

Meaning classes of evidential implications across languages*

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Lee, Jungmee. 2016. Meaning classes of evidential implications across languages. *Linguistic Research* 33(3), 437–461. This paper discusses the meaning type of the evidential implications triggered by evidentials across languages. I argue that they do not fit into classical meaning categories such as presupposition (in the sense of Stalnaker 1974), conventional implicature (in the sense of Potts 2005), and conversational implicature (in the sense of Grice 1975). I explore cross-linguistically common and varied properties of the evidential implications, and propose their taxonomy, following Tonhauser *et al.*'s (2013) approach to projective content. On the basis of the proposed taxonomy, I examine various properties of the evidential implication arising from Korean evidential sentences with *-te*, and discuss which meaning class it belongs to in the proposed taxonomy. (Sungkyunkwan University)

Keywords evidentiality, taxonomy, presupposition, conventional implicature, conversational implicature, projection, local effect

1. Introduction

A single sentence can give rise to multiple implications. For example, two implications arise from (1a): the speaker asserts (1b), and the expression *too* triggers the presupposition in (1c).

- (1) a. I went to the concert, too.
b. The speaker went to the concert.
c. Some other contextually salient individual(s) went to the concert.

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Evidential sentences also give rise to multiple implications, as illustrated with a Korean sentence with the evidential *-te* in (2).

- (2) Ecey pi-ka o-Ø-te-la.
 yesterday rain-Nom fall-Pres-TE-Decl
 '[I had sensory evidence that] it was raining yesterday.'
 prejacent implication: It was raining yesterday.
 evidential implication: I had sensory evidence that it was raining yesterday.

By uttering an evidential sentence like (2), the speaker asserts the prejacent implication, not the evidential implication. Then, the question arises as to which meaning category the evidential implication belongs to.

There are several classical meaning categories for non-asserted content, such as presupposition, conventional implicature, and conversational implicature. In this paper, I compare the properties of the classical meaning categories with those of the evidential implications across languages, and argue that they do not fit into the classical meaning categories (Section 2). I investigate the properties of the evidential implications triggered by some evidentials (analyzed in the previous research), and discuss which properties are or aren't attested across languages. On the basis of these cross-linguistic similarities and variations, I propose a taxonomy of evidential implications across languages (Section 3), and discuss which meaning class the evidential implication arising from Korean *-te* sentences belongs to in the proposed taxonomy (Section 4).

2. Classical meaning categories and evidential implications

In this section, I show that an evidential implication does not fit into the classical meaning categories such as presupposition (in the sense of Stalnaker 1974), conventional implicature (in the sense of Potts 2005), and conversational implicature (in the sense of Grice 1975).

2.1 Presupposed content?

In the literature on evidentiality, evidential implications have been generally

treated as presuppositional content. For example, Izvorski (1997) argues that the indirect (inferential and reportative) evidential implication arising from the present perfect in languages like Bulgarian, Turkish and Norwegian (called Perfect of Evidentiality; glossed as PE below) is presupposed content, as illustrated in (3):

- (3) Ivan izkaral izpita.
Ivan passed-PE the-exam
 p = 'Ivan passed the exam.'
asserted content = ' $\Box p$ in view of the speaker's knowledge state'
presupposed content = 'speaker has indirect evidence for p '
(Izvorski 1997: 226)

By uttering the sentence in (3), the speaker asserts that the prejacent implication p is true in all the possible worlds accessible from the speaker's epistemic state. The evidential implication such that the speaker has indirect evidence for p is not asserted, but it is presupposed.

These presuppositional analyses of evidential implications are empirically based on the *projective* behaviors of evidentials under the scope of semantic operators such as negation. Previous authors (Karttunen 1973; Chierchia and McConnell-Ginet 1990; Simons *et al.* 2010; among others) have used the so-called 'family-of-sentences' diagnostics in order to test whether some meaning m arising from a sentence S can project globally, as illustrated with negation below:

- (4) a. John stopped beating his wife.
b. John did not stop beating his wife.
c. *presupposition of (4a) and (4b)* = 'John used to beat his wife.'

Note that both (4a) and its negative version in (4b) presuppose (4c). In other words, the presupposition is projective out of the scope of negation.

Previous researchers of evidentials have used these projection diagnostics, too. For example, the evidential implication in (5) survives out of the negation scope: (5) does not mean that the speaker lacks evidence for the truth of the prejacent implication, but the only available reading is that the speaker has evidence against it. In other words, the evidential implication projects globally.

