposition involves both the *reliability* and the *source* of his or her knowledge about the situation described’ (emphasis added). Willett goes on to discuss a set of modal particles in Southeastern Tepehuan which encode either evidence reliability or evidence source. In his discussion, however, Willett adheres to a traditional evidence-type conception of evidentials; he calls the elements which encode reliability ‘evaluative particles’, and the set which encode evidence source ‘evidential particles’. One of my main proposals here will be that many evidentials encode information about both these dimensions simultaneously.<sup>6</sup>

A proposal which bears distinct similarity to mine is that of de Haan (2001). De Haan argues that the commonly-assumed two-way split between ‘direct’ vs. ‘indirect’ evidence (actions personally witnessed by the speaker, vs. actions not personally witnessed) is insufficient. In particular, de Haan argues that the traditional direct/indirect division cannot account for inferential evidentials across languages. The inferential

has certain elements in common with both sensory evidentials (such as visual evidentiality) and with evidentials denoting secondhand information (the so-called quotative evidential) ... Inferentials can consist of both direct and indirect evidence as these are commonly defined and an additional parameter is needed to analyze this evidential category (de Haan 2001:193-194).

On the basis of his investigation of inferential evidentials, De Haan proposes that there are two binary features involved in evidential contributions: direct/indirect, and firsthand/secondhand. The direct/indirect split corresponds to what I am calling ‘evidence type’; it distinguishes visual, auditory and other sensory evidence from quotative evidence. The firsthand/secondhand split corresponds roughly to what I am calling ‘evidence location’: ‘With firsthand knowledge, the speaker has sensory information about the event; with secondhand information, only evidence *after the fact* and hearsay’ (de Haan 2001:195; emphasis added). Inferential evidentials straddle the two dimensions; inferential evidence may be direct (in that it involves sensory witness), but secondhand (in that it involves only evidence after the fact). De Haan argues that languages make different choices about whether to classify inferential evidentials with direct evidentials, or with secondhand ones.

The differences between de Haan’s proposal and mine are twofold. First, de Haan uses only two dimensions, whereas I argue for three. And second, de Haan asserts that ‘the theoretical

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<sup>6</sup> Izvorski (1997:3) makes a similar two-way distinction to Willett, claiming that evidentials encode ‘speaker-oriented qualifications of propositions along two dimensions: (i) in terms of the evidence they are based on, e.g. DIRECT (visual / auditory, etc.) or INDIRECT (report or inference), and (ii) with respect to the speaker’s commitment to their truth ((dis)belief / agnosticism).’ However, Izvorski argues that the two dimensions are treated as coinciding by natural languages, and that the unified meaning of the direct/indirect split is ‘whether or not the evidence justifies the speaker’s belief in a proposition’.

advantage we gain by introducing a second feature would appear to be very slim, since the only category that is affected by adding a second feature is that of evidence based on deduction, the inferential.’ I will attempt to show, however, that many evidentials require reference to more than one dimension, so a multi-dimensional analysis is useful not just cross-linguistically but within the same language, and even within the same morpheme.

A third relevant proposal is made by Waldie (2012). On the basis of several Nuu-chah-nulth (Wakashan) evidentials, Waldie independently argues for a three-way characterization of evidential contributions which is quite similar to mine. First, Waldie proposes a dimension which he calls ‘perspectival status’; this is similar to my ‘evidence strength’ in that it encodes an agent’s certainty level about the proposition. Second is a ‘perceptual grounding’ aspect, which identifies ‘which sense the origo is using in relation to the preadjacent proposition’ (Waldie 2012:5). This is similar, but not identical, to my ‘evidence type’ dimension. The two differ in that my evidence type dimension contrasts visual or sensory restrictions with e.g., reportative or inferential restrictions, while Waldie separates out reportative and inferential restrictions into a separate dimension called ‘manner of support’. I will discuss the differences between Waldie’s proposal and mine in more detail below, once we have seen some relevant data.

#### 4 Where the evidence-type analysis breaks down

In this section I introduce some evidentials which cause problems for a simple evidence-type analysis, but which are capturable in the three-dimensional system I have proposed. The focus will be on evidentials which have some claim to being classified as ‘direct’. The languages looked at are St’át’imcets, Gitksan (Tsimshianic), Nuu-chah-nulth, Cuzco and Wanka Quechua, English, Nivacle (Matacoan-Mataguanan), Cheyenne (Algonquian), Korean, and Tibetan.

##### 4.1 St’át’imcets

In this section I examine one St’át’imcets evidential, *lákʷ7a* (previously discussed in Matthewson 2011, 2012, in the context of arguing for a modal analysis). *Lákʷ7a* poses problems for an evidence-type-based definition of the direct/indirect split. It acts like an evidence-type *direct* evidential, in that it requires sensory evidence for the proposition (thus, pure reasoning is not allowed). However, *lákʷ7a* also acts like something we would intuitively want to call an *indirect* evidential, because it disallows visual evidence of the eventuality itself (as opposed to the event’s results).

The basic behaviour of *lákʷ7a* is illustrated in (8-11). We see that *lákʷ7a* is felicitous in cases where the speaker has any kind of non-visual, sensory evidence for the proposition.<sup>7,8</sup>

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<sup>7</sup> St’át’imcets data are presented in the orthography used by community members; see van Eijk and Williams (1981). The symbol 7 represents a glottal stop. Abbreviations not covered by the Leipzig Glossing Rules are as follows: DEIC: deictic, DIR: directive transitivizer, EXIS: assertion of existence, MID: middle intransitive, NOM: nominalizer, SBJN: subjunctive, STAT: stative. The symbol - marks an affix boundary and = marks a clitic boundary.

(8) *Hearing:*

wa7 **lákʷ7a** ku=ts7ás=a  
be **lákʷ7a** DET=come=EXIS  
'Someone's coming.' (The speaker can hear them, but not see them.) (Davis 2012)

(9) *Taste:*

wa7 **lákʷ7a** ku=sq'áq'pa7 lts7a ti=ts'í7=a  
be **lákʷ7a** DET=dirt here DET=meat=EXIS  
'This meat tastes as if there's dirt in it.' (said while trying to eat it)

(10) *Smell:*

tsem-s=kán **lákʷ7a** ti=ts'í7=a  
burn-CAUS=1SG.SBJ **lákʷ7a** DET=meat=EXIS  
'I burnt the meat.' (Context: you smell it)

(11) *Touch:*

*Context: You are blindfolded. I ask you to tell me which of three cups a stone is in. You feel around and feel the stone and you say:*

nilh **lákʷ7a** lts7a  
FOC **lákʷ7a** here  
'It's in this one.'

As shown in (12-13), *lákʷ7a* disallows the speaker having had visual evidence of the eventuality itself. (12) is bad if the speaker has *seen* manifestations of the sickness, but acceptable if s/he has merely *heard* symptoms. (13) shows the speaker's judgment that visual witness of the event is ruled out.

(12) áolsem=lhkacw **lákʷ7a**  
sick=2SG.SBJ **lákʷ7a**  
'You must be sick.'

Rejected if the speaker sees someone is shivering and sweaty.  
Accepted if the speaker hears them coughing.

(13) tsicw **lákʷ7a** kwam s=Laura i=ts'wán=a láku7 xétsem=a  
go **lákʷ7a** take(MID) NOM=Laura DET.PL=wind.dried.salmon=EXIS DEIC box=EXIS

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<sup>8</sup> Most of the data presented here are found in Matthewson (2011). In that paper I propose that evidential contributions encode two distinct dimensions of meaning. In the current paper I have added the third, evidence strength dimension of meaning.



‘Laura took some wind-dried salmon from the box.’

