A Modal Evidential in Nłeʔkepmxcín*

Ella Hannon
University of British Columbia

Abstract: This paper examines the inferential evidential, *nke*, in the Northern Interior Salish language Nłeʔkepmxcín (ISO 639-3: thr). In the literature, there has been significant debate on whether or not evidentials affect propositional content (Izvorski 1997, Faller 2002, Chung 2005, Matthewson, Davis, and Rullmann 2007, AnderBois 2014, Murray 2017, a.o.). Evidentials that do not contribute to propositional content, such as the reportative evidential in Cuzco Quechua (Faller 2002), are classified as illocutionary operators. Evidentials that do contribute to propositional content, such as the inferential evidential in St'át'imcets (Matthewson et al. 2007), are often analyzed as epistemic modals with an added evidence source requirement. I argue that *nke* acts as an epistemic modal with an added evidence source presupposition, using tests from Faller (2002), Matthewson et al. (2007), and Huijsmans (2023).

Keywords: evidentiality, inferential evidentials, epistemic modals, modality, Nłeʔkepmxcín.

1 Introduction

Nłeʔkepmxcín is a northern Interior Salish language spoken by around 100 people along the Fraser River (Dunlop, Gessner, Herbert & Parker 2018)[1] in British Columbia and Washington state. Both

* I would like to acknowledge first and foremost my Nłeʔkepmxcín consultants: Kʷəɬtèzetkʷuʔ (Bernice Garcia) [KBG], Bev Phillips [BP], and Ċúʔsinek (Marty Aspinall) [CMA], without whom none of this work would have been possible. *nem kʷúkʷstéyp*! Bernice wishes it to be acknowledged that she is a Kamloops Indian Residential School speaker, who is re-learning her language. She introduces herself thus: *ʔes ʔúməcms kʷəɬtèzetkʷuʔ təw ɬe ċəɬétkʷu wéʔe ncitxʷ. ƛuʔ wéʔec ʔex netíyxs scwewẃxmx, ƛuʔ tékm xéʔe ne nɬeʔképmx e tmixʷs,* 'My traditional name is kʷəɬtèzetkʷuʔ, my home is in Coldwater of 'Nicola' of Nlaka'pamux lands.' I would also like to thank Lisa Matthewson for both her invaluable comments at all stages of writing of this qualifying paper, and for facilitating the Field Methods course on Nłeʔkepmxcín at UBC, without which I would never have met the aforementioned consultants. I would also like to thank Hotze Rullmann for his thorough and thought-provoking feedback. Furthermore, I would like to acknowledge the Nłeʔkepmxcín lab that came out of the Field Methods course (aptly named Nłab) and all of its members. The glosses used in this paper follow the Leipzig Glossing Conventions for the most part – here is a list of other abbreviations used: AUT = autonomous; CDE.DET = current direct evidence determiner; CMPL = completive aspect; CONJ = conjectural evidential; CTR = control; CTR.MID = control middle; D/C = determiner/complementizer; EMPH = emphatic particle; FOC = focus; INT = introductory predicate; MOD = modal particle; NEG_{AN} = negation (animate subject); PDE.DET = past direct evidence determiner; RPRT = reportative evidential; SBJV = subjunctive; SENSE = sensory evidential. Stress is marked according to Thompson and Thompson (1996), except I do not mark stress on monosyllabic words, nor on function morphemes. Other non-glossing abbreviations used in this paper include VF and SF for volunteered and suggested forms, respectively – volunteered forms are forms volunteered by the consultant, suggested forms are suggested by the linguist during an elicitation. Finally, NV and Ly stand for Nicola Valley and Lytton, representing the two different dialects of Nłeʔkepmxcín spoken by KBG, BP, and CMA. All Nłeʔkepmxcín data comes from original fieldwork. Other language data cited was not collected by me. All errors are my own.

[1] Although there is a 2023 edition of this resource, I have chosen the 2018 figure for total fluent speakers of Nłeʔkepmxcín because more Nłeʔkepmxcín communities were surveyed in 2018 (13/15 as opposed to 5/15). A

a grammar (Thompson & Thompson 1992) and a dictionary (Thompson & Thompson 1996) of Nłeʔkepmxcín exist, although evidentials are only mentioned briefly in the grammar. This paper examines the semantics of inferential evidentials cross-linguistically, and compares this to the semantics of the Nłeʔkepmxcín inferential evidential *nke*.

Historically, the semantic literature treats evidentials in one of two ways: as epistemic modals, or as speech-act operators. I will claim that, cross-linguistically, inferential evidentials tend to have modal semantics. To support this claim, I will look particularly at work by Faller (2002, 2011), Matthewson, Davis, and Rullmann (2007), Murray (2010, 2021), and Huijsmans (2023) on inferential and conjectural evidentials in four different languages. Work on other evidentials, particularly reportatives, has produced more varied patterns: some reportative evidentials (Faller 2002; Murray 2010) are pure illocutionary operators, while other reportative evidentials (Matthewson et al. 2007, Huijsmans 2023) pattern as epistemic modals.

In order to examine the applicability of an illocutionary operator analysis to *nke*, I will apply tests from Faller (2002, 2023), Matthewson et al. (2007), and Huijsmans (2023) that differentiate between illocutionary evidentials and modal evidentials. The breakdown of sections is as follows: Section 2 gives an overview of semantic treatments of inferential evidentials in the literature. Section 3 demonstrates that *nke* is an Indirect Inferring Evidential following Willett's (1988) taxonomy. In Section 4, I show that *nke* is not a spatio-temporal operator. Section 5 applies tests that distinguish illocutionary evidentials from modal evidentials. Section 6 discusses some observations about the modal force and flavour of *nke*. Section 7 concludes.

2 Are evidentials always modal?

Evidentials are grammatical morphemes that mark the evidence source a speaker has for a proposition *p*. Willett (1988) distinguishes between two main types of evidentials: Direct and Indirect. Aikhenvald (2004) divides this taxonomy into three: Direct, Reported, and Indirect. Evidentials have been analyzed as speech act operators (Faller 2002, Murray 2010), spatio-temporal operators (Faller 2004, Chung 2005, 2007, Speas 2010, Reisinger, Huijsmans and Matthewson 2021), and as epistemic modals (Matthewson et al. 2007, Faller 2011, Huijsmans 2023) in the semantic (and pragmatic) literature. Speech act operators do not contribute propositional or at-issue content – evidentials that act as speech act operators solely indicate the source of evidence that a speaker has for the claim (often a proposition) that they are introducing. Under an epistemic modal analysis (Matthewson et al. 2007, Rullmann, Matthewson, and Davis 2008, Faller 2011, Huijsmans 2023), evidentials contribute propositional (at-issue) content, typically introducing quantification over possible worlds. Evidentials that are epistemic modals still contribute not-at-issue content, indicating the source of evidence a speaker has for their claim – they differ from non-modal evidentials by also indicating the speaker's attitude towards the claim they are introducing. Lastly, the spatio-temporal analysis of evidentials (Faller 2004, Chung 2005, 2007, Speas 2010, Reisinger et al. 2021) restricts some evidentials to only being felicitous in contexts where the evidence was obtained prior to utterance time.

thorough survey of all Nłeʔkepmxcín communities was impossible in 2021 because of forest fires and floods impacting Nłeʔkepmxcín communities.

Returning to various types of evidentials cross-linguistically, (1) gives an example of the Direct evidential in Cuzco Quechua, which has received a speech act operator analysis.

(1) **Cuzco Quechua**
*irqi-kuna chakra-pi-**n** puklla-sha-n-ku.*
child-PL field-LOC-**mi** play-PROG-3-PL
p = 'The children are playing in the field.'
EV = speaker sees the children are playing in the field. (Faller 2002:92)[2][3]

According to Faller (2002), the Direct evidential *=mi* (which surfaces phonologically as *=n* in (1)) is a speech act operator. *=mi* does not contribute propositional content or introduce any quantification over possible worlds. The content that *=mi* contributes is not at issue, and, as will be further discussed in Section 3, cannot be challenged or directly disagreed with.

Reported evidentials, also known as reportative evidentials, encode that a speaker has second or third-hand evidence for their claim. Similarly to Direct evidentials, both epistemic modal (Matthewson et al. 2007; Rullmann et al. 2008) and illocutionary operator (Faller 2010, Murray 2010, AnderBois 2014) analyses of reportatives have been proposed. How reportatives that have been analyzed as illocutionary operators pattern will be discussed further in Section 4. An example of a reportative evidential, which Murray (2021) analyses as a speech act operator, is in (2).

(2) **Cheyenne**
*ného'éehe é-vóon-omóhtȧhe-**sėstse***
1.father 3-all.night-be.sick-**RPRT.3SG**
'[She said] my father was sick all night.' (Murray 2021:214)

Inferential evidentials (also sometimes known as conjectural evidentials), the focus of this paper, encode that a speaker has indirect evidence for their claim. Inferential evidentials have also been observed cross-linguistically to be more 'modal' than their Direct and Reported counterparts – although Faller (2002) and Murray (2010) analyze the conjectural and inferential evidentials in Cuzco Quechua and Cheyenne, respectively, as speech act operators, both analyses include a modal component in their semantics. I present data for the inferential evidential *k'a* in St'át'imcets in (3), an evidential that has been analyzed as an epistemic modal by Matthewson et al. (2007) and Rullmann et al. (2008), the conjectural evidential *=chà* in Cuzco Quechua in (4), which has received both speech act operator (Faller 2002) and epistemic modal (Faller 2011) analyses, and the inferential evidential *-he* in Cheyenne in (5), which Murray (2010) has analyzed as a speech act operator.

(3) **St'át'imcets**

[2] Here, *p* is the proposition expressed by the speaker, while EV is the evidential value, i.e., the meaning that the evidential contributes. Faller proposes that the content contributed by an EV is not propositional. The content contributed by an EV is above the propositional level of meaning, operating therefore at the illocutionary level of meaning.
[3] Evidentials relevant to my discussion in examples from Cuzco Quechua, Cheyenne, St'át'imcets, and Nłeʔkepmxcín have been bolded throughout. Glosses are presented as they were written in the original sources.

Context: You are a teacher and you come into your classroom and find a caricature of you drawn on the blackboard. You know that Sylvia likes to draw caricatures.

nilh	***k'a***	*s-Sylvia*	*ku*	*xílh-tal'i*
FOC	**INFER**	NOM-Sylvia	DET	do(CAUS)-TOP

'It must have been Sylvia who did it.' (Matthewson et al. 2007:206)

(4) **Cuzco Quechua**
Context: *s* (speaker) knew the person referred to with 'he' in her childhood.

suqta	*chunka*	*wata-yuq*	*ka-sha-n=**chá***
six	ten	year-POSS	be-PROG-3=**CONJ**

'He must be sixty years (old).' (Faller 2010:665)

(5) **Cheyenne**

*mó-ho'tȧheva-he-**hé***	*Annie*
Q.3-win-NEG$_{AN}$-**INFER**	Annie

'Annie won, I take it / Annie must have won.' (Murray 2017:74)

Lastly, for an example of evidentials that have been analyzed as spatio-temporal operators, I present data from Reisinger et al. (2021). Reisinger et al. (2021) analyse at least two determiners in ʔayʔaǰuθəm (Salish), *tə* and *s̆ɛ*, as spatio-temporal evidentials.