- (5) Ivan ne izkaral izpita.
 Ivan not passed-PE the-exam
 ‘[It is said/the speaker infer that] Ivan did not pass the exam’
 NOT= ‘It is not the case that [it is said/the speaker infer that] Ivan
 passed the exam.’ (Izvorski 1997: 24)

In addition to negation, projectivity in other embedded contexts such as interrogatives has been used in the literature of evidentiality. For example, Faller (2002) and Murray (2010) show that evidentials in Quechua and Cheyenne, respectively, always project globally and do not scopally interact with tense, modals, conditionals and certain embedding verbs. They take the results of the projection tests to support their analyses of Quechua and Cheyenne evidentials as ‘illocutionary’ evidentials which affect the illocutionary meaning (not the truth conditions) of a sentence.¹

However, this presuppositional view of evidential implications has been argued against in recent studies, e.g. Murray (2010). The primary evidence against the presuppositional analysis is that evidential implication contributes to new information to the common ground, contrary to Stalnaker’s (1974) non-informativity constraint such that presupposed content should be available in the common ground prior to an utterance. The following Cheyenne examples from Murray (2010) illustrate that evidential implications contribute new information to the common ground, unlike typical presupposed content.

- (6) a. É-to’se-am-ê-sôhpe-ohtse-**sêstse** Ma’enôhkevo’eha.
 3-going.to-by-Ep-through-go-Rpt.3sg Turtle.Moccasin
 ‘Turtle Moccasin, I hear, is going to pass by.’
 b. É-tonóom-e-Ø.
 3-wait.for-Psv-Dir
 ‘He’s expected.’
 c. É-mo’on-átamaahe-**sêstse**.
 3-handsome-appear-Rpt.3sg
 ‘He’s handsome, I hear.’ (Murray 2010: 27)

¹ Matthewson *et al.* (2007) also used the results of projection tests to support their modal analysis of St’át’imcets evidentials, according to which St’át’imcets evidentials are modal-like which affect the truth conditions of evidential sentences.

In (6), since the son has just returned, the evidential implication arising from (6a), such that his mother has reportative evidence that Turtle Moccasin will pass by, is new information to him. He has no information about whether Turtle Moccasin is handsome or not, and furthermore whether his mother has reportative evidence for it or not. Thus, the evidential implication arising from (6c) is also new information to the son. If we follow Stalnaker's characterization of presupposition, evidential implication cannot be classified as presupposed content, although they turn out to be projective in the family-of-sentences diagnostics.²

2.2 Conventional implicature?

Potts (2005, 2007) argues that Conventional implicature (CIs) is a distinguished meaning class, particularly from presupposition, in that the information offered by CIs is not part of the common ground. This *anti-backgrounding requirement* by CIs contrasts with presupposition, as illustrated below with the CI from nominal appositives in (7) and the presupposition from the factive predicate *know* in (8).³

² One might argue that this violation of Stalnaker's non-informativity constraint can be explained if we assume that presupposition needs not be discourse-old information (e.g. Abbott 2000) and also that presupposition accommodation occurs *obligatorily* in evidential sentences, i.e. the addressee(s) must adjust his/her knowledge in order to understand evidential utterances. However, evidential sentences do not function in this way: an evidential implication is provided as new information, and the addressee is not expected to have any prior knowledge of the source of information conveyed by evidential utterances. See Potts's (2007) argumentation against the presuppositional treatment of nominal appositives for relevant discussion.

³ A reviewer pointed out that the second sentence in (7a) is felicitous with *the cancer survivor* instead of *a cancer survivor*, as follows:

(i) a. Lance Armstrong survived cancer. When reporters interview Lance, the cancer survivor, he often talks about the disease.

b. *Implication from the second sentence in (i-a)* = 'Lance Armstrong is a cancer survivor.'

However, it calls for another investigation in which meaning category the implication in (i-b) belongs to. If it turns out that the implication in (i-b) is not a CI, then the different result in felicity between (7a) and (i-a) has nothing to do with the above comparison between CI and presupposition. With respect to the use of definite and indefinite articles in nominal appositives, Potts (2005) provides the following generalizations:

(ii) a. If a speaker chooses a definite article to head an NA's appositive, then the proposition expressed by that NA is deemed essential by the speaker to determining the referent of the anchor.

b. If a speaker chooses an indefinite article to head an NA's appositive, then the proposition expressed by that NA is deemed essential by the speaker to the narrative. (Potts 2005:119)

- (7) a. Lance Armstrong survived cancer. #When reporters interview Lance, a cancer survivor, he often talks about the disease.
 b. *CI of the second sentence in (7a)* = ‘Lance Armstrong is a cancer survivor.’
- (8) a. Lance Armstrong survived cancer. And most riders know that Lance Armstrong is a cancer survivor.
 b. *Presupposition of the second sentence in (8a)* = ‘Lance Armstrong is a cancer survivor.’ (Potts 2007: 486)

The conventional implicature of the nominal appositive in (7) is infelicitous if it turns out to be readily retrievable from the given context. In contrast, if the backgrounded information is offered as presupposed content as in (8), it is not infelicitous.⁴

Although Potts himself points out that the above generalizations should be tested extensively in future work, I suspect that his proposal is generally on the right track. This is beyond the scope of this paper, so I leave this for future research.