Consultant’s comment: “Okay if she didn’t see her doing it.”

*Lákw7a* does require the speaker to have had some sensory evidence for the proposition advanced. (14) supports this by showing that *lákw7a* is not compatible with the speaker only having had pure reasoning to support his/her claim.

- (14) *Context: I show you a coin and three small cups. I put the coin under one of the cups and then I mix them around and around very fast so you can’t see any more which one it’s under. I ask you to guess. You guess one cup, and I lift it up and show you that it’s not under there. You guess a second one, the same. You point at the last cup and say:*

# láti7 **lákw7a** lh=as legw  
there **lákw7a** COMP=3SBJN hide  
‘It must be under that one.’

Sensory evidence can either involve perception of the event itself, as in (8-11), or of the *results* of the eventuality. (15) shows non-visual sensory evidence of the results of the event.

- (15) *Feeling the results:*

*Context: An object was under water. The speaker didn’t witness how long it was under the water, but feels how dry it is after it is taken out.*

cw7áy=t’u7 **lákw7a** k=s=cin’s kw=s=wá7  
NEG=just **lákw7a** DET=NOM=long.time=3POSS DET=NOM=be  
l=ti=qú7=a – wá7=t’u7 wa7 k’ac  
in=DET=water=EXIS IPFV=just IPFV dry  
‘It couldn’t have been under the water long – it’s dry.’

Finally, although visual evidence of the event itself is ruled out, as shown in (12-13), visual evidence of the *results* of the event is fine, as shown in (16).

- (16) *Seeing the results:*

*Context: You had five pieces of ts’wan [wind-dried salmon] left when you checked yesterday. Today, you go to get some ts’wan to make soup and you notice they are all gone. You are not sure who took them, but you see some ts’wan skins in John’s room.*

ts’áqw-an’-as **lákw7a** i=ts’wán=a k=John  
eat-DIR-3ERG **lákw7a** DET.PL=ts’wan=EXIS DET=John  
‘Looks like John might have eaten the ts’wan.’

Similarly in (17), although visual evidence is involved, it is not visual evidence of the event itself (John’s being home), but merely of a consequence of his being home, namely that his lights are

on.

(17) *Context: A is driving past John's house with B and sees John's lights are on. A says:*

wá7 **lák7a** l=ta=tsítcw-s=a s=John  
be **lák7a** in=DET=house-3SG.POSS=EXIS NOM=John  
'John must be home.'

Consultant's comment: "Okay, 'cause you don't really see him."

The distinction between visual witness of the event itself (which is disallowed) and visual witness of its results (which is allowed), is confirmed by the infelicity of (18-19). As argued by Matthewson (2011), (18-19) involve visual witness of the result state encoded by the predicate. They therefore contrast with (16-17), which involved visual witness of something which merely contextually counts as a result of the event.

(18) *Context: You are waiting for Billy to arrive. You suddenly see that he's here.*

# t'iq **lák7a** k=Billy  
arrive **lák7a** DET=Billy  
'Billy must've arrived.'

(19) *Context: You needed a door put in. You come home and you see the door is in.*

# lan **lák7a** es-máys ti=séps=a  
already **lák7a** STAT-made DET=door=EXIS  
'The door must've been made.'

*Lák7a's* evidence source requirements are summarized in (20).<sup>9</sup>

- (20) i. *Lák7a* requires sensory evidence that the proposition is true.  
ii. *Lák7a* disallows visual evidence of the eventuality itself.

If we only consider evidence type as a possible way to formulate evidential contributions, (20i) looks like a directness requirement, but (20ii) looks like an indirectness requirement. However, we can already see that evidence location is important for *lák7a*: the speaker must have sensory evidence that the proposition is true (which could include either directly witnessing the event, or

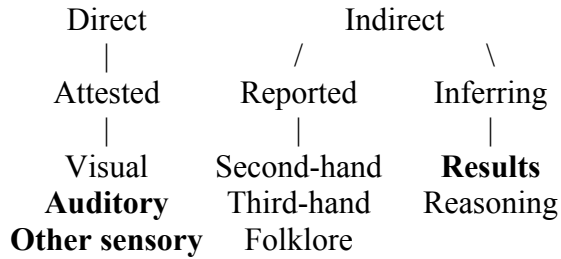
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<sup>9</sup> Martina Faller (p.c.) points out that if the language also possessed an evidential which was direct on the evidence location dimension, then the infelicity of *lák7a* when the speaker has visually perceived the event (20ii) might be only a cancelable implicature, resulting from competition between those two elements. The evidential contribution of *lák7a* would then not have to specify anything about location. However, St'át'imcets does not possess any such contrasting evidential, so the non-visual-witness restriction must be hardwired into *lák7a's* denotation.

merely its results), but disallows visual witness of the event itself.

The problem posed by *lákʷ7a* is further brought home by comparing it to Willett’s (1988) cross-linguistic classification of types of evidential contribution, given in (21). *Lákʷ7a* encodes the highlighted meanings; we see that it cross-cuts Willett’s direct/indirect division.

(21) Types of evidence (Willett 1988:57)



Within the three-dimensional system, however, *lákʷ7a* poses no contradiction. It encodes a direct value for evidence type (requiring sensory evidence), and an indirect value for evidence location (since it requires non-overlap between the speaker’s visual field and the event). See Matthewson (2011) for a more formal statement of the analysis of *lákʷ7a*.

#### 4.2 Gitksan

Similar problems for a pure evidence-type definition of evidential contributions arise in Gitksan (Tsimshianic), as discussed by Peterson (2010). Peterson shows that the Gitksan evidential *’nakw* encodes ‘that a speaker has sensory evidence for an event that they have not witnessed directly’ (Peterson 2010:244). We thus see again an apparent conflict between a *directness* requirement (having sensory evidence) and an *indirectness* requirement (not witnessed directly). Examples of felicitous uses of *’nakw* are given in (22-23).

(22) *Context: You and a friend are going fishing. You notice blood on the rocks ahead of you where your friend is walking.*

’nagwimi	k’otshl	’o’nin	
<b>’nakw</b> =mi	k’ots=hl	’o’n-n	
EVID=2SG	cut=CND	hand-2SG	
‘You must’ve cut your hand.’			(Peterson 2010:74)

(23) *Context: You get to Bob’s place and you can smell or see smoke.*

’nakwhl	sehons	Bob	
<b>’nakw</b> =hl	se-hon-(t)=s	Bob	
EVID=CND	CAUS-fish-3=CND	Bob	
‘Bob must be smoking fish.’ / ‘Looks like Bob is smoking fish.’			(Peterson 2010:245)

Just like St’át’imcets *lákʷ7a*, Gitksan *’nakw* cross-cuts Willett’s classification of evidential

contributions. *'Nakw* encodes both a direct value for evidence type (sensory) and an indirect value for evidence location (non-overlap between the event itself and the speaker's visual field; cf. Faller 2003, Chung 2005, 2012).

### 4.3 Nuu-chah-nulth

Problems for a monolithic approach to evidential contributions are also posed by Nuu-chah-nulth (Wakashan), as discussed by Waldie (2012). For example, Waldie argues that the Nuu-chah-nulth evidential *-k'uk* encodes 'visual inference'. It requires the speaker (or more generally, the origo<sup>10</sup>) to have witnessed something visually, but they may not have witnessed the event itself: contingent inference 'requires that the concluded proposition not be in the origo's perspective' (Waldie 2012:143). An example of *-k'uk* is given in (24). The speaker here has seen some evidence which allows her to infer that it is hot outside.

- (24) *Scenario: Kay was inside where the air conditioning kept the temperature at 21°C. She looked outside and saw it was sunny and people were wearing shorts and t-shirts, so she said this to Bill.*

λ'upaak'uk

λ'up-(y)a-**k'uk**

hot-CONT-VIS.EVID

'It looks hot out.'