(6) **ʔayʔaǰuθəm**
Context: You look out the window and there's a bear in your yard.
nɛ { **tə** / #šɛ / #k^{w} } mɛχaɬ.

niʔ	{ **tə** / #šɛ / #k^{w} }=miχaɬ
be.there	**CDE.DET** / PDE.DET / DET=black.bear

'There's a bear.' [CURRENT DIRECT EVIDENCE]
(Reisinger et al. 2021:170)

(7) **ʔayʔaǰuθəm**
Context: You go outside and you see fresh bear footprints in your driveway.
nišoɬ c̆ɛ { #tə / #šɛ / k^{w} } mɛχaɬ nɛ tə ǰušɪnmɛns.

niš-ʔuɬ=c̆a	{ tə / #šɛ / **k^{w}** }=miχaɬ	niʔ
be.here-PST=INFER	CDE.DET / PDE.DET / **DET**=black.bear	be.there

tə=ǰišinmin-s
CDE.DET=footprint-3POSS
'A bear must have been here. There are its footprints.' [INFERENTIAL EVIDENCE]
(Reisinger et al. 2021:172)

Determiners in ʔayʔaǰuθəm act as Direct evidentials that also encode temporal reference – *tə* is only felicitous when the speaker obtains their direct evidence at utterance time (Reisinger et al. 2021). It is infelicitous when the speaker is making a claim about a past event or when the speaker is making a claim based on inferential evidence, as in (7). The ʔayʔaǰuθəm determiners therefore

encode both information about the speaker's evidence source, and information about when the speaker obtained their evidence.

I turn now to treatments of Inferential evidentials in the literature. According to many authors, (e.g., Izvorski 1997; Faller 2002; Matthewson et al. 2007; Murray 2010; Peterson 2010; Huijsmans and Reisinger 2021) inferential evidentials in many typologically distinct languages include a modal element, even if these evidentials ultimately are treated as speech act operators (Faller 2002, Murray 2010). To illustrate my claim that **all** semantic analyses of inferential evidentials in the existing literature incorporate modal semantics, I present three denotations of inferential evidentials from three typologically distinct languages. (8) is Matthewson et al's (2007) denotation for the inferential evidential *k'a* in St'át'imcets.[4]

(8) **St'át'imcets**
$[\![k'a]\!]^{c,w}$ is only defined if c provides a modal base B such that for all worlds w', w' ∈ B(w) iff the inferential evidence in w holds in w'.
If defined, $[\![k'a]\!]^{c,w} = \lambda f_{<st,st>}.\ \lambda p_{<s,t>}.\forall w'[w' \in f(B(w)) \rightarrow p(w')]]$
(Matthewson et al. 2007:243)

According to this denotation, *k'a* is only felicitous in contexts where the speaker has indirect inferential evidence for *p*. When a speaker has indirect inferential evidence for *p* and they make a claim using *k'a,* the resulting modal claim quantifies over all possible worlds. The choice function *f,* a function from sets of worlds to sets of worlds, selects a subset of all of the possible worlds. This subset is then quantified over by the universal quantifier. If *f* selects a proper subset, the modal claim will be weakened. In this way, the choice function *f* is a mechanism for explaining the variable force (i.e., variation along the continuum from necessity to possibility) displayed by *k'a* – it can mean (epistemic) *must, should,* or *may/might*, depending on the context (Rullmann et al. 2008).

Faller's (2002) speech act operator denotation for Cuzco Quechua *=chá* is given in (9).

(9) **Cuzco Quechua**

-chá:	ASSERT(p)	→	ASSERT ($\Diamond p$)
	SINC=$\{Bel(s, p)\}$		SINC=$\{Bel(s,\Diamond p), Rea(s, Bel(s, \Diamond p))\}$

(Faller 2002:263)

The denotation in (9) states that *=chá,* when added to an utterance, changes the assertion from *p* to 'possibly *p*', and can only be uttered when a speaker believes that *p* is possible based on their own reasoning. Neither *=mi* nor *=si,* the Direct and Reported evidentials in Cuzco Quechua, respectively, introduce a logical possibility operator like *=chá* does, and therefore do not quantify over possible worlds.

As a point of contrast, Faller's (2010) possible-worlds semantics for the Cuzco Quechua *=chá,* modelled on a Kratzerian (1987) analysis of epistemic modality, is given in (10).

[4] Explanation of variables is as follows: c is the context, f is a choice function that selects a subset of possible worlds to be quantified over, w is the actual world, and p is the prejacent proposition.

(10) **Cuzco Quechua**
$[\![Conject(p)]\!]^{w,c} = 1$ iff there exists an epistemic modal base f_e and a doxastic ordering source g_d such that there exists some $w' \in max_{g_d}(\cap f_e(w))$, $[\![p]\!]^{w',c} = 1$.
(Faller 2010:673)

The denotation in (10) can be explained as follows: *=chá* is only felicitous in epistemic modal contexts, where it takes in a proposition *p* and evaluates *p* with respect to the set of worlds *w* and the context *c*. An ordering is imposed on the set of accessible worlds *w*, such that worlds are ordered in terms of how compatible they are with the speaker's beliefs about their evidence.

This denotation is similar to (8), but uses ordering sources instead of a choice function to quantify over a proper subset of the accessible worlds. Both (10) and (8) are modal treatments of inferential evidentials; although (9) is not a decidedly modal analysis of *=chá*, it includes a modal component – namely, the logical possibility operator that *=chá* contributes.

Murray (2010:116) states that the Cheyenne Inferential evidential "has a modal component"; this modal component is seen in the effect that the Cheyenne Inferential evidential has on speaker commitment to INF(p), i.e., to the proposition that they are introducing with the Inferential evidential. Murray's (2010) formula for the commitment update that the Cheyenne Inferential evidential makes to the common ground is in (11). The commitment update indicates the proposition that the speaker proposes to add to the common ground.

(11) **Cheyenne**
$[w \mid w \in \Diamond \perp \Omega]$
(INF commitment)
(Murray 2010:115)[5]

The formula in (11) says that a Cheyenne speaker who uses the Inferential evidential is committing to the *possibility* that the proposition introduced by the Inferential evidential is true in the actual world. Again, the logical possibility operator ◊ is introduced by the Inferential evidential – this contribution is not made by either the Reportative or the Direct evidentials (Murray 2010). By using an Inferential evidential, a speaker of Cheyenne is introducing a modal claim that they believe to be possible in the actual world, as well as indicating the source of evidence that they have for this claim.

Crucially, all of Faller (2002, 2010), Matthewson et al. (2007), and Murray's (2010) semantic analyses of Inferential evidentials include an element that specifies that the speaker must be making their claim based on inferential evidence. (8), (9), (10), and (11) also all specify that the Inferential evidential makes a modal claim about the proposition that it introduces: a weak (logically possible) claim in the case of Cuzco Quechua and Cheyenne, and a strong (logically necessary) claim in the case of St'át'imcets *k'a*. My proposal, that all Inferential evidentials are modal, is a weaker version of the hypothesis proposed by Matthewson (2012), whereby all evidentials contribute modal semantics, and all epistemic modals are evidentials.

[5] Explanation of variables is as follows: ⊥ represents at-issue information, ◊ is the logical possibility operator, and Ω represents a proposition (analyzed as a function from worlds to truth-values).

The final analysis that I will present in this section is Chung's (2020) analysis of the Korean Inferential evidentials *-ess* and *-keyss*. Chung's denotations for *-ess* and *-keyss* are given in (12) and (13), respectively.

(12) a. $[\![\text{-}ess]\!]^c = \lambda P.\ \lambda L.\ \exists t\ [t < \tau(L) \wedge \Box\ [\exists e\ [P(e)(t)]]$
Presupposition: the speaker does not perceive the described eventuality

(13) b. $[\![\text{-}keyss]\!]^c = \lambda P.\ \lambda L.\ \exists t\ [\tau(L) \leq t \wedge \triangle\ [\exists e\ [P(e)(t)]]$
Presupposition: the speaker does not perceive the described eventuality
(Chung 2020:197)[6]

Chung (2020:197) argues that *-ess* and *-keyss* are modals with presuppositions of indirect evidence source that make them compatible only with epistemic conversational backgrounds. *-ess*, the modal spatio-temporal evidential in (12), indicates that the event, which it is presupposed the speaker did not perceive, occurred prior to the reference time. On the other hand, the denotation for *-keyss* given in (13) indicates that the event time may either overlap with or follow the reference time. *-ess* also makes a stronger modal claim than *-keyss*: *-ess* makes a necessity claim while *-keyss* makes a weak necessity claim. Neither *-ess* nor *-keyss* are felicitous if the speaker themselves directly witnesses the event. A spatio-temporal analysis of evidentials will be discussed further in Section 3 – the crucial takeaway is that Inferential evidentials, even those that also act as spatio-temporal operators, are modal.

The denotations discussed in (8)-(13) support the hypothesis that Inferential evidentials always encode modality in their semantics. I summarize analyses of Inferential evidentials in Table 1.

Inferential evidentials as epistemic modals	**Inferential evidentials as both epistemic modals and illocutionary operators**	**Inferential evidentials as modal, spatio-temporal operators**
Bulgarian present perfect (Izvorski 1997) St'át'imcets *k'a* (Matthewson et al. 2007) ʔayʔaǰuθəm *c̓̓ɛ* (Huijsmans 2023) Cuzco Quechua =*chá* (Faller 2010)	Cuzco Quechua =*chá* (Faller 2002) Cheyenne =*hé* (Murray 2010)	Korean inferential evidentials *-ess* and *-keyss* (Chung 2005, 2020)

Table 1: Examples of semantic analyses of evidentials in the semantic/pragmatic literature

[6] Explanation of variables is as follows: P is the speaker's perceptual trace, △ is the symbol for the weak necessity modal, L denotes a set of time-space co-ordinates, and τ is a temporal trace function.

In the following sections, I will test which of the three analyses presented in Table 1 best applies to *nke*.