⁴ In addition to the anti-backgrounding effect, Potts (2007) argues that CIs are characterized by the following two properties. First, unlike presupposition, CIs cannot be plugged under elements like verbs of saying. The *as*-parenthetical in (i-a) gives rise to the CI implication in (i-b), although it is embedded under the verb of saying. This is why the negation of the CI implication is infelicitous in the following sentence. (See Potts 2002 for more details about *as*-parentheticals.) This contrasts with presupposition, as illustrated in (ii-a): The presupposed content is plugged under the verb of saying, and thus the following sentences with the negation of the presupposition are felicitous.

- (i) a. Ed said that, as Sue predicted, it was raining. #But in fact Sue didn’t predict rain.
 b. *CI of the first sentence in (i-a)* = ‘Sue predicted rain.’
- (ii) a. Ed said that Sue realized it was raining. (Later, we found out that Ed’s report was wrong. Sue can’t have realized it was raining, because it wasn’t).
 b. *Presupposition of the first sentence in (ii-a)* = ‘It was raining.’ (Potts 2007: 487)

Another property exhibited by CIs is that they are always speaker-oriented (even in embedded contexts). The CI implication from the nominal appositives in (iii) is attributed to the speaker, not to the individual denoted by the matrix clause subject. Consequently, if it is followed by the negation of the CI implication, then it is infelicitous.

- (iii) a. Sheila believes that Chuck, a psychopath, should be locked up. #But Chuck isn’t a psychopath.
 b. *CI of the first sentence in (iii-a)* = ‘Chuck is a psychopath.’ (Potts 2007: 489)

The evidential implication from evidential sentences cross-linguistically varies with respect to its

Now, consider the following Korean evidential sentence in terms of the anti-backgrounding requirement.

- (9) Ecey etten namca-ka kil-eyse ne-lul ttayli-nu-n
 yesterday some man-Nom street-Loc you-Acc hit-Impf-Rel
 kes-ul po-ass-e. Ne-lul tayli-**te**-n ku
 thing-Acc see-Past-Decl you-Acc hit-TE-Rel the
 namca-nun totaychay nwukwu-Ø-ni?
 man-Top on.the.earth who-Pres-Q
 ‘I saw a certain man hitting you on the street. Who on the earth is
 the man who (I saw) hit you?’

In (9), it is already in the common ground that the speaker had direct evidence for the relevant proposition. Contrary to CIs, the redundancy for a *-te* sentence does not give rise to infelicity. This indicates that the evidential implication does not have an anti-backgrounding effect, and thus it cannot be categorized as CI-type meaning.

2.3 Conversational implicature?

We have seen that the evidential implication in general is neither Stalnaker-style presupposition nor Potts-style conventional implicature. It is also notable that the evidential implication is not a conversationally implicated meaning, either. This is because it is a non-cancellable meaning, as illustrated with Izvorski’s Bulgarian example in (10) and Matthewson *et al.*’s (2007) St’át’imcets example in (11):

- (10) Maria celunala Ivan.
 Maria kiss-PE Ivan
 ‘Maria apparently kissed Ivan.’ #(Actually) I witnessed it./#(Actually)
 I know that for a fact. (Izvorski 1997: 24)
- (11) #nilh-as-**an** k-Sylvia ku wa7 xilh-tal’i;
 Foc-3conj-Perc.Evid Det-Sylvia Det Impf do(caus)-Top

global/local projection and speaker-orientedness. I discuss these properties later in Section 3.

wá7-lhkan t'u7 áts'x-en

Impf-1sg.Subj just see-Dir

'It was apparently Sylvia who did it; I saw her.'

(Matthewson *et al.* 2007: 25-27)

In (10), it is infelicitous when the evidential sentence occurs with the continuation that cancels the evidential implication. As in Izvorski's data, the evidential implication from the St'át'imcets evidential sentence in (11) cannot be canceled, either.⁵

2.4 Interim summary: Cross-linguistically shared properties of evidential implications

In the preceding sections, we have seen that evidential implications do not fit into the classical meaning categories such as presupposition (in the sense of Stalnaker 1974), conventional implicature (in the sense of Potts 2005), and conversational implicature (in the sense of Grice 1975). First, while some evidential implications are projective in the same way as presupposition globally projects, they contribute new information to the common ground unlike presupposition. Evidential implications also differ from CI-type meaning, because they do not have an anti-backgrounding effect unlike CI-type meaning. Furthermore, they cannot be analyzed as conversational implicature, because they are not cancellable.

I argue that the properties discussed in the preceding sections are cross-linguistically shared by evidential sentences. The evidential implications arising from evidential sentences can be characterized by their non-cancelability, and by their lack of requirement on a prior context. I propose that not-at-issueness is also one of the characteristics of evidential implications across languages.

At-issueness is defined in terms of whether the target implication is the 'main point' of the utterance and it is 'directly related to the conversation at hand'. If the target implication is merely a 'backgrounded' implication, then it is not-at-issue (e.g. Stalnaker 1974; Chierchia and McConnell-Ginet 1990; Potts 2005; Abbott 2000;

⁵ As pointed out by one of the reviewers, Lambrecht (1994) argues that there is a continuum according to the accessibility to contextually retrievable information, rather than there is a clear-cut distinction among different meaning types.