(Waldie 2012:78)

On the basis of *-k'uk* as well as several other Nuu-chah-nulth evidentials, Waldie argues for a three-way characterization of evidential contributions which is partially similar to mine. Waldie's system is given in (25).

- (25) Three separate aspects to evidentiality (Waldie 2012)

- i. perceptual grounding (which sense the origo used)
- ii. manner of support (witness, inference, report)
- iii. perspectival status (origo certainty)

Waldie's 'perspectival status' corresponds to my 'evidence strength'. Waldie's 'perceptual grounding' is similar, but not identical, to my 'evidence type' dimension. The two differ in that the evidence type dimension contrasts visual or sensory requirements with e.g., reportative or inferential restrictions, while Waldie separates out reportative and inferential restrictions into a separate dimension called 'manner of support'. Waldie's motivation for separating perceptual grounding and manner of support is based on Nuu-chah-nulth-internal facts. Nuu-chah-nulth has one evidential, *na?aat*, which strictly requires auditory evidence, and imposes no other restrictions. As such, it includes auditory reports (but only auditory ones; written reports do not suffice). *na?aat* therefore encodes *only* the sense used (the perceptual grounding). It contrasts

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<sup>10</sup> Following Garrett (2001), Waldie uses the term 'origo': 'the person from whose perspective a given evidential is evaluated' (Garrett 2001:4). Here I usually simply talk about the speaker, since origo shifts are not relevant to the current discussion.

with other evidentials which encode a more traditional reportative semantics. In St’át’imcets, on the other hand, there is no evidence for a separation between perceptual grounding and manner of support, so I group them all together under ‘evidence type’. The combination of Waldie’s data and mine may suggest that eventually we need a four-way system, but I leave this for future research.

A final difference between the two proposals is that Waldie does not distinguish between evidence type and evidence location; this is presumably because unlike in St’át’imcets or Gitksan, there are no Nuuchahnulth evidentials which reveal the need for such a distinction. The auditory evidential *naʔaat* is relevant again here. As mentioned above, *naʔaat* is used whether the origo directly perceived the event itself, as in (26), or only by means of an intermediary (i.e., some results of the event), as in (27). It therefore does not care about evidence location.

- (26) *Scenario: Kay and Bill were walking past Ken's house, and they could hear him yelling, but they couldn't see him. Kay said this to Bill.*

ʕaaqʕaaqaʔiʃ	naʔaat	Ken	
ʕa:q-(y)a[RLL]-ʔiʃ	<b>naʔa·t</b>	Ken	
yell.at-REP-3.IND	<b>AUD.EVID</b>	Ken	
‘Ken is hollering.’			(Waldie 2012:233)

- (27) *Scenario: The police arrested someone, but the newspapers didn't say who it was. Olive told Kay that it was Ken. Later, Kay said this to Bill.*

ʔuʔitwaʔiʃ	Ken	naʔaat	maʔpiʔ
ʔuʔ-(m)it-wa-ʔiʃ	Ken	<b>naʔa·t</b>	maʔ-piʔ
FOC-PAST-3.QUOT	Ken	<b>AUD.EVID</b>	tied-MOM.in.the.house
‘It is said it was Ken who ended up in jail.’			(Waldie 2012:234)

This accords with what I have proposed, namely that an evidential may encode information on one dimension (here, evidence type/perceptual grounding), while neutralizing another dimension (here, evidence location). The difference between St’át’imcets and Gitksan, on the one hand, and Nuuchahnulth on the other is that the former languages also have evidentials which *do* encode information about evidence location (e.g., *lákwa* or *’nakw*).

Waldie’s proposal and mine may actually be even more similar than they appear. In particular, Waldie’s manner of support category may be more similar to my evidence location than it initially seems. Although the only distinctions Waldie argues for under manner of support are report vs. inference (making it look like it is subsumed under my evidence type category, along with perceptual grounding), his prose suggests that conceptually, manner of support is similar to what I am calling evidence location. For example, he writes that manner of support ‘is needed to indicate that for an origo a perceived situation and a proposition are linked in some way, whether directly (by witnessing) or indirectly (by contingent inference).’ Further research is required into the connections between Waldie’s system and mine. In any case, it is clear that Nuuchahnulth, like St’át’imcets and Gitksan, has evidentials which defy a simple evidence-type direct-indirect

split.

#### 4.4 Wanka and Cuzco Quechua

I now turn to Quechua languages, focusing on the evidential which in these languages has been called ‘direct’. I will attempt to determine whether this evidential encodes evidence-type directness, evidence-location directness, or evidence-strength directness.

There is evidence that the relevant Quechua morpheme encodes evidence strength information. For example, Aikhenvald (2004:161) claims that ‘The direct evidential expresses the speaker’s firm belief that what they are talking about is true.’ One of Aikhenvald’s examples is given in (28). She writes (2004:161) that ‘[b]y saying [28] the speaker does not mean to say that he has seen his parents fail to do a particular job. This example implies that the speaker is quite sure that his parents are unable to do it.’

- (28) papaa-kaa-si                    mana-**m**                    atipa-n-cu                    lula-y-ta  
father-DEF-also                    not-**DIR.EV**                    be.able-3P-NEG                    do-IMP-ACC  
‘Our parents can’t do it either.’                    (Wanka Quechua; Aikhenvald 2004:162)

Aikhenvald also observes (2004:162) that the Quechua direct evidential ‘is also used when talking about generally known facts. [29] is something every Peruvian knows.’

- (29) yunka-pi-**n**                    k’usillu-kuna-qa                    ka-n  
rainforest-LOC-**DIR.EV** monkey-PL-TOP                    be-3P  
‘In the rainforest, there are monkeys.’                    (Cuzco Quechua; Aikhenvald 2004:162)

For Cuzco Quechua, Faller (2002) argues that the ‘best possible grounds’ evidential =*mi* requires that ‘the speaker has the best possible source of information required for the type of event described’ (Faller 2002:18). The restriction imposed by =*mi* thus appears to be at least partly a restriction on the *quality* of evidence the speaker has, rather on the *type*. This is supported by the fact that =*mi* is licensed by any of the following three kinds of evidence (Faller 2010):

- (30) i. Direct evidence, in cases where the described event is directly observable or otherwise directly accessible  
ii. The ‘next best thing’, in cases where the event is not observable (this includes reliable reports)  
iii. Undisputed common and learnt knowledge

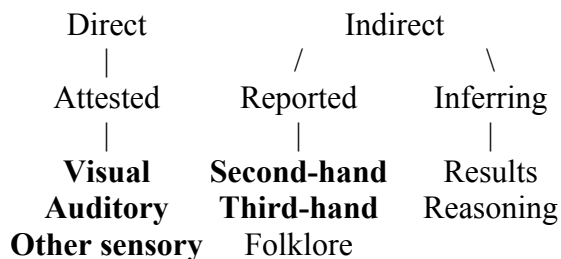
(31) illustrates the use of =*mi* when the evidence is the ‘next best thing’, and (32a,b) show cases of undisputed common and learnt knowledge. (‘Ev’ indicates the source of the speaker’s information.)