3 Evidentiality in Nłeʔkepmxcín

Thompson & Thompson (1996) and Littell & Mackie (2011, 2014) observe that Nłeʔkepmxcín has a three-way split in its evidential system, illustrated in (14)-(16) below:

(14) **Non-visual sensory (Direct/Indirect) evidential =*nuk^{w}***
Context: You're out for a walk in the forest and you smell smoke. You think:

*ʔex **nuk^{w}** ʔémsəm tk swét*
ʔex=**nuk^{w}** ʔémsəm t=k=s-wét
IPFV=**SENSE** fire OBL=D/C=NMLZ-who
'Somebody must[7] be setting a fire.'[8] (BP | VF | Ly)

(15) **Reportative evidential =*ek^{w}u***
Context: You are out at a restaurant with your friend where all of the food is served in the dark. You and your friend are served your first course and your friend takes the first bite. They tell you it tastes like chicken. You think:

*chicken **ek^{w}u** xéʔe*
chicken=**ek^{w}u** xéʔe
chicken=**RPRT** DEM
'This might be chicken.' (BP | VF | Ly)

(16) **Inferential evidential =*nke***
Context: You're walking downtown and you see one of your friends with a load of fishing gear. You greet him and say:

*x^{w}úy̓ k^{w} **nke** nes k̓ə̓tním*
x^{w}úy̓=k^{w}=**nke** nes k̓ə̓tní-m

[7] Von Fintel & Gillies (2010) contend that English epistemic modals correspond to the Inferring branch of Willett's taxonomy, and are as such both epistemic modals and Indirect evidentials. In (14), *nuk^{w}* is compatible with Reasoning – the speaker smells smoke and then reasons that somebody is setting a fire. It is unclear at the time of writing whether *nuk^{w}* has epistemic modal semantics. However, since *nuk^{w}* is compatible with inference, and with Reasoning based on observed Results, and receives epistemic modal translations as in (14), it is possible that *nuk^{w}* is also a modal evidential. Since *nuk^{w}* is not the main focus of this paper, I will not discuss its semantics in detail.

[8] It is worth mentioning that *nke* is also felicitous in (14). Both *nuk^{w}* and *nke* are compatible with inference based on Results or Reasoning. Therefore, the Direct label as defined in Willett's taxonomy is not wholly accurate for *nuk^{w}*– *nuk^{w}* is compatible with many of the same contexts as *nke*. See Matthewson (2020) for discussion of issues with the labels in Willett's taxonomy, including discussion of evidentials that cover both the Direct evidence branch and the Indirect evidence branch. After all, results are perceived with senses, and *nukw* is compatible with reasoning based on perceived results. Therefore, labeling *nuk^{w}* as (only) a Direct evidential is incorrect – perhaps *nuk^{w}* should just be labelled a Sensory evidential (as suggested by Littell and Mackie 2011, 2014), with the stipulation that is also compatible with the Indirect evidential notions of Results and Reasoning, when Results are sensorily perceived by the speaker or when Reasoning is informed by the speaker's senses. If the senses are not involved, i.e., if the Reasoning is purely logical, then *nke* is required and *nuk^{w}* infelicitous.

PROSP=2SG.SUBJ=**INFER** go fish-CTR.MID
'You must be going fishing!' (BP | VF | Ly)

In this section, I present data that supports the claim that *nke* is an Inferential evidential. I will show that *nke* is compatible with Inferential evidence obtained from both Results and Reasoning, the two subtypes of Inferring evidence included in Willett's (1988) taxonomy. An adapted version of Willett's (1988:57) taxonomy is in Figure 1; the sub-classifications of evidentiality in bold correspond to the evidence sources encoded by *nke* in Nłeʔkepmxcín.

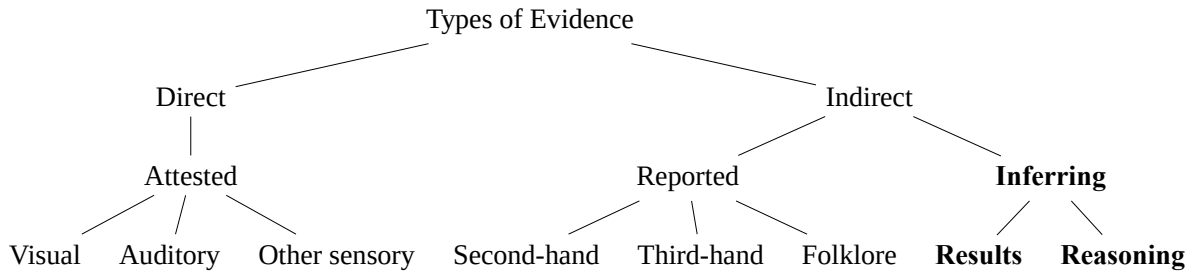

Figure 1: Willett's (1988:57) taxonomy of evidentiality; bold text corresponds to the evidence source(s) encoded by *nke*.

I argue that, while *nke* has been observed to be compatible with certain direct evidence sources (such as visual, auditory, or other sensory cues; see Hannon & Smith 2023), it is not a Direct evidential. In Nłeʔkepmxcín, *nke* is used in contexts where the speaker is inferring what might have happened based on non-visual sensed Results, as in (17) and observed Results, as in (18).

(17) Context: Your brother often sings at gatherings. A friend of both of yours is having a gathering. You walk past, and you can hear someone singing. You think:

*c̓e us **nke** xéʔe ƛ̓əm sincíʔ ʔex ʔiƛ̓m*
c̓=e=us=**nke** xéʔe ƛ̓əm sincíʔ ʔex=ʔiƛ̓-m
EMPH=INT=SBJV=**INFER** DEM CMPL younger.brother IPFV=sing-CTR.MID
'That must be my brother singing.' (CMA | VF | NV)

(18) Context: You look out of your window, and you see that there is frost on your neighbour's roof.

*c̓iɬt **nke** wə ɬ ʔéyc̓qeʔ*
c̓iɬt=**nke** wə=ɬ=ʔéyc̓qeʔ
cold=**INFER** PREP=DET=outside
'It must be cold outside.' (BP | VF | Ly)

Crucially, the speaker has not witnessed who is singing in (17), nor the frost formation in (18) – they have only witnessed the results of these two events, and are making modal claims based on these results. These uses of *nke* therefore fall squarely under the Results subdivision of Inferential evidentiality according to Willett (1988). The hypothesis that *nke* is not a Direct evidential is also

supported by rejections of *nke* in contexts where the speaker only has direct, sensory evidence of an event, as in (19) and (20). The Direct evidential *=nukʷ* is preferred in (19) and (20).

(19) Context: You're waiting for your stove to heat up. It's an old stove, so you can't see when the burner is heated. Instead, you have to touch the stove to tell whether it's hot. You put your hand near the stove and say:

\# *c̓loxʷ* ***nke.***
c̓loxʷ=**nke**
hot=**INFER**
Intended: 'It feels hot.'
Consultant comment: 'If I feel it, I can't say *nke*. Once I sense it I can't say *nke* 'cause I'm questioning my own self.' (BP | SF | Ly)

(20) Context: You feel hungry. You say:

\# *téyt kn* ***nke.***
téyt=kn=**nke**
hungry=1SG.SUBJ=**INFER**
Intended: 'I feel hungry.'
Consultant comment: 'No. It's like I'm asking myself if I'm hungry.'
(KBG | SF | NV)

Indirect evidentials in Willett's taxonomy cover two subdivisions. I have explained the compatibility of *nke* with the Results subdivision – I now show that *nke* is also volunteered when the speaker is basing their inference on Reasoning, as in (21) and (22).

(21) Context: (adapted from von Fintel and Gillies 2007:38) A math teacher gives a class a problem. She tells the class that there is a ball in either box A, box B, or box C. She then tells them that the ball is not in box A, nor is it in box B. Therefore:

ʔex ***nke*** *e púkwleʔ ne k̓ʷáxʷe C.*
ʔex=**nke** e=púkwleʔ neʔ k̓ʷáxʷe C
IPFV=**INFER** DEM=ball DEM box C
'The ball must be in box C.' (BP | VF | Ly)

(22) Context: You go to the store, and you see your friend's car in the parking lot. You think:

ʔex ***nke*** *ƛ̓ep ntéwmn nsnúk̓ʷe*
ʔex=**nke** ƛ̓ep n=téwmn n=snúk̓ʷe
IPFV=**INFER** MOD LOC=store 1POSS=friend
'My friend must be in the store.' (KBG | VF | NV)

The compatibility of *nke* with both Results and Reasoning demonstrates that it is an Indirect Inferring evidential under Willett's (1988) taxonomy. (23) and (24) show that *nke* is also rejected

in contexts where the speaker only has Hearsay evidence for their claim – in these contexts, the Reportative *=ekʷu* is preferred.

(23) Context: You and your friends are discussing some people you know. You've recently heard a rumour that they're related, and you want to see what your friends think of it. You say:

\# *c̓e* ***nke*** *xe snúk̓ʷes.*
c̓=e=**nke** xe=s-núk̓ʷ=(e)s
CLEFT=INT=**INFER** DET=NMLZ-relative=3POSS
Intended: 'I heard they were related.'
Consultant comment: 'You're just guessing… so it kind of doesn't work from the rumour.' (BP | SF | Ly)

(24) Context: Anna's friend, Rachel, tells her that Cayla is at home. Anna hasn't been by Cayla's house to check yet. I ask Anna where Cayla is and she says to me:

\# *ʔex* ***nke*** *ɬ Cayla wəɬ łə cítxʷs.*
ʔex=**nke** ɬ=Cayla wə=łə=cítxʷ=s
IPFV=**INFER** DET=Cayla PREP=DET=house=3POSS
Intended: 'I heard Cayla's at home.' (BP | SF | Ly)

Based on the facts about *nke* discussed in this section, I propose that *nke* is an Indirect Inferring evidential. I now turn to the question of what analysis is best for *nke*: a modal spatio-temporal analysis (Chung 2005, 2007), an epistemic modal analysis with an inferential evidence presupposition (Matthewson et al. 2007, Huijsmans 2023), or a modal speech act operator analysis (Faller 2002, Murray 2010). I begin by claiming, in Section 4, that a spatio-temporal operator analysis does not fit *nke*.

4 *nke* is not a spatio-temporal evidential

Here I examine in greater depth the spatio-temporal analysis mentioned earlier, which was first proposed by Faller (2004) and elaborated on by Chung (2005, 2007). As seen with the ʔayʔaǰuθəm determiner data in Section 1, reiterated below, spatio-temporal evidentials can encode information about the time at which the speaker obtained the evidence for their claim, i.e., **when** the speaker obtained their evidence. Spatio-temporal operators can also encode information about **where** the speaker obtained their claim.

(6) **ʔayʔaǰuθəm**
Context: You look out the window and there's a bear in your yard.
nɛ { **tə** / #šɛ / #kʷ } mɛχaɬ.
niʔ { **tə** / #šɛ / #kʷ }=miχaɬ
be.there **CDE.DET** / PDE.DET / DET=black.bear
'There's a bear.' [CURRENT DIRECT EVIDENCE]
(Reisinger et al. 2021:170)

(7) **ʔayʔaǰuθəm**
Context: You go outside and you see fresh bear footprints in your driveway.
nišoł čɛ̓ { #tə / #šɛ / kʷ } mɛχał nɛ tə ǰušɪnmɛns.
niš-ʔuł=čɛ̓ { tə / #šɛ / **kʷ** }=miχ̣ał niʔ
be.here-PST=INFER CDE.DET / PDE.DET / **DET**=black.bear be.there

tə=ǰišinmin-s
CDE.DET=footprint-3POSS
'A bear must have been here. There are its footprints.' [INFERENTIAL EVIDENCE]
(Reisinger et al. 2021:172)

In this section, I will demonstrate that *nke* does not encode any information about when or where the speaker obtained the evidence for their inferential claim. In (25), the speaker is making an inferential claim based on evidence obtained at utterance time. The speaker's location also has not changed from the time at which they obtained their evidence.