Simons *et al.* 2010). This (not-)at-issueness can be diagnosed by the so-called challengeability test (e.g. Faller 2002; Matthewson *et al.* 2007; Roberts *et al.* 2009; Murray 2010). According to the challengeability test, at-issue content can be directly negated or investigated, but not-at-issue content cannot be directly challenged, as illustrated with evidentials in Quechua (Faller 2002) and Cheyenne (Murray 2010) below:

- (12) a. Inés-qa qaynunchay nana-n-ta-s watuku-sqa.
Inés-Top yesterday sister-Acc-Bpg visit-Pst2
p = ‘Inés visited her sister yesterday.’
ev = ‘speaker was told that *p*.’
b. Mana-n chiqaq-chu. #Mana-n chay-ta willa-rqa-sunki-chu.
not-Bpg true-Neg not-Bpg this-Acc tell-Pst1-3s2o-Neg
‘That’s not true. You were not told this.’ (Faller 2002: 195-196)
- (13) a. Méave’ho’eno é-hestahe-**sestse** Mókéé’e.
Lame Deer s-be.from-Rpt.3sg Mókéé’e
‘Mókéé’e is from Lame Deer, I hear.’
b. #É-sáa-hetóméto-hane-∅. Né-sáa-nè-néstó-he-∅
3-Neg-be.true-Mod-Dir 3-Neg-be.true-Mod-Dir
‘That’s not true. You didn’t hear that.’ (Murray 2010: 51)

The evidential sentences in (12a) and (13a) give rise to reportative evidential implications, but they cannot be directly negated as shown by the infelicity in (12b) and (13b). These results of the challengeability test suggest that the evidential implications are not-at-issue content.⁶

⁶ The effect of not-at-issue content on the common ground has been discussed by previous authors like Murray (2010), AnderBois *et al.* (2015), and Lee (2016). For example, Murray merges two different views on assertion (e.g. Stalnaker 1987; Karttunen 1974 on the one hand, and Ginzburg 1992; Roberts 1996; Gunlogson 2001; Groenendijk and Roelofsen 2009 on the other hand), and argues that asserting not-at-issue content *directly updates* the common ground (while asserting at-issue content *proposes* to update the common ground). AnderBois *et al.* (2015) makes a similar proposal: at-issue and not-at-issue content undergo a different update on context, by means of being interpreted with respect to different variables. Lee (2016) follows these dynamic semantic treatments of two different types of meaning, and sketches out a formal representation of bi-directional interaction between at-issue and not-at-issue content in Korean evidential sentences.

In sum, evidential implications are non-cancellable and not-at-issue, and they do not impose any constraint on a prior context. Given these cross-linguistically shared properties, they do not fit into traditional meaning categories such as presupposition, conventional implicature, and conversational implicature. In the next section, I propose a classification of evidential implications according to their differences across languages.

3. Towards a taxonomy of evidential implications across languages

In this section, I first review Tonhauser *et al.* (2013), according to which what has been generally classified as presupposed content due to their projective behaviors can be subdivided into different meaning classes. Following Tonhauser *et al.*, I propose a taxonomy of evidential implications on the basis of their varied properties across languages.

3.1 Tonhauser *et al.*'s (2013) taxonomy of projective content

Tonhauser *et al.* (2013) investigates a range of constructions exhibiting projective behaviors and argues that projective content is divided into four subclasses in terms of the following properties: (i) Strong Contextual Felicity Constraint, and (ii) Obligatory Local Effect Constraint. As a constraint on the common ground, Strong Contextual Felicity Constraint is based on the standard assumption that a sentence can be uttered felicitously only if its presupposed content is entailed by the context, i.e. this constraint is identical to Stalnaker's non-informativity constraint. The latter constraint is concerned with the interaction between a target implication and embedding operators like propositional attitude verbs, modals, and conditionals, i.e. whether the target implication always takes widest scope (even in embedded contexts), or it can take narrow and intermediate scopes. The following Table summarizes the different properties of four meaning classes and examples (with triggers and their implications):⁷

⁷ Note that multiple implications can be triggered by a single expression, as is the case with *too*. See Tonhauser *et al.* (2013) for more details.