- (31) paqarin                    Inés                    Qusuq-ta=**n**                    ri-nqa  
tomorrow                    Inés                    Cuzco-ACC=**BPG**                    go-3FUT  
‘Inés will go to Cuzco tomorrow.’  
Ev: Inés told the speaker that she will go to Cuzco tomorrow                    (Faller 2011:664)

- (32) a. 1945 wata-pi=**n** segunda guerra mundial=**qa** tuku-rqa-n.  
 1945 year-LOC=**BPG** second war world=**TOP** end-PST-3  
 ‘World War II ended in 1945.’  
 Ev: learnt in school (Faller 2010; cf. also Aikhenvald 2004:162)
- b. yunka-pi=**n** k’usillu-kuna-qa ka-n  
 rainforest-LOC=**BPG** monkey-PL-**TOP** be-3  
 ‘In the rainforest, there are monkeys.’  
 Ev: speaker knows it as part of Quechua culture (Faller 2002:133)

Data such as (31-32) rule out a pure evidence-type analysis of =*mi*, because they show that direct witness of the relevant events is not required; reports can count as good enough in certain circumstances. Like St’át’imcets *lákw7a* or Gitksan *’nakw*, =*mi* does not fit with Willett’s classification; this is shown in (33).

(33) Types of evidence (Willett 1988:57) vs. Quechua =*mi*:



However, it could still be the case that evidence type, *as well as* evidence strength, plays a role with =*mi*. In support of this, Martina Faller observes (p.c.) that having very reliable evidence is not always sufficient to license =*mi*. For example, suppose we are having a meeting and Mary’s partner calls in to say that she is sick and cannot attend. Even if I completely trust this source, I could not use =*mi* to say that Mary is sick; I would have to use the reportative. Similarly, suppose that I call my parents and they say that it has been raining: I could not use =*mi* to report that it has been raining where my parents live. The difference between these cases, where =*mi* is not licensed, and (31), where it is, is that it is in principle possible to directly witness Mary’s sickness, or the rain. Therefore, direct witness counts as the best possible evidence for these events, and =*mi* is disallowed if the speaker lacks that best evidence. In (31), in contrast, Inés’s future plans are not directly observable. In this case (or with other non-observable events, such as another’s person’s emotions), the ‘next best thing’ is allowed, such as a reliable report (see Faller 2002, 2011 for further discussion and data).

It is clear that what counts as ‘good enough’ evidence to license =*mi* is dependent upon the type of event being described. However, the generalization about Cuzco Quechua =*mi* still seems to be – exactly as Faller describes it – that the speaker must have the *best possible* evidence for the claim being made. Usually, the best possible evidence will come from having personally witnessed the event. If that is not possible, other types of evidence are allowed, including reliable reports. Notice that the restriction is still about evidence strength, not type of evidence. If we

analyzed it as involving an evidence *type* restriction, we would need a complicated and disjunctive definition of what counts as the right type of evidence.

In light of these facts, I propose that Quechua *=mi* encodes the highest level of evidence strength. Note, by the way, that this shows that ‘evidence strength’ is a better characterization of this dimension than ‘speaker certainty’. In the cases mentioned above where *=mi* is not licensed (where Mary’s partner tells me she’s sick, or my parents tell me it’s raining), the speaker may be highly certain of the proposition they are advancing. However, they did not receive the best possible type of evidence for those events, so *=mi* is disallowed. Note also that this analysis of Quechua does not require us to have a basic meaning (an evidence type meaning), plus ‘extensions’, as in Aikhenvald’s (2004) conception of Quechua. We simply have one unified meaning; the variation comes from the fact that what counts as the best possible evidence varies according to what type of event one is reporting.

#### 4.5 English<sup>11</sup>

According to von Fintel and Gillies (2010), English *must* makes an evidential contribution. They argue that *must*  $\varphi$  is infelicitous if the speaker’s evidence for  $\varphi$  is ‘direct’ (see also Kratzer 2012 for the claim that all epistemic modals contain indirect evidential meaning). They thus claim that *must*  $\varphi$  is felicitous only if the speaker’s evidence for  $\varphi$  is indirect, and true if the direct evidence entails  $\varphi$ .<sup>12</sup>

Data illustrating the evidential restriction on *must* are given in (34-36). In (34), the speaker has visual evidence of the rain itself; this counts as direct evidence, so *must* is infelicitous.

- (34) [Seeing the pouring rain.]  
?? It must be raining. (von Fintel and Gillies 2010:353)

In (35), the speaker has only inferential evidence for the location of the ball. Even though this evidence may be very strong, strong enough to lead to full certainty on the part of the speaker, *must* is felicitous due to the indirectness of the evidence.

- (35) *Chris has lost her ball, but she knows with full certainty that it is in either Box A or B or C. She says:*

The ball is in A or B or C. It is not in A ... It is not in B. So, it must be in C.

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<sup>11</sup> See Matthewson (in press) for related discussion of English *must* and its evidential contribution.

<sup>12</sup> Von Fintel and Gillies argue, contrary to the analysis which has been fairly standard since Kratzer (1981), that *must*  $\varphi$  is not semantically weaker than  $\varphi$ , but on the contrary entails it. On this analysis, the apparent weakness of a *must*-assertion vis-à-vis its plain counterpart is due to the indirect evidential signal. The claim that *must* is strong is largely independent of the evidential question: *must* could have its standard weak semantics and still contribute an indirect evidence requirement. I therefore set the weakness issue aside here, concentrating instead on the evidential restriction of *must*.



(von Fintel and Gillies 2010:362)

And in (36), the speaker again may be very certain about the event described, but has only indirect evidence, so *must* is licensed.

- (36) [Seeing wet raingear and knowing rain is the only possible cause]  
It must be raining. (von Fintel and Gillies 2010:353)

On the basis of data such as these, von Fintel and Gillies propose (2010:353) that *must* ‘signals that the speaker has reached her conclusion via an indirect inference.’ The question here is what exactly is meant by ‘indirect’ – is this an evidence type, evidence location, or evidence strength requirement? I will argue that it is an evidence strength requirement, and that English *must* therefore encodes the opposite end of the same dimension as Quechua =*mi* does.

In order to isolate the nature of the indirectness requirement of *must*, we need to look at exactly which sorts of situations render *must* infelicitous. As already shown in (34), visual witness of the event itself counts as direct and renders *must* infelicitous. (37-40) show that any kind of sensory evidence of the event itself counts as direct evidence, and therefore disallows *must*.

- (37) *Context: The speaker hears people playing Tchaikovsky.*

# They must be playing Tchaikovksy.

- (38) *Context: The speaker smells a good smell.*

# Something must smell good.

- (39) *Context: The speaker tastes something good.*

# Something must taste good.

- (40) *Context: The speaker feels that a coat is wet.*

# The coat must be wet.

Second, *trustworthy reports that  $\phi$*  count as direct evidence for the purposes of *must* (and are therefore disallowed). This is mentioned by von Fintel and Gillies (2010:354), and illustrated in (41).

- (41) *Context: Belinda, Bob’s wife, told the speaker that Bob is home. Belinda is a very reliable source. The speaker now tells someone else:*

# Bob must be home.

The infelicity of (41) indicates that the proposition that Bob is home counts as ‘direct’ evidence, even though the speaker only obtained that information via a trustworthy report.

Finally, general knowledge also counts as direct evidence, and is therefore ruled out as an evidence source for *must*, as shown in (42).

(42) *Context: It is general knowledge that World War II ended in 1945.*

# World War II must have ended in 1945.

The claim that general knowledge propositions count as direct evidence is also supported by (36), repeated here as (43):

(43) [Seeing wet raingear and knowing rain is the only possible cause]  
It must be raining. (von Fintel and Gillies 2010:353)

When discussing (43), von Fintel and Gillies write that ‘Billy’s *direct information* is that the people coming inside have wet umbrellas, slickers, and galoshes *and that rain is the only cause*’ (von Fintel and Gillies 2010:372; emphasis added). The proposition that if raingear is wet, then rain is the only cause is a general knowledge proposition – not one which is directly supported by witnessed evidence in this discourse situation. Nevertheless, it must count as direct evidence in order for von Fintel and Gillies’ analysis to work: only by counting the proposition ‘if raingear is wet, then rain is the only cause’ as part of the speaker’s direct evidence do we derive the fact that (43) entails that it is raining, and thus correctly predict that (43) is true in the context given.<sup>13,14</sup>

In summary, then, what counts as ‘direct’ evidence for *must* includes the three types of information listed in (44).