(25) Context: You're being served food in the dark and you have to try and find out what it is. You think the piece of food could be a mushroom, since you've touched it and it feels like a mushroom. You say:

*məƛ̓qi **nke** xéʔe*
məƛ̓qi=**nke** xéʔe
mushroom=**INFER** DEM
'That must be a mushroom.' (KBG | SF | NV)

In (26), the speaker is making an inferential claim about an area that they are not in at utterance time, based on evidence that they have obtained prior to the utterance time.

(26) Context: You used to live in Vancouver. You are not living in Vancouver anymore. You notice how different the weather is where you live right now. You know that it often rains in Vancouver, especially in the afternoon, but not necessarily every day. Now it's the afternoon, so you think:

*ʔex **nke** tekɬ c̓éyɬ nVancouver*
ʔex=**nke** tekɬ-Ø c̓éyɬ n=Vancouver
IPFV=**INFER** rain-3ERG now LOC=Vancouver
'It might be raining right now in Vancouver.' (CMA | VF | NV)

In (27), the speaker is making a claim about an event that has occurred prior to utterance time, based on evidence that they have obtained at utterance time.

.

(27) Context (adapted from Matthewson et al. 2007:205): You live with your friend Mary. You put cake in the fridge this morning, and, when you get home in the evening, there's no cake left! You think:

*upis **nke** ɬ Mary ɬn cake*

upi-s=**nke** ɬ=Mary ɬ=n=cake
eat-3ERG=**INFER** DET=Mary DET=1POSS=cake
'Mary must have eaten my cake.' (KBG | VF | NV)

(25) and (26) show that *nke* is felicitous when the time at which a speaker obtained their evidence overlaps with utterance time, as well as in situations when evidence time precedes utterance time. (25) and (26) also demonstrate that *nke* is felicitous when the speaker is in the same location at both evidence and utterance time, as well as when the speaker is in a different location at evidence time than at utterance time. In (27), the speaker has obtained her evidence at utterance time, but the event she is referring to, namely Mary's eating of the cake, has already happened.

Therefore, I conclude that *nke* is not a spatio-temporal evidential, since it imposes no restrictions on speaker location at reference time or evidence time nor does it impose restrictions on the relationship between the time at which the speaker obtained their evidence and the reference time.

5 *nke* is an epistemic modal

Having ruled out a spatio-temporal analysis of *nke*, I now turn to the question of whether or not *nke* is an epistemic modal. In Section 1, I have claimed that all inferential evidentials have modal semantics. This section will determine whether this claim holds for *nke*.

5.1 Diagnostic tests

This section will apply tests from Faller (2002), Matthewson et al. (2007), and Huijsmans (2023) that can distinguish between pure speech act operators and modal (propositional) operators. These tests are summarized in Table 2. Tests that have different results for speech act operators than for epistemic modals are italicized.

Test	**Non-modal (speech act operator)**	**Modal (propositional operator)**
Is it felicitous if p is known to be false?	*sometimes – yes for reportatives, sometimes for other evidentials, including inferentials*	*no*
Is it felicitous if p is known to be true?	*sometimes - yes for reportatives, sometimes for other evidentials*	*no*
Is the indirect evidence requirement cancellable?	no	no
Is the indirect evidence requirement blocked by negation?	no	no
Can the evidential be challenged? (i.e., does it pass the assent-dissent test?)	*no (fails the assent-dissent test)*	*The evidence source cannot be challenged; MOD(p) can be challenged (passes the assent-dissent test)*

Is the evidential embeddable?	*no*	*sometimes – epistemic modals are unembeddable in certain environments*
What readings can the evidential receive in questions?	information-seeking reading	conjectural question reading (information-seeking reading? (Eckardt 2020, Faller 2023))

Table 2: Tests for semantic distinction between speech act (non-modal) operators and propositional (modal) operators, adapted from Matthewson et al. (2007:234).

The following subsections will explain each test, the results predicted for a pure illocutionary operator, and the results predicted under a modal analysis. Each subsection will contain at least three data points: one displaying how a purely illocutionary evidential would perform on the test, one displaying how an epistemic modal would perform on the test, and the results of the test as applied to Nłeʔkepmxcín. Since, as discussed in Section 1, there are no Inferential evidentials that have been analysed as solely speech act operators, examples featuring Direct and Reported evidentials will sometimes be used to illustrate the non-modal/modal contrast.

A quick note on the final test in the table, the readings that evidentials may have in questions. This test has unclear predictions – Littell, Matthewson, and Peterson (2010) observe that adding a modal Inferential evidential to a question can result in a conjectural (i.e., self-addressed) question that does not require an answer. Eckardt (2020) contends that *wohl*, the German Inferential evidential, can be used in questions to ask the addressee what their answer would be based on their own indirect evidence (i.e., can receive an information-seeking reading). Faller (2023), re-examining the Cuzco Quechua Conjectural/Inferential evidential *=chá*, determines that *=chá* can receive both information-seeking and conjectural readings in interrogatives. It is therefore not entirely clear what the predictions of the readings-in-questions test are for a modal evidential, since conjectural question readings and information-seeking readings have both been recorded. The readings-in-questions test will therefore only be discussed briefly.

5.2 Felicity if *p* is known to be false

Faller (2002, 2006Ms.) claims that evidentials that are illocutionary operators allow the prejacent to be rejected or denied without contradiction. In (28), the Cuzco Quechua speaker is expressing that they heard from another source (as indicated by the use of the reportative evidential *=si*) that someone had left them a lot of money (as indicated by the proposition that *=si* scopes over). The speaker then felicitously follows up their evidential claim with a categorical denial of the claim that the evidential embeds: the speaker knows for a fact that they were not left any money.

(28) **Cuzco Quechua**

*pay-kuna=**s***	*ñoqa-man-qa*		*qulqi-ta*	*muntu-ntin-pi*	*saqiy-wa-n*	
(s)he-PL=**REP**	I-ILLA-TOP		money-ACC	lot-INCL-LOC	leave-1O-3	
mana-má	*riki*	*riku-sqa-yki*	*ni*	*un*	*sol-ta*	*centavo-ta-pis*
not-IMPR	right	see-PRT-2	not	one	sol-ACC	cent-ACC-ADD

saqi-sha-wa-n-chu
leave-PROG-1O-3-NEG
'They leave me a lot of money, (but) that's not true, as you have seen, they don't leave me one sol, not one cent.' (Faller 2006:12)

However, as Faller (2002) observes, the Cuzco Quechua conjectural evidential *=chá* does not pattern the same way as the reportative evidential *=si*. The denial test as applied to *=chá* is presented in (29):

(29) **Cuzco Quechua**

# llave-qa	*muchila-y-pi-**chá***	*ka-sha-n,*	*ichaqa*	*mana-n*
key-TOP	backpack-1-LOC-**chá**	be-PROG-3	but	not-mi

aqhay-pi-chu
there-LOC-NEG
'The keys may be/are possibly/probably in my backpack, but they are not there.'
(Faller 2002:178)

Faller (2002:178) explicitly notes that, on this test, *=chá* patterns like "English possibility modals". Matthewson et al. (2007:213) and Huijsmans (2023:159) observe that the inferential evidentials *k'a* (St'át'imcets) and *c̓a* (ʔayajuθəm) also fail this test. (30) applies this test to Nłeʔkepmxcín.

(30) **Nłeʔkepmxcín**
Context (adapted from Huijsmans 2023:159) I thought I heard raindrops on the roof, but when I went outside, it wasn't actually raining. I said:

*# ʔex **nke** tekɬ, pe təteʔe.*

ʔex=**nke**	tekɬ	pe	təteʔe
IPFV=**INFER**	rain	but	NEG

Intended: 'It must have been raining, but it's not.'
Consultant comment: 'It's totally weird.' (BP | SF | Ly)

That *nke* is not felicitous in contexts where the speaker knows *p* is false is evidence that *nke* does not act solely as an illocutionary operator. However, this result does not yet determine whether *nke* is modal.

5.3 Felicity if *p* is known to be true

If *nke* is an epistemic modal, then it is predicted that it should be infelicitous when the speaker knows that the prejacent is true (Matthewson et al. 2007:216). If *nke* is purely an illocutionary operator, then it might be felicitous when the speaker knows that the prejacent is true. This is the case for Cuzco Quechua *=chá*, as demonstrated in (31).

(31) **Cuzco Quechua**

*t'anta-ta-puni-**chá***	*irqi-ta-qa*	*qu-rqa-n*
bread-ACC-puni-**chá**	child-ACC-to	give-PST1-3

p = '(S)he certainly gave bread to the child.'
EV = speaker has conjectural evidence for *p* (Faller 2002:84)

Matthewson et al. (2007:216) observe that St'át'imcets *k'a* is infelicitous when a speaker knows for a fact that *p* is true, as shown in (32):

(32) **St'át'imcets**

# nilh	***k'a***	*k-Sylvia*	*ku*	*xílh-tal'i;*	*wá7-lhkan*	*t'u7*
FOC	**INFER**	DET-Sylvia	DET	do(CAUS)-TOP	IPFV-1SG.SUBJ	just

áts'x-en
see-DIR
Intended: 'It must have been Sylvia who did it; I saw her.'
(Matthewson et al 2007:216)

As for the results of the felicity test applied to Nłeʔkepmxcín, (33) shows that *nke* is infelicitous when the speaker knows that *p* is true.

(33) **Nłeʔkepmxcín**
Context: You walk past your friend Mary's house and you see her in the window.
*# ʔex **nke** néʔe ʔe Mary ʔex néʔe nə x̣ym-s.*

ʔex=**nke**	néʔe	ʔe=Mary	ʔex	néʔe	nə=x̣ym-s
IPFV=**INFER**	DEM	DET=Mary	IPFV	DEM	LOC=home-3POSS

Intended: 'Mary must be at home.'
Consultant comment: 'If you've actually seen her… *wíkəne ɬ Mary wə ɬe cítx^{w}s* [I see/saw Mary at home].' (KBG | SF | NV)

This result favours an epistemic modal analysis of *nke*, but does not yet rule out an illocutionary operator analysis of *nke*.

5.4 Cancellability

The third test I apply, the cancellability test, predicts the same results for illocutionary operators and epistemic modals. This test attempts to cancel the evidence requirement that an evidential imposes on the speaker. Faller (2002) and Murray (2010) contend that an illocutionary operator is not cancellable because the evidential requirement is built into its sincerity conditions, which are not implicatures and therefore cannot be cancelled. The cancellability test as applied to an illocutionary operator is in (34). Matthewson et al. (2007) predict the same result for the St'át'imcets evidentials, which the authors analyze as epistemic modals with an evidence source presupposition, which also cannot be cancelled. The cancellability test as applied to an evidential that acts as an epistemic modal is in (35).