Table 1. Four classes of projective content in Tonhauser *et al.* (2013)

Classes	Projection	Strong Contextual Felicity Constraint	Obligatory Local Effect Constraint	Examples: Trigger (Target Implication)
A	yes	yes	yes	pronoun (existence of referent) <i>too</i> (existence of alternative)
B	yes	no	no	Expressive Appositive possessive NP (possessive relation)
C	yes	no	yes	<i>almost</i> (polar implication) <i>know</i> (content of complement) <i>only</i> (prejacent implication) <i>stop</i> (prestate holds)
D	yes	yes	no	<i>too</i> (salience of established alternative) Focus (salience of alternatives) <i>that</i> N (speaker indicates suitable entity)

Tonhauser *et al.*'s taxonomy in terms of the two constraints includes all implications which have been analyzed as presuppositions or as conventional implicatures in the literature. Categories A and D, which are subject to Strong Contextual Felicity constraint, include anaphoric expressions such as pronouns, demonstrative noun phrases, and the adverb *too*. Category B contains the expressions that have been proposed to give rise to conventional implicatures by Potts, such as expressives, appositives, NRRCs, and also demonstratives and possessive NPs. Category C is a heterogeneous class, containing classical presuppositions triggered by *stop* and *know*, and also the prejacent implication from *only* and the polar implication from *almost*. (For reasons of space, examples of each meaning class in Tonhauser *et al.*'s taxonomy are not provided in this paper.)

3.2 Proposal: Three classes of evidential implications across languages

In this paper, I propose that evidential implications triggered by evidentials across languages can be classified as in Tonhauser *et al.*'s (2013) taxonomy. They analyze projective implications arising from various lexical items or constructions in

terms of their requirement on a prior context (Strong Contextual Felicity Constraint) and the projective scope (Obligatory Local Effect Constraint). In this paper, I consider the (non-)projectivity itself as one of the properties of evidential implications across languages, along with (not-)at-issueness, (non-)cancelability, (no) requirement on a prior context, and obligatory local effect. While it is beyond the scope of this paper to explore the properties of evidential implications from a whole range of languages, the empirical patterns in some languages that have been previously analyzed in the formal semantics literature can be summarized as follows:

Table 2. Three classes of evidential implications across languages

Classes	Not-At-Issueness	Non-Cancelability	No Requirement on Prior Discourse	Projectivity	Obligatory Local Effect	Examples: Language (Evidential type)
1	yes	yes	yes	yes	yes	St'at'imcets <i>an'</i> (perceived)
2	yes	yes	yes	yes	no	Quechua <i>-n</i> (direct)
3	yes	yes	yes	no	N/A	Japanese <i>soo</i> (inferential)

Evidential implications across languages share the properties of Not-at-issueness, Non-cancellability, and No requirement on a prior context, as we have already seen in the preceding sections. However, they crucially differ in terms of their projective behaviors: Classes 1 and 2 are projective content, but Class 3 is not. Class 1 and Class 2 differ in terms of Obligatory Local Effect.

Different projective behaviors between Classes 1-2 and Class 3 are illustrated with respect to negation operators in (14): the evidential implications triggered by St'at'imcets perceived evidence marker *an'* (Class 1) and Quechua direct evidential *-n* (Class 2) are projective under negation, but that triggered by Japanese inferential evidential *soo* is not.

(14) **Projectivity**

a. **Class 1: St'át'incets Perceived evidence *an'***

Cw7áoz-as-**an'** kw s-nilh-ts s-Sylvia ku
Neg-3conj-Perc.Evid Det Nom-Foc-3poss Nom-Sylvia Det
xilh-tal'i
do(caus)-Top

'It is not necessarily Sylvia who did it.'

NOT = 'I don't have indirect perceived evidence that it was necessarily Sylvia who did it.'

(Matthewson *et al.* 2007: 229-230)

b. **Class 2: Quechua direct evidential *-n***

Mana-**n** para-sha-n-chu.

not-Bpg rain-Prog-3-Pol

p = 'It's raining.'

ev = 'speaker has direct evidence that it isn't raining.'

NOT = 'speaker does not have direct evidence that *p*.'

(Faller 2006: 10)

c. **Class 3: Japanese inferential evidential *-soo***

konya ame-ga furi-**soo** janai

tonight rain-Nom fall(Inf)-soo Cop.Neg.Pres

'It doesn't look like it will rain tonight.'

(McCready and Ogata 2007: 30-31)

Classes 1 and 2 are distinguishable by means of Obligatory Local Effect. When St'át'incets perceived evidence *an'* and Quechua direct evidential *-n* are embedded under a verb of saying, their interpretations differ, as illustrated in (15): the evidential meaning triggered by St'át'incets *an'* (Class 1) is locally anchored to the matrix clause subject Lémya7, but the evidential meaning triggered by Quechua evidential *-n* (Class 2) does not have an obligatory local effect: The evidential implication is anchored to the speaker.

(15) **Obligatory local effect**

a. **Class 1: St'át'incets Perceived evidence *an'***

Context: Context: Lémya7 was babysitting your nephew and niece

and she noticed at one point that the boy had a red mark on his face and his sister was looking guilty. She tells you when you get home what she noticed. Then you tell the mother of the kids.

tsut s-Lémya7 kw s-tup-un'-aś-**an'** s-Maria
saynom-Lémya7 Det Nom-punch-Dir-3erg-Perc.Evid Nom-Maria
ti sésq'wez'-s-a

Det younger.sibling-3poss-Exis

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

(*an'* relates to Lémya7's belief; Lémya7 has evidence.)