- (44) i. information obtained by **sensory observation** in the utterance situation  
ii. **trustworthy reports**  
iii. **general knowledge**

These three types of information make little sense from the point of view of a pure evidence-type understanding of evidential contributions, since three different types of evidence count as direct. However, they make perfect sense according to an evidence-strength understanding. What *must* cares about is the trustworthiness or reliability of the speaker’s evidence.

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<sup>13</sup> The argument regarding (43) relies on von Fintel and Gillies’ claim that *must*  $\varphi$  entails  $\varphi$ , something which, as noted in footnote 11, is independent of the evidential issue. For those not convinced of the strength of *must*, (42) is a better example for showing that general knowledge propositions count as ‘direct’ for the purposes of *must*.

<sup>14</sup> One might conclude from this discussion that it is misguided to use the term ‘(in)direct’ when discussing the evidence requirements of English *must*, since general knowledge propositions do not fall under what the literature typically considers as direct. As pointed out above (see footnote 5), retaining the term ‘direct’ is not crucial for my proposal; I preserve it in order to keep continuity with prior literature. This is done for English *must* just like for Cuzco Quechua in the preceding section.

Notice now that the evidence disallowed by *must* parallels very closely the kinds of evidence allowed by Quechua *=mi*, as discussed above. *=mi* and *must* apply the trustworthiness distinction in inverse ways: *=mi* *requires* the strongest possible evidence for the prejacent proposition, while *must* *disallows* the strongest possible evidence. In other words, while *=mi* is an evidence-strength direct evidential, *must* is an evidence-strength indirect evidential. This provides further support for the claim that evidentials can encode evidence strength as their primary distinction.

#### 4.6 Nivacle

Gutiérrez (2010) and Gutiérrez and Matthewson (2012) argue that determiners in Nivacle (Matacoan-Mataguayan) encode evidential distinctions. They propose that Nivacle determiners encode whether or not the speaker has had, at some point in the relevant individual’s lifespan, the best type of sensory evidence for the existence of that individual. This means that Nivacle determiners convey both an evidence type restriction (whether the evidence is sensory or not) and an evidence strength restriction (whether it is of the best possible kind or not).

Some data illustrating the evidential contributions of Nivacle determiners are given in (45). In (45a), the speaker has seen his elder sister at some time in the past, so he has had the best type of sensory evidence for her existence, at some point in her lifespan. Consequently, the best-sensory-evidence determiner *xa* is used. In (45b-c), on the other hand, the speaker never had sensory evidence of his sister’s existence, because she was kidnapped by the military before he was born. So even though he firmly believes that his sister existed (due to reliable reports), the not-best-sensory evidence determiner *pa* must be used.

- (45) a. kaʔax      ɫ-xa=beʔla                      ʃʃitaʔ  
          have        F-BEST.SENS.DET=one                elder.sister  
          ‘I have one elder sister.’
- b. kaʔax      ɫan      ɫ-pa=beʔla                      ʃʃitaʔ  
          have        REP      F-NOT.BEST.SENS.DET=one      elder.sister  
          ‘I have one elder sister.’
- c. x-en-tax                      ka      xa-βan                      ɫ-pa=ʃʃitaʔ  
          1S.SG-want-IPFV      SUB      1S.SG-see/find      F-NOT.BEST.SENS.DET=elder.sister  
          ‘I wanted to find my sister.’    (Gutiérrez and Mathewson 2012)

Importantly, determiner choice in Nivacle cannot be analyzed as relying solely on evidence type. This is because having had sensory evidence of the existence of the relevant individual is not sufficient to license the best-sensory-evidence determiners. Rather, the speaker must have had the *best possible* type of sensory evidence – which is usually, but crucially not always, visual evidence. For example, in (46), the speaker has auditory evidence that an animal is coming. This is not the best sensory evidence for an animal, so *pa* is used.

- (46) pa=jakisit                                      natʃ  
          NOT.BEST.SENS.DET=animal      come

‘An animal is coming.

(Gutiérrez and Mathewson 2012:71)

However, in cases where non-visual evidence is superior to visual, such as when determining whether a drink is vodka or water, the best-sensory-evidence determiners do not require vision, as shown in (47).

(47) *Context: You are blindfolded. You need to guess what liquid you are being given: “Now I am tasting...”*

k’a-joxi        na=jinoʔot  
1S.SG-drink    BEST.SENS.DET=water  
‘I am drinking water (I can feel it).’

(Gutiérrez and Mathewson 2012:70)

We thus see that the evidential contribution of these determiners involves both evidence type and evidence strength. The Nivacle best-sensory-evidence determiners are similar to St’át’incets *lákw7a* in requiring sensory evidence, but also similar to Quechua =*mi* in requiring the best possible evidence in the situation and for the predicate used. They encode ‘direct’ values on both dimensions.

An interesting point about the Nivacle evidential determiners is that (being determiners) they differ from typical evidentials in not requiring evidence of an *event*, but of an *individual*.<sup>15</sup> It is not obvious what the analogue of the evidence location dimension would be for a determiner evidential. Could there be an evidential determiner system which encoded the distinction between having evidence of the individual themselves, vs. only their ‘results’? While this must be left to future research, it seems that the Nivacle best-sensory-evidence determiners require the speaker to have the best type of sensory evidence of the individual themselves. We can therefore say that the Nivacle best-sensory-evidence determiners encode a ‘direct’ value on all three meaning dimensions.

#### 4.7 Cheyenne

Another potential case of an evidential which is direct on all three dimensions is the Cheyenne (Algonquian) direct evidential, as discussed by Murray (2010). The Cheyenne direct (which is not overtly marked) is characterized by Murray as requiring that the speaker has ‘direct evidence’ for his or her claim, where direct evidence is ‘probably personal experience’ (2010:22-23). An example is given in (48). After having uttered (48a), the speaker cannot utter (48b) using the direct evidential, since in this context, the speaker does not have direct evidence that the snake crawled away; s/he is only inferring it based on the absence of the snake. (48b) would be felicitous if the speaker had seen the snake crawling away.

(48) a. é-s-sáa-hoé-he-Ø                      še’šenovo tse  
          3-PST-NEG-be.at-MOD<sub>A</sub>-DIR        snake  
          ‘The snake was gone.’

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<sup>15</sup> See also Imai (2003), Lecarme (2008) for discussion of evidentiality in nominals.

b.# é-'-eše-ase-vone hne ʔ  
 3-PST-already-away-crawl-**DIR**  
 'It crawled away.'

(Murray 2010:32)

The requirement that the speaker have personal evidence for the described event suggests that the Cheyenne direct imposes both an evidence type requirement (something like sensory evidence), and an evidence location requirement (witnessing the event itself, rather than its results). Interestingly, however, Murray also claims that the direct evidential strengthens the assertion being made. It 'commits the speaker to the truth of the scope proposition' (2010:53), and it carries a certainty implication. Murray therefore translates the direct evidential into English using 'I'm sure', 'I'm certain', or 'I find'. This looks like an evidence-strength directness requirement. The proposal that the Cheyenne direct imposes more than one requirement is reflected in Murray's statement that this evidential indicates that the speaker is '*certain based on personal experience* that the proposition in the evidential's scope is true' (2010:95; emphasis added).