(34) **Cheyenne**

*# é-hótȧheva-**sėstse***	*Annie*	*naa+oha*	*ná-sáa-néstó-he-Ø*
3-win-**RPRT.3SG**	Annie	but	1-NEG-hear.st-*h(an)e*-DIR

'Annie won, I hear, but I didn't hear that.' (Murray 2010:135)

(35) **St'át'imcets**

# ts'um'-qs-an-as	***k'a***	*kw*	*s-Lemya7*	*kw*	*s-Roger;*
lick-nose-DIR-3ERG	INFER	DET	NOM-Lemya7	DET	NOM-Roger

ats'x-en-lhkan	*wi7*	*zam'*
see-DIR-1SG.SUBJ	EMPH	after.all

Intended: 'Lemya7 must have kissed Roger; actually, I saw it.'
Consultant's comment: 'You're guessing but you're saying you saw it.'
(Matthewson et al. 2007:216)

The cancellability test as applied in Nłeʔkepmxcín is in (36).

(36) **Nłeʔkepmxcín**
Context: Your friend John likes to go fishing. You often go fishing with him. You were both fishing at the weekend and you saw John catch a big salmon. You said:

*# tʔústk **nke** ʔe John ʔe sqyéytn – wíkene xéʔe*

tʔústk=**nke**	ʔe=John	ʔe=sqyéytn	wík-e-ne	xéʔe
catch.fish=**INFER**	DET=John	DET=salmon	see-DIR-1SG.ERG	DEM

Intended: 'John must have caught a salmon – I saw it.'
Consultant comment: 'This sounds.. contrary.' (KBG, BP | SF | NV, Ly)

(36) shows that it is infelicitous to make a statement of *nke(p)* that is then directly followed by a statement that indicates speaker certainty of *p*. This result is consistent with both an epistemic modal analysis and an illocutionary operator analysis, since under neither analysis should the evidence requirement of *nke* be cancellable.

5.5 Evidence requirement (not) blocked by negation

The fourth test determines whether the evidence requirement is blocked by negation. In Matthewson et al's (2007) epistemic modal analysis of St'át'imcets evidentials, the evidence requirement holds under negation since it is a presupposition. An illocutionary operator analysis predicts the same results, i.e., that the evidence requirement will not be blocked by negation, because illocutionary operators cannot take scope under negation (Faller 2002, Murray 2010:80). Faller (2002:227) argues for an illocutionary operator analysis of *=chá* as well as a modal analysis in part based on how *=chá* interacts with negation; Faller (2002:227) argues that *=chá* cannot scope under negation. Therefore, a sentence containing negation and *=chá* can only have the reading in (37i.); the reading in (37ii.) is unavailable.

(37) **Cuzco Quechua**

Ines-qa	*mana-**chá***	*qaynunchaw*	*nana-n-ta-chu*	*watuku-rqa-n.*
Ines-TOP	not-**chá**	yesterday	sister-3-ACC-chu	visit-PST1-3

'Ines didn't visit her sister yesterday.'
EV = (i) speaker has conjectural evidence that Ines did not visit her sister yesterday;
(ii) # speaker does not have conjectural evidence that Ines visited her sister yesterday.

(Faller 2002:227)

The reading in (34ii) is unavailable because *=chá* cannot scope under negation i.e., it cannot mean that the speaker does not have inferential evidence for their claim that Ines didn't visit her sister yesterday. Faller (2002) takes the result of this test as evidence that *=chá* is an illocutionary operator. Faller (2002:228) gives the following speech-act formula for the meaning of *=chá* in (37):

(38) **=chá**:
q_1 = 'Ines visited her sister yesterday.'
$q_2 = \neg q_1$
$p = \Diamond q_2$
SINC = {*Bel(s, p), Rea(s, Bel(s, p))*}
(adapted from Faller 2002:228)

According to Faller (2002:229), the order of operators in (35) is evidence that *=chá* acts as an illocutionary operator. The possibility operator ◇ (i.e., the meaning *=chá* contributes as a propositional operator) is added after the negation operator ¬. Therefore, when a speaker of Cuzco Quechua says (37), they are negating the prejacent proposition q_1, that Ines visited her sister, before they are asserting that q_2 ($\neg q_1$) is possible ($\Diamond q_2$). This leads to the interpretation of it being possible that ¬*q*, not that the speaker is asserting that they have no evidence for *q*. This is consistent with the predictions of an illocutionary operator analysis.

I now turn to the predictions for the results of the evidence requirement test as applied to epistemic modals. Matthewson et al. (2007:217) predict that the indirect evidence requirement should hold in negated sentences, since it is a presupposition and therefore not a cancelable implicature. However, a modal analysis also predicts that, since the evidential contributes to the propositional level of meaning, it thereby contributes content that can be targeted by negation. This content that can be targeted by negation is the modal claim that the evidential introduces. This is illustrated in (39) for St'át'imcets:

(39) **St'át'imcets**

aoz	***k'a***	*k-wa-s*	*Sylvia*	*ku*	*xílh-tal'i*
NEG	**INFER**	DET-IPFV-3POSS	Sylvia	DET	do(CAUS)-TOP

= 'It is necessarily not Sylvia who did it.'
≠ 'It is not necessarily Sylvia who did it.'
≠ 'It is not the case that I have indirect evidence that it was necessarily Sylvia who did it.' (Matthewson et al. 2007:218)

The indirect evidence requirement therefore cannot be cancelled for either a speech act operator or an epistemic modal. In addition, the epistemic modal analysis predicts that the proposition within the scope of the modal evidential can be targeted by negation.

In order to illustrate the effects of negation on a sentence containing *nke*, I present the set of contexts in (40) (adapted from Huijsmans 2023:162).

(40) **Nɬeʔkepmxcín**
Context: Two detectives are investigating a case where an expensive necklace was stolen from a woman's house. They have two main suspects: the gardener, and the woman's son. The two detectives are talking, and one says:

*te **nke** téʔe ks c̓es e gardener te naq̓ʷmtm e mém̓ye.*

te=**nke**	téʔe	k=s	c̓=e=s	e=gardener
NEG=**INFER**	NEG	D/C=NMLZ	CLEFT=INT=3POSS	D/C=gardener

t=e=naq̓ʷm-t-Ø-m	e=mém̓ye
OBL=D/C=steal-TR-3.OBJ-INDEF.SUBJ	DET=necklace

= 'It is necessarily not the gardener who stole the necklace.'
≠ 'It is not the case that I have indirect evidence that it was necessarily the gardener who stole the necklace.'[9] (BP | VF | Ly)

(40) cannot receive the reading whereby the speaker has **no** evidence that the gardener stole the necklace is unavailable. Therefore, the possible readings for (40) show that the indirect evidence requirement encoded by *nke* cannot be blocked by negation. These facts support a modal analysis if the evidence requirement encoded by *nke* is viewed as a presupposition; these results are also consistent with an illocutionary operator analysis if *nke* can only scope over negation. Therefore, the results of the evidence requirement test are inconclusive for determining whether *nke* is a modal or an illocutionary evidential.

5.6 Challengeability

Whether an evidential can be challenged is another of the tests that distinguishes between illocutionary operators and epistemic modals discussed in Faller (2002), Matthewson et al. (2007), and Murray (2010). If an evidential cannot be challenged, then it cannot be at-issue and therefore cannot contribute to propositional content – this is the expected result for an illocutionary operator. However, the prejacent that an illocutionary operator introduces *can* be challenged; however, if the evidential is not modal, then no modal claim exists to be challenged. Under a modal analysis, an evidential cannot itself be challenged, but the modal claim it introduces can be. Similarly, a challenge that solely targets the truth of the prejacent *p* is subsumed under a challenge to the modal claim: saying that *p* is not possible entails that the interlocutor also disagrees with the truth of *p*. Matthewson et al. (2007) call this test the assent/dissent test. If a speaker dissents (i.e., replies 'That's not true!') to a statement containing a modal evidential, they can only be disagreeing with the claim that *p* is possible. However, if a speaker replies to a statement containing an illocutionary operator with 'That's not true!', only *p* can be disagreed with, not the claim that *p* is possible.

Faller (2002:158) claims that the Cuzco Quechua evidentials *=si* 'reportative' and *=mi* 'direct' cannot be challenged and therefore do not contribute to propositional content. However, the case

[9] The consultant also offered (40) as a translation for 'It might not have been the gardener who stole the necklace'. It is unclear whether the availability of this second reading is due to *nke* scoping under negation (i.e., meaning 'not necessarily') or whether the availability of this second reading is due to *nke* having variable force (i.e., meaning 'might not'). The fact that 'It is possibly not the gardener who stole the necklace' is an available reading for (40) does not affect whether the evidence requirement can be targeted by negation, so it will not be explicitly discussed here.

of the Conjectural evidential *=chá* is slightly more complex. Faller (2002) ascribes two 'values' to *=chá*: a modal value (MV) and an evidential value (EV). The modal value of *=chá* can be challenged. However, the evidential value cannot be challenged. (41) shows Faller's (2002:181) results of the challengeability test as applied to *=chá*:

(41) **Cuzco Quechua**

a. *Juan-**chá*** *vaca-ta-qa* *suwa-rqa-n.*
Juan-**chá** cow-ACC-TOP steal-PST1-3
p = 'Juan stole the cow.'
MV: speaker considers it possible that *p*
EV: speaker conjectures that *p*

b. *Mana-n* *pay-chu* *kan-man* *ka-rqa-n.* *Pay-qa mana-n*
not-mi he-NEG be3-IRR be-PST1-3 he-TOP not-mi

suwa-chu
thief-NEG
'It couldn't have been him. He's not a thief.'

c. *Ari.* *Pay-qa kan-man* *ka-rqa-n.* *Ichaqa mana-n* *crei-ni-chu.*
yes he-TOP be3-IRR be-PST1-3 but not-mi believe-1-NEG
'Yes, he might have been the one. But I don't believe it.'
(Faller 2002:181)

Faller (2002) gives no examples of infelicitous challenges to (41a.). The range of possible responses for an interlocutor (i.e., 41b.) and (41c.)) demonstrate that the modal value of *=chá* can be explicitly challenged – (41b.) indicates that the interlocutor does not believe that *p* must be true, thereby challenging the modal value of *=chá*. (41c.) shows that the interlocutor can agree with the modal claim, but also assert that they personally do not believe in it. Faller (2002:181) contends that the facts of *=chá* support both a propositional operator and an illocutionary operator analysis. The results of the challengeability test for Cuzco Quechua *=chá* therefore mirror the expected results for an epistemic modal analysis.