(Matthewson *et al.* 2007: 248)

b. Class 2: Quechua direct evidential -n

Marya ni-wa-rqa-n Pilar chayamu-sqa-n-ta-**n**

Marya say-1o-Pst1-3 Pilar arrive-Pp-3-Acc-Bpg

p = 'Marya told me that Pilar arrived.'

ev = (i) speaker has direct evidence that Marya told her or him that Pilar arrived.

(ii) # Marya has direct evidence that Pilar arrived.

Class 1 and 2 (for evidential implications) correspond to Category C and B in Tonhauser *et al.*'s (2013) taxonomy of projective content, respectively. That is, the evidential implication triggered by, e.g. St'át'imcets perceived evidence *an'*, belongs to the same meaning category as implications from *only* and *almost* as well as classical presuppositions such as those triggered by *stop* and *know*. The evidential implication triggered by Quechua direct evidential -n is included in the same meaning category as Tonhauser *et al.*'s Category B which subsumes Potts's (2005) CI triggers. The non-projective evidential implications, such as those triggered by Japanese inferential evidentials (McCready and Ogata 2007), do not correspond to Tonhauser *et al.*'s taxonomy.

4. Case study: Evidential implication from Korean -*te* sentences

In this section, I discuss the properties of the evidential implication that arises from sentences containing the Korean evidential -*te*. I show that it exhibits the same properties as those arising from evidentials in other languages, i.e. not-at-issueness, non-cancelability, and no requirement on a prior context (Section 4.1), but its

projective behaviors and local effects indicate that it belongs to a particular meaning class in the proposed taxonomy (Section 4.2).

4.1 Cross—linguistically shared properties

First, the evidential implication that arises from Korean *-te* sentences is not-at-issue, as illustrated with the challengeability test below. The evidential implication can neither be directly negated as in (16) nor be investigated as in (17).⁸

- (16) a. Ecey nalssi-ka nemwu tep-Ø-**te**-la.
yesterday weather-Nom too hot-Pres-Te-Decl
‘[I had sensory evidence that] it was too hot yesterday.’
b. Ani-ya. #Ne-nun kulehkey nukki-cianh-ass-e.
Neg-Impol you-Top so feel-Neg-Past-Decl
‘No. You did not feel so.’
- (17) a. Ecey nalssi-ka nemwu tep-Ø-**te**-nya?
yesterday weather-Nom too hot-Pres-TE-Q
‘Given your sensory evidence, was it too hot yesterday?’
b. Ani-yo. #Ce-nun nalssi-lul nukki-ci mos-ha-yess-e-yo.
Neg-Pol I-Top weather-Acc feel-Comp Neg-do-Past-Decl-Pol
‘No. I didn’t feel the weather.’

The infelicity of (16b) and (17b) suggests that the evidential implication cannot be challenged, and thus it is not-at-issue content.

Secondly, the evidential implication arising from a *-te* sentence is not cancellable, as illustrated with the infelicitous continuation that cancels the preceding evidential

⁸ In contrast, the preajcent implication can be challenged, and thus it is at-issue content, as shown below:

- (i) a. Ecey nalssi-ka nemwu tep-Ø-**te**-la.
yesterday weather-Nom too hot-Pres-TE-Decl
‘[I had sensory evidence that] it was too hot yesterday.’
b. Ani, kuleh-cianh-ass-e. Chwu-ess-e.
no, so-Neg-Past-Decl cold-Past-Decl
‘No, it was not so. It was cold.’

claim in (18):

- (18) Pi-ka o- \emptyset -**te**-la. #Na-nun pi-ka
 rain-Nom fall-Pres-TE-Decl I-Top rain-Nom
 o-nu-n kes-ul po-cianh-ass-ta.
 fall-Impf-Rel thing-Acc see-Neg-Past-Decl
 ‘[I saw that] it was raining. #I did not see that it was raining.’

Thirdly, the evidential implication of a *-te* sentence is not subject to Stalnaker’s (1974) non-informativity constraint, as illustrated in (19).

- (19) a. Yenghi:
 Yocum Chelswu-nun ettehkey cinay-koiss- \emptyset -ni?
 these.days Chelswu-Top how spend.time-Prog-Pres-Q
 ‘How’s Chelswu doing these days?’
 b. Minswu:
 Cal cinay-koiss- \emptyset -**te**-la.
 well spend.time-Prog-Pres-TE-Decl
 ‘[I had sensory evidence that] he was doing well.’

In (19), it is completely new information to Yenghi that Minswu had direct evidence for the truth of the embedded proposition. In other words, Stalnaker’s non-informativity constraint on a prior context is *not* imposed on the evidential implication arising from a *-te* sentence.

4.2 Cross-linguistically varied properties

In this section, I explore the projective behaviors of the evidential implication *m* arising from Korean evidential sentences with *-te*:

- (20) *m*: ‘some individual *x* has evidence for the truth of the prejacent *p*.’