If the Cheyenne direct imposes evidence-type directness as well as evidence-strength directness, it should differ empirically from the Quechua best possible grounds evidential =*mi*, which I argued above encodes only an evidence strength requirement. In particular, we predict that unlike in Quechua, the Cheyenne direct evidential cannot be used for claims based on general knowledge or reliable reports. At least for general knowledge, this prediction seems to be upheld (Sarah Murray, p.c.).

#### 4.8 Korean

The Korean element *-te* has been, and continues to be, the subject of a great deal of discussion in the literature. It has many challenging properties, including its interaction with tense morphemes, restrictions on first-person subjects, and its status as a potential epistemic modal. *-te* is relevant here because its evidential contribution is interestingly complex. In this section I will summarize the generalizations about *-te*'s evidential contribution, and suggest that it encodes information about evidence type and evidence strength, although crucially not evidence location.<sup>16</sup>

First, *-te* is claimed by many authors to have a sensory evidence requirement; this is an evidence-type restriction. For example, Song (this volume) claims that *-te* 'indicates that the speaker has firsthand sensory evidence about the statement. It indicates the information was acquired through the speaker's physical senses.' Song gives the examples in (49); see also Chung (2005, 2007, 2010), J. Lee (2011a,b, 2013), C. Lee (this volume), among many others, for discussion of *-te*'s sensory evidence requirement.

- (49) a. Yephcip-un        nemwu        sikkulep-**te**-la.        (AUDITORY EVIDENCE)  
           neighbor-TOP    too            be:noisy-PAST.SENS.-DECL  
           'The neighbor was too noisy.' (I heard their noise.)

<sup>16</sup> At least not under a simple understanding of this dimension; Chung (2005, 2007, 2012) advances a more sophisticated evidence-location analysis of *-te*. See below for discussion.

- b. Ku hyangswu naymsay-ka cham coh-te-la. (OLFACTORY EVIDENCE)  
 that perfume smell-NOM very be:good-PAST.SENS.-DECL  
 ‘The perfume smelled really nice.’ (I smelled it.) (Song this volume)

However, *-te* also allows non-sensory evidence, in cases where the speaker is using introspection about their own mental or physical internal state. Park (this volume) summarizes as follows: ‘*-te* cannot express an information obtained through inference, hearsay or reasoning, but can express an information obtained through perception or introspection’ (example numbers deleted from quotation). An introspection case is illustrated in (50).

- (50) akka-nun moll-ass-nuntey komkomi sayngkakha-e.po-ni  
 a.while.ago-CONTR not.know-PAST-SUBORD deeply think-try-SUBORD  
 nay sayngkak-i thulli.ess-te-la. (INTROSPECTION)  
 my thought-NOM wrong-TE-DEC  
 ‘I didn’t know that at first. After that I thought deeply. (And then I noticed) I was wrong.’  
 (Park this volume)

Although the types of evidence which *-te* allows are non-uniform (sensory plus introspection), it does seem as if the suffix encodes evidence type information. What about evidence location? *-te* does not encode anything about this dimension: it allows both evidence of the event itself, or of its results (or precursors).<sup>17</sup> (The choice between evidence of the event itself vs. its results or precursors is mandated by the tense *-te* co-occurs with; see Chung 2010:934, J. Lee 2011a,b, C. Lee this volume for discussion.) The contrast between evidence of the event itself vs. its results is illustrated in (51).

- (51) a. *Context: Yesterday, the speaker was looking outside through a window. Now, he says:*

ecey pi-ka o-Ø-te-la  
 yesterday rain-NOM fall-PRES-TE-DECL  
 ‘[I saw that] it was raining yesterday.’

- b. *Context: Yesterday morning, the speaker saw that the ground was wet. Now, he says:*

kucekkey pi-ka o-ass-te-la  
 the.day.before.yesterday rain-NOM fall-PAST-TE-DECL  
 ‘[I inferred that] it rained the day before yesterday.’ (J. Lee 2011b:287)

This straddling of (one sense of) the direct-indirect divide has led some researchers to claim that *-te* is not an evidential. For example, Chung (2010:934) argues that ‘*-te* itself cannot be an evidential marker since an evidential system is intended to distinguish direct and indirect evidentiality, and thus it is unlikely that both direct and indirect evidential meanings would be expressed by the same morpheme.’ In light of the three-dimensional approach advocated here,

<sup>17</sup> *-te* is similar in this respect to the Nuu-chah-nulth auditory evidential *naʔaat*; see discussion of (26-27) above.

we do not have to conclude that *-te* is not an evidential if it allows both direct and indirect witness on the evidence location dimension. As long as it encodes information about at least one of the three dimensions, it is an evidential.<sup>18</sup>

J. Lee's (2011a,b) analysis, while very different from that of Chung in some respects, shares with Chung's the insight that it is the tense, not *-te* itself, which places the speaker in a position either to have witnessed the event itself, or not. J. Lee proposes that *-te* is a necessity modal, with a modal base based on sensory observation. In J. Lee (this volume), she argues that all sentences containing *-te* are weakened compared to plain assertions, just as we would typically expect from a modal (although see von Stechow and Gillies 2010 for the claim that necessity modal statements need not be weaker than plain assertions). I will return to this in section 5 below. In spite of *-te* encoding a direct value on the evidence type dimension, and in spite of it being felicitous in cases where the speaker witnessed the event itself (as for example in (51a), which would be bad in English with the modal *must*), it is at least possible to analyze *-te* as an epistemic modal.

As a final point about *-te*, it should be noted that even its evidence-type contribution is not so simple. For example, consider the data in (52-53). (52) seems to involve neither sensory observation, nor introspection (unless 'introspection' includes all kinds of inference, which does not appear to be what Park (this volume) intends by the term).

(52) *Context: The exam week was over, and many students left campus.*

Tosekwan-I coyongha-kyess-**te**-la  
 library-NOM quiet-FUT-**TE**-DECL  
 '[I inferred that] the library would be quiet.' (J. Lee 2011b:294)

In (53), we have a generic statement with *-te*; this can be uttered after looking at one instance of mammals laying eggs, or merely after consulting an encyclopedia. No sensory witness of the event occurs in the latter (Chungmin Lee, p.c.).

(53) ces-meki-tongmwul-to al-ul nah-**te**-ra  
 milk-sucking-animal-even egg-ACC lay-**TE**-DEC  
 'Even mammals lay eggs [I saw/read].' (C. Lee, this volume)

Examples such as (52-53) cast doubt on the 'sensory evidence/introspection' analysis of *-te*'s evidence-type contribution, and (53) looks very much like a 'trustworthiness' case, since encyclopedias are usually reliable. This might suggest that *-te* involves an evidence-strength component, but further research is required.

#### 4.9 Tibetan

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<sup>18</sup> Chung (2005, 2007) actually gives a more sophisticated version of an evidence-location analysis of *-te*. She argues that *-te* requires that some evidence of the event was within the speaker's perceptual field at some past time. The evidence of the event may consist of the event's precursors, the event itself, or the event's results, depending on the tense.

Finally, we turn to Tibetan. Tibetan has a direct evidential *'dug*, which according to Garrett (2001) ‘indicates that an assertion is based on perceptual evidence: normally, direct is used when the origo has seen a situation, although other sensory modalities also qualify as direct’ (2001:5). Thus, ‘[t]o say *Tashi left* with direct is to say that you saw Tashi leave, you heard him leave, or that you have some other kind of direct perceptual evidence’ (Garrett 2001:52). This looks like an evidence-type directness requirement (sensory), plus an evidence-location directness requirement (witness of the event itself rather than its results).