Before discussing the results of the challengeability test for St'át'imcets and Nłeʔkepmxcín, I examine the challengeability test as applied to the Cuzco Quechua direct evidential *=mi*; analyzed as a pure illocutionary operator in Faller (2002). Consider (42) and (43):

(42) **Cuzco Quechua**

Ines-qa *qaynunchay* *ñaña-n-ta-**n*** *watuku-rqa-n*
Ines-TOP yesterday sister-3-ACC-**mi** visit-PST1-3
p = 'Ines visited her sister yesterday.'
EV = speaker saw that *p* (Faller 2002:157)

(43) **Cuzco Quechua**

a. *Mana-**n*** *chiqaq-chu.* *# Mana-**n*** *chay-ta* *riku-rqa-nki-chu*
not-**mi** true-NEG not-**mi** this-ACC see-PST1-2-NEG

'That's not true. # You didn't see this.'

b. *Mana-**n*** *chiqaq-chu.* *Manta-n-ta-lla-**n*** *watuku-rqa-n*
not-**mi** true-NEG mother-3-ACC-LIM-**mi** visit-PST1-3
That's not true. She only visited her mother.' (Faller 2002:158)

Faller notes that (43a) is infelicitous as a challenge to (42), which is evidence that the evidential value of *=mi* cannot be challenged. However, it is felicitous to reply to (42) with a challenge to *p*: Faller (2002:158) gives the example in (43b) as a viable option. Therefore, 'that's not true' can only target *p*.

Dissent to a statement containing a modal evidential can target the modal claim expressed by the speaker, but not the speaker's evidence source for this modal claim. If an evidential introduces a modal claim, and that modal claim can then be dissented with, that evidential is said to pass the assent/dissent test. If dissent cannot target the modal claim, then the evidential is said to fail the assent/dissent test. Matthewson et al. (2007:222) observe that *k'a* passes the assent/dissent test, which is consistent with a modal analysis. The test as applied to *k'a* is in (44):

(44) **St'at'imcets**
Context: A is driving past John's house with B and sees John's lights are on.
A: *wa7* ***k'a*** *l-ta* *tsitcw-s-a* *s-John;* *takem* *i*
be **INFER** in-DET house-3POSS-EXIS NMLZ-John all DET.PL

sts'ak'w-s-a *wa7* *s-gwel*
light-3POSS-EXIS be STAT-burn
'John must be home; all his lights are on.'

B: *aoz* *kw-a-s* *wenacw;* *papt* *wa7* *lhap-en-as*
NEG DET-IPFV-3POSS true always IPFV forget-DIR-3ERG

k-w-as *lhap-an'-as* *i* *sts'ak'w-s-a*
DET-IPFV-3POSS put.out-DIR-3ERG DET.PL light-3POSS-EXIS

lh-as *uts'qa7*
when-3SBJV go.out
'That's not true. He always forgets to turn his lights off when he goes out.'
B's statement ≠ 'John is not home.'
B's statement = 'It is not true that John must be home.'
(Matthewson et al. 2007:222)

In (45) and (46), I present the results of the assent/dissent test as applied to *nke*.

(45) **Nłeʔkepmxcín**
Context: (adapted from Matthewson et al. 2007:223) Anna is out for a walk in the evening. She sees her friend Julie's car in her driveway. Later, Anna meets up with Ella. Ella and Anna start talking about Julie and Anna says:

ʔex ***nke*** *ɬ Julie nɬ cítxʷs tes wíkəne te kas*
ʔex=**nke** ɬ=Julie n=ɬ=cítxʷ=s
IPFV=**INFER** DET=Julie LOC=DET=house=3POSS

t=e=s-wík-[t]-Ø-əne t=e=ka=s
OBL=DET=NMLZ-see-[TR]-3OBJ-1SG.ERG OBL=DET=car=3POSS
'Julie must be at home; I saw her car.' (BP | SF | Ly)

(46) Ella knows Julie always goes on walks in the evening. She replies:

təté? ks tíʔtaẋʷs xéʔe. naʕʔíp xʷəsít ʕaʔáp us
təté? k=s- tíʔtaẋʷ-s xéʔe naʕʔíp xʷəsít-Ø ʕaʔáp us
NEG D/C=NMLZ-true-3ERG DEM always walk-3ERG evening 3SBJV
'That's not true. She always goes walking in the evenings.'
Ella's statement ≠ Julie is not home.
Ella's statement ≠ Anna has no evidence that Julie is home.
Ella's statement = It is not true that Julie must be home.' (BP | SF | Ly)

As (46) shows, it is infelicitous to challenge the source of evidence that a speaker has for the claim that they introduce using *nke*. It is, however, perfectly acceptable for an interlocutor to challenge the modal claim that *nke* introduces. Therefore, *nke* passes the assent/dissent test. These results are consistent with an analysis of *nke* as an epistemic modal.

5.7 Embeddablility

Illocutionary operators and epistemic modals pattern differently in embedded contexts. Faller (2002:213) notes at least two prototypical contexts of embedding: under factive verbs or verbs of saying and in the antecedent of a conditional. Epistemic modal evidentials can be interpreted within the scope of the embedding verb; illocutionary operators cannot. Results are less clear for embeddability in the antecedent of a conditional – often, epistemic modals cannot embed in the antecedent of a conditional. Illocutionary operators cannot appear in the antecedent of a conditional. Therefore, if the evidential under discussion cannot embed in the antecedent of a conditional, this test will not help to narrow down whether it is a modal or a speech act operator. If the evidential can embed in the antecedent of a conditional, it is more likely to be a modal.

Faller (2002:212) distinguishes between *m-performative* and *descriptive* readings of English epistemic modals. The former, *m-performative* readings, express the speaker's subjective evaluation of their own epistemic modal claim in the present. The latter, *descriptive* readings, concern other's evaluations of epistemic modal claims, or a speaker's evaluation at some point in the past. Therefore, descriptive readings of epistemic modals may be denied by the speaker at the utterance time. (47a.) is an m-performative reading of an English epistemic modal adjective, while (47b.) and (47c.) are descriptive readings of English epistemic modal adjectives (I have added text in brackets to categorize the use of *probable* in (47a.-c.)).

(47) a. It is probable that they had run out of fuel. [*m-performative*]

b. It was probable that they had run out of fuel. [*descriptive;* speaker's past evaluation]
c. He considers it probable that they had run out of fuel. [*descriptive*; other's evaluation]

(Faller 2002:212)

Faller claims that Cuzco Quechua evidentials can only have m-performative readings (2002:213). Faller contends that Cuzco Quechua evidentials can never receive descriptive readings; they should therefore (i) be infelicitous in the antecedent of a conditional and (ii) not be able to receive descriptive readings when embedded under attitude verbs or verbs of saying. These predictions are borne out for the Cuzco Quechua evidentials, as demonstrated for *=mi* in (48):

(48) **Cuzco Quechua**

a. **Antecedent of a conditional**

sichus	*Pidru-chá*	*ña*	*iskay*	*t'anta-ta-ña-(*-**n**)*	*mikhu-rqa-n*
if	Pedro-DIM	already	two	roll-ACC-DISC-**mi**	eat-PST1-3

chaywa	*ama*	*huq-ta*	*quy-chu*
then	not-DIR	other-ACC	give-IMP

'If Pedro already ate two rolls, don't give him another one.'

(Faller 2002:221)

b. **Scope under verbs of saying**

Marya	*ni-wa-rqa-n*	*Pilar-(*__mi__)*	*chayamu-sqa-n-ta-__n__*
Marya	say-1OBJ-PST1-3	Pilar	arrive-PP-3-ACC-**mi**

p = 'Marya told me that Pilar arrived.'
EV = (i) speaker has direct evidence that that Marya told her/him that Pilar arrived;
(ii) # Marya has direct evidence that Pilar arrived. (Faller 2002:222)

However, evidentials that can operate at the propositional level can receive descriptive readings. Testing whether an evidential can embed is therefore useful for distinguishing between evidentials that are purely illocutionary operators and evidentials that also act as modals. However, there are a few confounding factors: some modals cannot embed in the antecedent of a conditional. Huijsmans (2023:164) notes that the ʔayʔaǰuθəm inferential evidential, *čɛ̓/čа̓*, which acts as an epistemic modal, is infelicitous in the antecedent of a conditional (49) but felicitous under verbs of saying (50). Matthewson et al. (2007:230) report the same pattern for the St'át'imcets inferential *k'a*.

(49) **ʔayʔaǰuθəm**

Context: We were planning an outing, but we're going to check what it looks like outside before we leave.

*# ʔot **čɛ̓** səm čɬ̓ xʷaštəm θahat.*

ʔut=**čа̓**=səm	čəɬ	xʷaʔ=štəm	θa-h=at
if=**INFER**=FUT	rain	NEG=1PLSUBJ+FUT	go-EPEN=1PL.SBJV

Intended: 'If it must be going to rain, we won't go.' (Huijsmans 2023:164)

(50) **ʔayʔaǰuθəm**

Context: Gloria saw Daniel buying bus tickets to Whistler and thinks he must be going on a trip there. She tells this to me, and then I talk to Daniel and find out that actually he bought them for a friend. Later, I tell you:

tatawθiyəm [ʔə] Gloria hos c̓̓ɛ səm Daniel ʔəkʷ Whistler.
ta~taw-θiy-əm [ʔə=]Gloria [s=]hu=s=**c̓̓a**=səm
PROG~tell-1SG.OBJ-PASS [DET=]Gloria [NMLZ=]go=3POSS=**INFER**=FUT

Daniel ʔə=kʷ=Whistler
Daniel OBL=DET=Whistler

k̓ʷʊnɛtasoł yiyqʔamʔos kʷ pipa kʷs θos ʔəkʷ Whistler.
k̓ʷən-í-t-as-uł [s=]yə~yq-ʔəm-uł=s
see-STAT-CTR-3ERG-PST [NMLZ=]PROG~buy-ACT-INSTR-PST=3POSS

kʷ=pipa kʷ=s=hu=s ʔə=kʷ=Whistler
DET=paper DET=NMLZ=go=3POSS OBL=DET=Whistler

qʷaqʷaysxʷołč Daniel. tatawθas xʷas hiyas θo.
qʷa~qʷay-sxʷ-uł=č Daniel ta~taw-θ-as
PROG~talk-CTR-PST=1SG.SUBJ Daniel PROG~tell-1SG.OBJ-3ERG

[s=]xʷaʔ=s hiy+as θu
[NMLZ=]NEG=3POSS be+3SBJV go

hɛł šɛ patnas yəqʔəmtasoł pipa kʷs θos Whistler.
hił šə=patna=s yəq-ʔəm-t-as-uł pipa
be DET=partner=3POSS buy-IND-CTR-3ERG-PST paper

kʷ=s=θu-s Whistler
DET=NMLZ=go=3POSS Whistler

‘Gloria told me Daniel must be going to Whistler. She saw him buy tickets for going to Whistler. I talked to Daniel. He told me that it’s not him that’s going. He bought the tickets to Whistler for his friend.’ (Huijsmans 2023:167)

I show in (51) that *nke* is infelicitous when embedded in the antecedent of a conditional. This result does not help to determine whether or not *nke* is a modal evidential.