In simple declarative sentences with *-te*, the evidential implication *m* is anchored to the speaker, as illustrated with the infelicitous continuations by which the speaker

asserts the negation of the prejacent.

- (21) Ecey pi-ka o-Ø-**te**-la. #Kulentay ecey
yesterday rain-Nom fall-Pres-TE-Decl but yesterday
pi-ka an-o-ass-e.
rain-Nom Neg-fall-Past-Decl
‘[I saw that] it was raining yesterday. #But it didn’t rain yesterday.’

Unlike in simple declarative sentences, the evidential implication *m* can be anchored to individuals other than the speaker of an evidential utterance if *-te* occurs in the embedded context. I investigate the projective behaviors of the evidential meaning *m*, using ‘family-of-sentences’ diagnostics.

4.2.1 Projectivity under negation

When the evidential *-te* is embedded under negation, the evidential implication appears to project. Consider (22) which contains *-te* and the negation morpheme *-an*.

- (22) Pi-ka an-o-Ø-**te**-la.
rain-Nom Neg-fall-Pres-TE-Decl
‘[I saw that] it was not raining.’
NOT= ‘It is false that [I saw that] it was raining.’

In (22), negation scopes over the prejacent implication, but not the evidential implication. In other words, the evidential implication does not fall under the scope of the negation, but it is projective.

The example in (23) provides further illustrations that negation cannot scope over the evidential implication in question. The context forces the evidential implication to be negated, but the evidential utterances are infelicitous in the given context:

- (23) Context: For the past ten years, Chelswu has been in a jail where there is no available connection to the outside world, i.e. no windows, no noise or smell from outside etc. Now, he says:

#Pi-ka an-o- \emptyset -**te**-la.

rain-Nom Neg-fall-Pres-TE-Decl

Intended: 'It is false that [I saw that] it was raining.'

At first glance, the above projective patterns with negation seem to suggest that the evidential implication from Korean *-te* sentences belongs to Class 1 or Class 2 in the proposed taxonomy (Table 2). However, these examples do not straightforwardly suggest that the evidential implication *m* projects globally. McCready and Ogata (2007) point out that the same pattern holds for Japanese inferential evidentials, but it might be due to the morpho-syntactic constraint on the post-verbal suffixes: negation occurs in the syntactic scope of the evidential, and consequently the semantic scope merely follows from the morphosyntactic structure. See Speas (2004) for syntactic projection of evidentiality in terms of Cinque's (1999) functional projections, where a negation projection (NegP) is syntactically dominated by an evidential projection (EvdP). One might argue that the pattern observed in Korean evidential sentences like (22) and (23) is due to the morpho-syntactic constraint on the post-verbal suffixes, too.

4.2.2 Projectivity in interrogatives

The evidential implication *m* is not anchored to the speaker in interrogatives, as illustrated below:

- (24) Context: While Chelswu has been staying in Seoul for the past two weeks, Yenghi was in Europe. She has just arrived in Seoul. Now, Chelswu is giving her a ride and asks:

#Ecey Seoul-ey pi-ka o- \emptyset -**te**-nya?

yesterday Seoul-at rain-Nom fall-Pres-TE-Q

Intended: '[Given my sensory evidence] was it raining in Seoul yesterday?'

In the context of (24), the speaker knows that the addressee does not know the truth of the prejacent. Even though the speaker himself knows the truth of the prejacent, the evidential sentence is infelicitous. This illustrates that the evidential implication

in interrogatives is not anchored to the speaker.

The following example illustrates that the evidential implication *m* is anchored to the addressee in interrogatives:

- (25) Context: The speaker has just returned to Seoul, and asks a question to his son who has been in Seoul for the past two weeks.
 Ecey Seoul-ey pi-ka o-Ø -te-nya?
 yesterday Seoul-at rain-Nom fall-Pres-TE-Q
 ‘[Given your sensory evidence] was it raining in Seoul yesterday?’
 NOT: ‘[Given my sensory evidence] was it raining in Seoul yesterday?’

In the context of (25), the truth of the prejacent, which is the target of interrogation, is not known to the speaker. But the addressee is presupposed to know it. The felicity of (25) illustrates that the evidential implication in interrogatives is anchored to the addressee, not to the speaker.

This change of anchoring in interrogatives, known as ‘interrogative flip’ in the literature (e.g. Speas and Tenny 2003), is cross-linguistically attested in evidentials from other languages, e.g. Quechua (Faller 2002), St’át’imcets (Matthewson *et al.* 2007), and Cheyenne (Murray 2010). However, the anchoring pattern still differs between Class 1 and Class 2. In content questions, the evidential implications triggered by St’át’imcets evidentials (Class 1) are anchored only to the addressee as shown in (26), but the evidential implication triggered by Quechua *-n* (Class 1) can be anchored to the speaker as well as the addressee, as shown in (27).