There is further evidence that *'dug* is not a pure evidence-strength evidential. Recall that Quechua =*mi*, which I have argued encodes evidence-strength directness, allows reports of other people’s internal states, as long as the speaker’s evidence comes from the most reliable source (the person experiencing the state). This is however not possible in Tibetan, as shown in (54). Garrett notes that since other people’s hunger is not observable, the predicate ‘to be hungry’ can only appear with the direct *'dug* if the experiencer is first person.

- |      |   |                      |   |                   |
|------|---|----------------------|---|-------------------|
| (54) | nga/*khyed.rang/*kho<br>I/*you/*he<br>'I'm hungry.' | grod.khog<br>stomach | ltogs-gi-' <b>dug</b><br>hunger-[DIR IMP] | (Garrett 2001:20) |
|------|---|----------------------|---|-------------------|

This confirms that unlike in Quechua, in Tibetan the direct evidential really does require sensory witness of the event itself, and therefore imposes both evidence-type and evidence-location directness.

Garrett himself explicitly gives a multi-dimensional analysis of Tibetan *'dug*, along very much the lines proposed here. He argues that *'dug* is semantically complex, consisting of a demonstrative component Dem (which encodes that the origo was once, or is now, ‘in a position to demonstratively identify the relevant region’; Garrett 2001:59), plus a Know component, which means that the speaker presents himself as knowing that the proposition is true. The combination of Dem and Know in turn derives the sensory perception requirement, since if one knows that an event took place, and was in a position to demonstratively identify the event, then one personally witnessed that event. We can interpret Dem as an evidence location restriction, and Know as an evidence strength restriction. Garrett analyzes the third directness component of *'dug*, evidence type, as being derived from the other two.

Garrett does observe that *'dug* can sometimes be used when the embedded proposition is *not* directly witnessed. Examples are given in (55-56).

- |      |  |   |                   |
|------|--|---|-------------------|
| (55) | de.ring nyi.ma skyid.po<br>today sun pleasant<br>'Today the weather will be good.' | ltas-pa-' <b>dug</b><br>appear-[DIR PRED] | (Garrett 2001:90) |
|------|--|---|-------------------|

- |      |   |  |                   |
|------|---|--|-------------------|
| (56) | khong dge.rgan<br>he teacher<br>'I see he's a teacher.' | red-' <b>dug</b><br>[IND COP]-[DIR ELPA] | (Garrett 2001:91) |
|------|---|--|-------------------|

Garrett points out that in cases like (55), ‘what has been witnessed is not the event itself but



some definite evidence that strongly suggests that the event will take place' (Garrett 2001:92, citing Denwood 1999:154). Cases like (55) and (56) raise interesting questions about the status of the Dem requirement, which Garrett does not discuss further.

## 5 The typology and predictions

The results from the nine languages we have looked at are summarized in Table 1. We see that there are evidentials which encode direct and indirect values on all three dimensions.

Table 1: Classification of evidentials from nine languages

	DIRECT	INDIRECT
EVIDENCE TYPE	St'át'imcets <i>lákw7a</i> Gitksan <i>'nakw</i> Nuu-chah-nulth <i>naʔaat</i> Nuu-chah-nulth <i>k'uk</i> Nivacle <i>xa/na/ka</i> Cheyenne $\emptyset$ Korean <i>-te</i>	Reportatives Nivacle <i>pa</i>
EVIDENCE LOCATION	Cheyenne $\emptyset$ Tibetan <i>'dug</i>	St'át'imcets <i>lákw7a</i> Gitksan <i>'nakw</i> Nuu-chah-nulth <i>k'uk</i>
EVIDENCE STRENGTH	Quechua <i>=mi</i> Nivacle <i>xa/na/ka</i> Cheyenne $\emptyset$ Korean <i>-te?</i> Tibetan <i>'dug</i>	English <i>must</i> Nivacle <i>pa</i>

Another way to visually represent the results is given in Table 2. Here we see clearly that evidential contributions may be complex, encoding information about more than one of the dimensions.<sup>19</sup>

Table 2: Classification of evidentials from nine languages

	EVIDENCE TYPE	EVIDENCE LOCATION	EVIDENCE STRENGTH
St'át'imcets <i>lákw7a</i>	D	I	--
Gitksan <i>'nakw</i>	D	I	--
Nuu-chah-nulth <i>naʔaat</i>	D	--	--
Nuu-chah-nulth <i>k'uk</i>	D	I	--
Quechua <i>=mi</i>	--	--	D
English <i>must</i>	--	--	I

<sup>19</sup> Thanks to Martina Faller (p.c.) for suggesting a table in this format.

Nivacle <i>xa/na/ka</i>	D	--	D
Nivacle <i>pa</i>	I	--	I
Cheyenne $\emptyset$	D	D	D
Korean <i>-te</i>	D	--	D?
Tibetan <i>'dug</i>	--	D	D
Reportatives	I	--	--

Questions for further research include firstly whether these are the only three dimensions of meaning (cf. the discussion of Nuu-chah-nulth in section 4.3). Secondly, we want to know what the range of possible evidential contributions is within each dimension, since more precise specifications are made than merely ‘direct’ or ‘indirect’. The distinctions encoded can in fact be very subtle. For example, we have seen that St’át’imcets *lákw7a* requires sensory evidence, but disallows visual evidence of the event itself. Gitksan *'nakw* requires sensory evidence and normally disallows visual evidence of the event itself. However, it can be uttered in a visual-evidence situation, and then gives rise to a mirative interpretation (which is unavailable for St’át’imcets *lákw7a*) (Peterson 2010). Thompson Salish has an evidential *nukw* which requires sensory evidence and disallows direct visual evidence, just like *lákw7a* and *'nakw*, but also allows ‘gut feelings’ or intuition. Unlike *lákw7a*, *nukw* allows some visual perception of the event itself, as long as some other sense is involved in addition (Mackie 2010). Given these subtle distinctions within each dimension, the question naturally arises of whether there are limits on the kinds of meanings each dimension allows. For interesting proposals which aim to restrict the types of evidential contribution which are possible in natural language, see Speas (2004) and McCready (2010).

Another question which arises is whether certain combinations of direct and indirect values are ruled out. At the very least we can say that some combinations will be unlikely because they don’t make sense, or are not useful categories. For example, it would be odd to have an evidential which required the speaker to have untrustworthy visual evidence (i.e., was direct for evidence type and indirect for evidence strength).<sup>20</sup>

Another way to look at the question of whether certain combinations are ruled out is to examine the implicational relations between the different dimensions. For example, sensory experience of the event itself (a direct value for evidence type and evidence location) will usually result in very reliable evidence (a direct value for evidence strength). Moreover, any evidential which encodes a direct value on the evidence location dimension (i.e., requires the speaker to have been in the same location as the event), is almost necessarily direct for evidence type (requiring sensory evidence of the event).<sup>21</sup> However, these implicational relations go only in one direction, and hence do not invalidate the separateness of the dimensions. Recall that there are evidentials (e.g., St’át’imcets *lákw7a*) which encode evidence-type directness but evidence location indirectness. And there are evidentials (e.g., Quechua *=mi*) which encode evidence strength directness, and contain no specification for evidence type or evidence location.

It is also possible that even the one-way relations noted above are only tendencies, based on what

<sup>20</sup> Although perhaps this would be a mirative? Further research is required.