(51) **Nłeʔkepmxcín**

Context: The weather forecast says it might rain tomorrow, but you know the weather forecast is often wrong. You and your friends are trying to make plans to go for a walk tomorrow, and you say:

\# *ʔe xʷuy̓ **nke** tekł, təteʔ xʷuy̓kt xʷəsít.*

ʔe xʷuy̓=**nke** tekɬ təté? xʷuy̓=kt xʷəsít
HYP PROSP=**INFER** rain NEG PROSP=1PL walk
Intended: # If it might be going to rain, we won't go.
Consultant comment: 'Nope.' (BP | SF | Ly)

I now turn to embedding *nke* under *say* and under other attitude verbs, like *think*. As shown in (52) and (53), *nke* can embed under verbs of saying, as well as under *think*. Crucially to an epistemic modal analysis, *nke* takes scope under attitude verbs – a speaker is not reporting their own inferences in uttering (52) or (53); rather, they are reporting the inferences of the subject of the attitude verb.

(52) **Nɬeʔkepmxcín**
Context (adapted from Huijsmans 2023:167): Mary saw John buying bus tickets to Whistler, so she tells you that John must be going to Whistler. You want to relay this information to your friend. You say:

*cúncms ɬ Mary ks xʷúy̓s **nke** nes ɬ John wə ɬ Whistler*.
cún-[t]-cm-s ɬ=Mary k=s=xʷúy̓=s=**nke**
say-[TR]-3SUBJ-1SG.OBJ DET=Mary D/C=NMLZ=PROSP=3POSS=INFER

nes ɬ=John wə=ɬ=Whistler
go DET=John PREP=DET=Whistler
'Mary said that John must be going to Whistler.' (BP | VF | Ly)

(53) **Nɬeʔkepmxcín**
Context: John and Mary are friends. John remembers Mary telling him that she goes to the lake every Monday. You ask John where Mary is, and he tells you Mary must be at the lake. Later, another friend asks you where Mary is, and you tell them:

*ʔes ptinusm ɬ John ks ʔeks **nke** ɬ Mary wə ɬe péɬuskʷu*.
ʔes-ptinusm ɬ=John k=s ʔe=k=s **nke**
STAT-think DET=John D/C=NMLZ CLEFT=D/C=NMLZ **INFER**

ɬ=Mary wə=ɬe=péɬus-kʷu
DET=Mary PREP=DET=lake-water
'John thinks Mary must/might be at the lake.' (BP | VF | Ly)

As these examples demonstrate, *nke* is felicitous when embedded under attitude verbs and under verbs of saying, and, crucially, scopes under attitude verbs and verbs of saying. The Inferential evidential *nke* can be used to report other's claims based on other's inferential evidence; *nke* is not only used to report attitudes and beliefs of the speaker. Therefore, *nke* is embeddable, contributes to propositional meaning and is better analyzed as a modal rather than as a speech act operator.

5.8 Readings in questions

As observed by Matthewson, Littell, and Peterson (2010), in some languages, the addition of an inferential evidential to a question can result in a self-addressed reading, i.e., one where the evidential remains anchored to the speaker. The authors call these types of questions 'conjectural questions'.[10] A conjectural question is a self-addressed question that does not require an answer from an addressee – in fact in many such cases the addressee is also the speaker. An example of a conjectural question formed by the addition of the St'át'imcets inferential evidential *k'a* to a wh-question is in (52).

(54) **St'át'imcets**
swát=as=**k'a** ku=lhwál-ci-ts-as ti=ts'úqwaz'=a
who=SBJV=**INFER** DET=leave-APPL-1SG.OBJ-3SUBJ DET=fish=EXIS
'I wonder who left me this fish.' (Littell et al. 2010:90)

Littell et al. (2010) included Nłeʔkepmxcín data as support for their analysis of questions containing inferential evidentials as conjectural questions. Here, I supplement this data and support their hypothesis that a question containing *nke* is a conjectural question. I present (55) as a prototypical example of a conjectural question. (55) cannot receive an information-seeking reading, only a self-addressed reading.

(55) **Nłeʔkepmxcín**
Context: I'm moving house and my friend has come over to help me move. All of my stuff is in boxes, but I can't remember exactly what's in each box because I wasn't keeping track while I packed them. I look at a box and think:

*ke **nke** ks x̣ménks xeʔ tk k̓ʷáxʷe*
ke=**nke** k=s=x̣m-énk=s xeʔ t=k=k̓ʷáxʷe
Q=**INFER** D/C=NMLZ-heavy-belly=3POSS DEM OBL=D/C=box
'I wonder if this box is heavy.' (BP | SF | Ly)

How exactly the inferential evidential *nke* patterns in interrogative contexts, and what implications this might have for a modal analysis of *nke*, is an area for future research; in unpublished work, Kulkarni (2023) has suggested that *nke* can also mark disjuncts in an alternative question. For now, and for the purposes of this paper, I contend that *nke* patterns as expected for an epistemic modal on this test.

5.9 Summary of test results as applied to *nke*

In order to summarize the results discussed in the above subsections, I present a reiteration of Table 1 in Table 3 below, including a column showing how *nke* patterns on these tests.

Test	**Non-modal (illocutionary operator)**	**Modal (propositional operator)**	**Nłeʔkepmxcín *nke***

[10] Faller (2023) contends that conjectural questions are still a subtype of interrogative flip, although the evidential origo (i.e., who the evidence requirement is anchored to) does not change.

Is it felicitous if *p* is known to be false?	sometimes – yes for reportatives, sometimes for other evidentials, including inferentials	no	no
Is it felicitous if *p* is known to be true?	sometimes - yes for reportatives, sometimes for other evidentials	no	no
Is the indirect evidence requirement cancellable?	no	no	no
Is the indirect evidence requirement blocked by negation?	no	no	no
Can the evidential be challenged? (i.e., does it pass the assent-dissent test?)	sometimes (if yes, then the evidential fails the assent-dissent test)	EVID(*p*) cannot be challenged; MOD(*p*) can be challenged (passes the assent-dissent test)	EVID(*p*) cannot be challenged; MOD(*p*) can be challenged (passes the assent-dissent test)
Is the evidential embeddable?	no	sometimes – epistemic modals may be unembeddable	yes under verbs of saying and attitude verbs; no in the antecedent of a conditional
What readings can the evidential receive in questions?	information-seeking reading	conjectural question reading (information-seeking reading? (Eckardt 2020; Faller 2023))	conjectural question reading

Table 3: Table adapted from Matthewson et al. (2007:247), including a column for *nke*.

Table 3 demonstrates that *nke* patterns as expected for epistemic modals, and is therefore best analyzed as an epistemic modal with an indirect evidence requirement. In the next section, I will show that *nke* is only compatible with epistemic conversational backgrounds, and that *nke* is accepted in necessity, weak necessity, and possibility contexts.

6 *nke* is a variable force epistemic modal

In this section, I will discuss a few more similarities between *nke* and St'át'imcets *k'a*: (i) *nke* and *k'a* both only quantify over epistemic modal bases, and (ii) *nke* and *k'a* display variable-force modal behaviour (see Rullmann et al. 2008 for a more in-depth discussion of the variable-force modal nature of evidentials in St'át'imcets).

(56) demonstrates that *nke* is incompatible with a non-epistemic modal base:

(56) **Nłeʔkepmxcín**
Context: (adapted from Vander Klok 2022) There are two main ways to get to the mountains from your friend's house. You can either take the road that goes by the lake, or you can take the inland road that passes through a town. Both roads take the same amount of time. Someone asks you how to get to the mountains. You say:

*# xʷúy̓kʷ **nke** nes wə łe péłəskʷu e xwéʔeł̓s.*
xʷúy̓=kʷ=**nke** nes wə=łe=péłəskʷu e=xwéʔeł=s
PROSP=2SG.SUBJ=**INFER** go PREP=DET=lake-water DET=road=3POSS
Intended: 'You can take the lake road.'
Consultant comment: 'It's more like you're guessing… [if you said] *xʷúy̓kʷ nke* you would have to have more evidence.. your car would have to be steering that direction or something.' (BP | SF | Ly)

I briefly demonstrate in the following examples that *nke* can be interpreted as an epistemic modal that varies along the continuum from necessity to possibility. Many of the previous examples in this paper exemplify *nke* acting as an epistemic necessity modal; I reiterate one of these contexts in (57). (58) is an example of *nke* acting as an epistemic weak necessity modal, and (59) is an example of *nke* acting as an epistemic possibility modal.

(57) **Nłeʔkepmxcín**
Context: (adapted from von Fintel and Gillies 2007) A math teacher gives a class a problem. She tells the class that there is a ball in either box A, box B, or box C. She then tells them that the ball is not in box A, nor is it in box B. Therefore:

*ʔex **nke** e púkwleʔ nə k̓ʷáxʷe C.*
ʔex=**nke** e=s-púkwleʔ nə=k̓ʷaxʷe C
IPFV=**INFER** DEM=NMLZ-ball LOC=box C
'The ball must be in box C.' (BP | VF | Ly)

(58) **Nłeʔkepmxcín**
Context: (adapted from Vander Klok 2022) You have a friend, Lisa, who goes hiking every day from 10am until 11am. She often goes to the lake, but sometimes she goes to the mountains. Another friend asks you where Lisa is. You notice it's 10:30am and you reply:

*ʔex **nke** weʔ e Lisa wə łe péłəskʷu.*
ʔex=**nke** weʔ e=Lisa wə=łe=péłəs-kʷu
IPFV=**INFER** DEM DET=Lisa PREP=DET=lake-water
'Lisa should be at the lake.' (KBG | VF | NV)

(59) **Nłeʔkepmxcín**

Context: You have a friend who told you that her husband had a cold about a week ago. You're meant to be going to dinner with that friend, her husband, and a few other friends this evening. She texts you to tell you her husband can't make it. You think:

qʷx̣nóxʷ ***nke*** *ʔi.*
qʷx̣nóxʷ=**nke** ʔi
sick=**INFER** still
'He might still be sick.' (CMA | VF | NV)

Despite the seemingly variable-force nature of *nke*, attempts to explicitly conjoin two possibilities using *nke* have not succeeded. Speakers prefer to use constructions featuring the conjunctive mood, such as *x̣əkus*, with or without *nke*. This is demonstrated in (60).

(60) Context: I walk outside to check the weather. I look up and see that the clouds are grey, but they're not too dark. I think:

xʷuẏ ***nke*** *tekɬ x̣əkus ks temes téʔ ks tekɬs.*
xʷuẏ=**nke** tekɬ-Ø x̣ək=us=(**#nke**) k=s-tém-es
PROSP=**INFER** rain-3ERG know=3SBJV=**INFER** D/C=NMLZ-lack-3SUBJ

téʔ k=s-tekɬ-s
NEG D/C=NMLZ-rain-3POSS
'It might rain today, but it also might not.' (BP | VF | Ly)

Based on the above results, I therefore hypothesize that *nke* can be formalized as in (61), based on Peterson's (2010) possible-worlds semantics for Gitksan modal evidentials. The denotation in (61) posits that *nke* is underlyingly a necessity modal, based on the above observations.