<sup>21</sup> See also de Haan (1999) on the connection between deixis and visual evidence.

the world is usually like, rather than strict implications. For example, sensory evidence of an event usually leads to speaker certainty, but not always. As noted by McCready (2010), it is important to consider cases where the speaker realizes that their senses may be deceiving them. McCready reports that sequences of the following type are rejected by speakers with the Japanese inferential evidential *mitai*:

- (57) The street is wet. But perhaps there is no street—perhaps you are just dreaming.  
(Anyway,) It rained last night—Evid<sub>inf</sub>. (McCready 2010:123)

McCready uses data such as these to argue that what counts as evidence for an evidential must be knowledge, not merely belief, since these ‘skeptical’ scenarios destroy knowledge, but are still compatible with belief (that is, most people would still believe that the street they are witnessing actually exists). These cases also illustrate the possibility that an evidential could encode evidence-type directness (e.g., sensory witness), but not lead to evidence-strength directness (certainty). Further empirical research is required on these matters; the available resources on the evidentials discussed above do not usually give information about the kinds of situations illustrated in (57).

### 5.1 Which kinds of evidentials can be modals?

In this final part of the paper, I return to the question posed at the beginning, namely which kinds of evidentials could in principle be epistemic modals. Above, we framed the issue as follows: there is an apparent conflict between direct evidentials, which may result in an entailment that the embedded proposition is true, and epistemic modals, which according to standard analyses result in weaker propositions than plain assertions. In the intervening sections I have tried to show that there is no monolithic notion of a ‘direct’ evidential; the question must therefore be posed separately for each of the three dimensions.

The literature provides several modal analyses of evidentials which are direct on the evidence-type dimension. Matthewson (2011) analyzes St’át’imcets *lákwa*, which is evidence-type direct, as a modal.<sup>22</sup> J. Lee (2011a,b, 2013, this volume) analyzes Korean *-te* as an epistemic modal which encodes a requirement for sensory evidence, and is therefore also evidence-type direct (although see (52-53) above). J. Lee specifically argues that in spite of *-te*’s sensory-evidence requirement, it results in reduced assertive strength, just like modals do. This not only supports the multi-dimensional view (as under this analysis, *-te* would be direct on one dimension, and not on another), it also supports the idea that evidence-type direct evidentials can in principle be modals.<sup>23</sup> And Lecarme (2008) argues for a modal analysis of nominal direct evidentials in Somali. According to Lecarme, the present tense on a nominal indicates direct evidentiality, in the sense that the speaker visually perceives the relevant individual. Lecarme proposes a modal

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<sup>22</sup> However, Peterson (2010) does not analyze the partially similar Gitksan *'nakw* as a modal.

<sup>23</sup> J. Lee (this volume) aims to derive the non-equi subject constraint on *-te* (i.e., that the subject of a present-tense *-te*-sentence cannot be the speaker) from its status as a modal. She observes that English *must* is subject to a similar constraint, and argues that the constraint arises because of a conflict between one’s (usual) certainty about one’s own actions, and the reduced strength of a modal proposition as compared to a plain assertion.

analysis whereby the perceptual requirement is encoded in the modal's ordering source.

What about evidentials which encode a direct value on the evidence location dimension? Interestingly, in the languages studied here I have not found an evidential which is direct purely on this dimension. Both Cheyenne  $\emptyset$  and Tibetan *'dug* encode evidence-strength directness as well, and therefore are not good test cases. The type of element needed would be an evidential which required the speaker to have been in the same location as the event, but still introduced modal semantics. Such an element intuitively seems to be not very useful, as usually if one is in the same location as the event, one is in a position to make a plain assertion about that event (or to use an evidence-type, or evidence-strength, direct evidential, if one exists in the language). However there does not seem to be any inherent contradiction in the semantics of such a potential element, and perhaps future research will uncover one.

Now to the most challenging case: evidence strength. This dimension is different from the others, in that evidentials which are direct on this dimension are frequently described as resulting in the embedded proposition being entailed. For example, Faller (2011) argues that Lecarme's modal analysis of Somali does not extend to Cuzco Quechua *=mi*, as Lecarme's analysis allows the embedded proposition not to be entailed.<sup>24</sup> Cuzco Quechua sentences with *=mi*, however, do entail their embedded propositions.

The most obvious proposal for evidentials which are purely evidence-strength direct – those which occupy the bottom left cell in Table 1 – would seem to be that they *cannot* be modals, since evidence-strength direct evidentials involve a high level of speaker certainty, and result in the entailment of the embedded proposition. However, we are not forced to this conclusion. First, recall that von Stechow and Gillies (2010) have argued that necessity modals *are* compatible with complete speaker certainty. If modals are compatible with complete speaker certainty, there is no conceptual reason why an evidence-strength direct evidential could not be a modal.

Furthermore, Faller (2011) does in fact advance a modal analysis of Cuzco Quechua *=mi*. Although Faller herself would not characterize *=mi* as a *pure* evidence-strength evidential, I argued in section 4.4 above that analyzing it this way provides a simple and empirically accurate characterization of its evidential contribution. It is therefore relevant that Faller analyzes *=mi* as an epistemic modal, with a modal base which contains propositions describing the speaker's perceptions, and an empty ordering source.<sup>25</sup> I therefore conclude that there is no category of direct evidential which is in principle excluded from contributing modal semantics.<sup>26,27</sup>

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<sup>24</sup> This is so because the actual world might not be among those quantified over by the modal. See for example Lecarme (2008:219) on the fact that our perceptions can be mistaken.

<sup>25</sup> The differences between Lecarme's analysis and Faller's thus have to do with details about the respective contributions of the modal base and the ordering source; see the original papers for discussion.

<sup>26</sup> Cable (2008) argues against a modal analysis of an evidential which required 'direct witness of the truth of the proposition' (in our terms, Cable is probably thinking of an evidential which is direct on all three dimensions). He advances the following problematic case for a modal analysis of such an evidential:

Suppose that you directly witness your friend Dave returning a shirt to H&M (i.e.,

## 6 Conclusion

In this paper I have argued that there is no monolithic direct vs. indirect split in evidential contributions. Instead, evidential contributions encode information on three separate dimensions, each of which has direct and indirect values. We have seen examples from nine languages of evidentials which are direct on at least one of the three dimensions: evidence type, evidence location, and evidence strength. Finally, I argued that there is no category of direct evidential which is in principle incompatible with modal semantics. The strong equivalency view according to which all evidentials are epistemic modals, and all epistemic modals are evidentials, is not in principle invalidated by the existence of direct evidentials. Whether or not the strong equivalency view is correct is of course a matter which will continue to be debated.

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you accompany him on the trip). However, suppose also that you never directly witnessed Dave's original purchase of the shirt. In such a case, the putative modal base for the direct evidential will contain the proposition 'I directly witnessed Dave returning a shirt to H&M.' But: In every world  $w$  where one directly witnesses Dave returning a shirt to H&M, Dave (of course) purchases a shirt at H&M in  $w$  (at some earlier time). Thus: According to the modal analysis ... the following would be true in the imagined situation: DIRECT-EVIDENTIAL(Dave purchased a shirt at H&M) *despite the fact that you needn't have ever directly witnessed the original purchasing event* (Cable 2008:20; emphasis original).

Of course, this problem is at present only a prediction; we need to test this context with an evidential of the right type. Faller (2011) does observe that *minimal* reasoning is allowed with  $=mi$ , but the reasoning involved in Cable's cases may count as too much: Martina Faller (p.c.) suspects that the context in (i) would not license  $=mi$ .

<sup>27</sup> As pointed out by Martina Faller (p.c.), empirical testing of this hypothesis relies on an explicit definition of epistemic modality and a foolproof way of detecting it. Solving that problem goes far beyond the bounds of this paper; see Kratzer (2012), among others, for discussion. One issue is that some researchers analyze *all* assertions as implicitly epistemically modalized; see for example Alonso-Ovalle and Menéndez-Benito (2010) for this proposal.

<http://people.umass.edu/scable/PNWSeminar/handouts/ModEvid/Evidentials.pdf>

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