(61) **Preliminary denotation for *nke***
$[\![nke]\!]^{w,c}$ is only defined if *c* provides a modal base *B* such that for all worlds $w' \in B(w)$, the inferential evidence in *w* holds in *w'*.

If defined, $[\![nke]\!]^{w,c} = \lambda p.\forall w' [w' \in O_{g(w)}(B(w)) \,\&\, p(w') = 1]$.[11]

[11] The modal base determines which possible worlds are accessible from the evaluation world *w'*, and the ordering source narrows down the set of possible worlds provided by the modal base by ranking them. In the case of *nke*, the ordering source is doxastic – epistemically accessible possible worlds are ranked based on how consistent they are with the speaker's beliefs. The denotation I propose for *nke* in (61) differs from Matthewson et al.'s (2007) denotation for the St'át'imcets Indirect evidential and epistemic modal *k'a*: Matthewson et al. (2007) use a choice function and an optional ordering source to explain the compatibility of *k'a* with the modal forces of necessity, weak necessity, and possibility. I have chosen not to use a choice function and to explicitly use an ordering source primarily because of later work by Peterson (2010) on variable-force epistemic modality in Gitksan (Tsimshianic). Peterson (2010) contends that the compatibility of Gitksan epistemic modals with possibility and necessity contexts can be accounted for without the need for a choice function. The denotation in (61) claims that *nke* is underlyingly a necessity modal. However, Section 6 has shown that *nke* is compatible with epistemic weak necessity and possibility readings. This apparent variability of modal force can be derived from (61) – if the ordering source is empty, *nke* is interpreted as a necessity modal. If the ordering source contains multiple propositions, *nke* is interpreted as a possibility modal. Whether *nke* is semantically a variable-force modal, or whether the weakening of its force arises pragmatically is an issue that is outside the scope of this paper.

(adapted from Peterson 2010:179)

There is a lot more work that needs to be done on modality in Nłeʔkepmxcín, so the denotation in (61) may be revised upon further research.

7 Conclusion

This paper has demonstrated, based on the results of diagnostic tests, that the inferential evidential *nke* in Nłeʔkepmxcín is better analyzed as a modal evidential rather than solely as an illocutionary operator. Since *nke* is semantically embeddable, and introduces a modal claim that can be challenged by an interlocutor, I conclude that it is a modal evidential. This is in keeping with many of the inferential evidentials described in the cross-linguistic literature, such as *k'a* in St'át'imcets (Matthewson et al. 2007) and *c̓ɛ/c̓a* in ʔayʔaǰuθəm (Huijsmans 2023). I have also pointed out that even illocutionary operator analyses of inferential evidentials, such as Faller (2002) and Murray (2010), contain modal elements to their semantics.

This paper has also highlighted aspects of *nke* that need further research, particularly its readings in interrogatives and whether it is underlyingly a necessity or a possibility modal. More research is also needed on many aspects of Nłeʔkepmxcín, including but not limited to the semantics of the other Nłeʔkepmxcín evidentials, and any other morphemes that may turn out to be modal. The account of *nke* proposed in this paper is but a starting point.

References

AnderBois, Scott. 2014. On the exceptional status of reportative evidentials. In Snider, Todd, Sarah D'Antonio and Mia Weigand (eds.), *Proceedings of SALT 24*, 234-254.

Chung, Kyung-Sook. 2005. Space in tense: The interaction of tense, aspect, evidentialty, and speech act in Korean. PhD dissertation: Simon Fraser University.

Chung, Kyung-Sook. 2007. Spatial deictic tense and evidentials in Korean. *Natural Language Semantics* 15, 187-219.

Chung, Kyung-Sook. 2020. Korean Evidentials and Epistemic Modals. In Lee, Chungmin and Jinho Park (eds.), *Evidentials and Modals*. Leiden: Brill. Current Research in the Semantics/Pragmatics Interface 39, 177-214.

Dunlop, Britt, Suzanne Gessner, Tracey Herbert, and Aliana Parker. 2018. *Report on the Status of B.C. First Nations Languages*, 3rd Edition. First Peoples' Cultural Council.

Eckardt, Regine. 2020. Conjectural questions: the case of German verb-final *wohl* quetsions. *Semantics and Pragmatics 13(9)*, 1-54.

Eckardt, Regine and Andrea Beltrama. 2019. Evidentials and questions. In Christopher Piñon (ed.), *Empirical Issues in Syntax and Semantics 12*, 121-155.

Faller, Martina. 2002. The Semantics and Pragmatics of Evidentials in Cuzco Quechua. PhD dissertation: Stanford University.

Faller, Martina. 2004. The Deictic Core of 'Non-Experienced Past' in Cuzco Quechua. *Journal of Semantics* 21(1), 45-85.

Faller, Martina. 2006Ms. Evidentiality above and below speech acts. Draft manuscript available: https://personalpages.manchester.ac.uk/staff/martina.t.faller/documents/Evidentiality.Above.Below.pdf [Accessed on 03/10/23].

Faller, Martina. 2011. A possible worlds semantics for Cuzco Quechua evidentials. In Li, Nan and David Lutz (eds.), *Proceedings of SALT 20*, 660-683.
Faller, Martina. 2023. Conjectural speech acts in Cuzco Quechua. *Journal of Pragmatics* 214, 144-163.
Hannon, Ella and Cayla Smith. 2023. A brief comparison of two evidentials in Nɬeʔkepmxcín. In Reisinger, D.K.E., Laura Griffin, Gloria Mellesmoen, Sander Nederveen, Julia Schillo, and Bailey Trotter (eds.), *Papers from the Fifty-Eighth International Conference on Salish and Neighbouring Languages*, 94-116. University of British Columbia Working Papers in Linguistics: Vancouver, BC.
Huijsmans, Marianne, and D. K. E. Reisinger. 2021. Modal versus deictic evidentials in ʔayʔaǰuθəm (Comox-Sliammon). In Dreier, Nicole, Chloe Kwon, Thomas Darnell, and John Starr (eds.), *Proceedings of SALT 31*, 629-646.
Huijsmans, Marianne. 2023. *Second-position clitics, from morphosyntax to semantics: the ʔayʔaǰuθəm (Comox-Sliammon) perspective*. Ph.D dissertation: The University of British Columbia.
Izvorski, Roumyana. 1997. The present perfect as an epistemic modal. In Aaron Lawson (ed.), *Proceedings of SALT 7*, 222-239.
Kratzer, Angelika. 1991. Modality. In Dieter Wunderlick and Armin von Stechow (eds.), *Semantics: An international handbook of contemporary research*, 639-656. Berlin: de Gruyter.
Kulkarni, Aaditya. 2023. Alternative questions in Nɬeʔkepmxcín. Poster presented at A Day of Nɬeʔkepmxcín at UBC, April 2023.
Littell, Patrick & Scott Mackie. 2011. Reconsidering Sensory Evidence in Nɬeʔkepmxcín. In Lyon, John and Joel Dunham, (eds.), *Papers from the Forty-Sixth International Conference on Salish and Neighbouring Languages*, 164-183. University of British Columbia Working Papers in Linguistics: Vancouver, BC.
Littell, Patrick & Scott Mackie. 2014. Further dimensions of evidential variation: Evidence from Nɬeʔkepmxcín. Paper presented at SULA 7. https://littell.nfshost.com/papers/littell2014.pdf [Accessed 09/19/23]
Matthewson, Lisa. 2012. Evidence about evidentials: Where fieldwork meets theory. In Stolterfoht, Britta and Sam Featherston (eds.), *Empirical Approaches to Linguistic Theory*, 85-114. Berlin: de Gruyter Mouton.
Matthewson, Lisa. 2020. Evidence Type, Evidence Location, Evidence Strength. In Lee, Chungmin and Jinho Park (eds.), *Evidentials and Modals*. Leiden: Brill. Current Research in the Semantics/Pragmatics Interface 39, 82-120.
Matthewson, Lisa, Henry Davis, and Hotze Rullmann. 2007. Evidentials as epistemic modals: Evidence from St'át'imcets. In van Craenenbroeck, Joeroen and Johan Rooryck (eds.), *Linguistic Variation Yearbook 7*, 201-254.
Murray, Sarah E. 2010. *Evidentiality and the structure of speech acts*. Ph.D dissertation: Rutgers University.
Murray, Sarah E. 2017. *The Semantics of Evidentials*. Oxford Studies in Semantics and Pragmatics 17. Oxford: Oxford University Press.
Murray, Sarah E. 2021. Evidentiality, Modality, and Speech Acts. In Colin Phillips, Barbara Partee, and Mark Liberman (eds.), *Annual Review of Linguistics 7*, 213-233.
Peterson, Tyler Roy Gösta. 2010. *Epistemic modality and evidentiality in Gitksan at the semantics-pragmatics interface.* Ph.D dissertation: The University of British Columbia.

Reisinger, D. K. E., Marianne Huijsmans, and Lisa Matthewson. 2021. Evidentials in the nominal domain: a Speasian analysis of ʔayʔaǰuθəm determiners. In Patrick Grosz, Luisa Martí, Hazel Pearson, Yasutada Sudo, and Sarah Zobel (eds.), *Proceedings of Sinn und Bedeutung 25*, 751-768.

Rullmann, Hotze, Lisa Matthewson, and Henry Davis. 2008. Modals as distributive indefinites. *Natural Language Semantics* 16(1), 317-357.

Speas, Peggy. 2010. Evidentials as generalized functional heads. In Anna Maria Di Sciullo and Virginia Hill (eds.), *Edges, Heads, and Projections: Interface Properties*, 127-150. John Benjamins Publishing Company.

Thompson, M. Terry and Laurence C. Thompson. 1992. *The Thompson Language*: *nleképmxcin*. Missoula, MT: University of Montana Occasional Publications in Linguistics 8.

Thompson, M. Terry and Laurence C. Thompson. 1996. *Thompson River Salish Dictionary*. Missoula, MT: University of Montana Occasional Publications in Linguistics 12.

Van der Auwera, Johan and Plungian, Vladimir A. 1998. Modality's semantic map. *Linguistic Typology* 2, 79-124.

Vander Klok, Jozina. 2022. Revised modal questionnaire for cross-linguistic use. http://tulquest.huma-num.fr/fr/node/70. [Accessed on 09/19/23]

Von Fintel, Kai and Anthony S. Gillies. 2010. Must…stay…strong! *Natural Language Semantics* 18(4), 351-383.

Willett, Thomas. 1988. A cross-linguistic survey of the grammaticalization of evidentiality. *Studies in Language* 12(1), 51-97.