- (26) swat **ku7** k-wa táns-ts-an
 Who report Det-Impf dance-Caus-1sg.Erg
 ‘Who did they say I was dancing with?’
 (Matthewson *et al.* 2007: 251)

- (27) Pi-ta-**n** Inés-qa watuku-rqa-n?
 Who-Acc-Bpg Inés-Top visit-Pst1-3
 ‘Who did Inés visit?’
ev = (i) speaker has best possible grounds for asking.

- (ii) speaker expects hearer to base his/her answer on best possible grounds.

(Faller 2002: 230)

Given the above different projective patterns, the evidential implication arising from *-te* belongs to Class 1 like St'át'incets evidentials, because it cannot be anchored to the speaker, as we have seen in (24).

4.2.3 Projectivity under a verb of saying

The projective behavior under a verb of saying suggests that the evidential implication triggered by *-te* belongs to Class 1. When embedded under a verb of saying, the evidential implication is anchored to the individual denoted by a matrix clause subject, not to the speaker. Consider the sentence in (28), which is construed as Chelswu (not the speaker) having sensory evidence for the truth of the prejacent.

- (28) Context: Chelswu mistakenly left his cell phone in his office yesterday. When he got back to the office late at night, the door was not locked.

Chelswu-nun mwun-i yelleyeiss-Ø-**te**-la-ko
 Chelswu-Top door-Nom be.open-Pres-TE-Decl-Comp
 malha-yess-ta.
 say-Past-Decl
 'Chelswu_i said that [he_i saw that] the door was open.'
 NOT: 'Chelswu said that [I saw that] the door was open.'

This anchoring pattern of the evidential implication is the same as the St'át'incets evidential in (15a), but differs from the Quechua evidential in (15b). Thus, the above data with verbs of saying also suggests that the evidential implication from *-te* belongs to Class 1, not Class 2 or Class 3.

4.2.4 More discussion

While the projection behaviors discussed in the preceding sections indicate that

the evidential implication from *-te* belongs to Class 1 like St'át'imcets evidentials, it seems that they are not completely identical in their projection patterns. For example, the evidential *-te* cannot be embedded under propositional attitude verbs while this embedding is possible with St'át'imcets evidentials, as illustrated in (29) and (30).

- (29) #Chelswu-nun pi-ka ecey o-Ø **-te**-la-ko
Chelswu-Top rain-Nom yesterday fall-Pres-TE-Decl-Comp
mit-ess-e.
believe-Past-Decl
Intended: 'Chelswu believed that [he made a sensory observation
that] it was raining yesterday.'
- (30) Context: Your small nephew comes running up to you and tells
you that his sister punched him in the face. He has a red mark on
his face, and you notice that the sister is looking guilty. You tell
the kids' mother what happened and she says she doesn't believe
it, because her daughter never punches people. You say:
wenácw-nun'-lhkan kw s-tup-un'-ás-**an'** ti
true-Tr-1sg.Subj Det Nom-punch-Fir-3erg-Perc.Evid Det
n-sqwsés7-a, ka-k'íilus-a ti smém'lhats-a
1sg.Poss-nephew-Exis Circ-embarrassed-Circ Det girl-Exis
'I believe she must have hit my nephew, the girl looks guilty.'
(-*an'* relates to speakers belief; speaker has inferential evidence)
(Matthewson *et al.* 2007: 252)

These projective behaviors might indicate that Class 1 is a heterogeneous group of different meaning categories, as Tonhauser *et al.* (2013) have argued for Class C in their taxonomy of projective content. In other words, Class 1 includes not only the evidential implication triggered by St'át'imcets evidential *an'* (which has more 'presuppositional' properties according to the results of the 'family-of-sentences' tests, just like the projective content triggered by *stop* and *know*) but also that triggered by the Korean evidential *-te* (which seems to have less 'presuppositional' properties according to the diagnostics, just like the polar implication from *almost* and the prejacent implication from *only*). I hope that future work on evidentiality can

refine the empirical generalizations and the taxonomy of evidential implications across languages which have been proposed in this paper.

5. Summary and conclusion

In this paper, I pointed out that the evidential implications triggered by evidentials across languages do not fit into the classical meaning categories such as presupposition (in the sense of Stalnaker 1974), conventional implicature (in the sense of Potts 2005), and conversational implicature (in the sense of Grice 1975). I argued that the evidential implications can be classified as in Tonhauser *et al.*'s (2013) taxonomy of projective content, and sketched out a classification according to their cross-linguistically common and varied properties. I proposed that the following three properties are cross-linguistically attested in evidential implications: non-cancelability, not-at-issueness, and no requirement on a prior context. However, they differ with respect to their (non-)projective patterns. The evidential implications from Japanese evidentials (Class 3) are not projective, but those from St'át'imcets (Class 1) and Quechua (Class 2) evidentials are projective. The latter two classes are distinguished in terms of the projection scope, i.e. whether the projection is local or global. Among the three classes proposed in this paper, I showed that the evidential implication triggered by the Korean evidential *-te* belongs to Class 1 like those triggered by St'át'imcets evidentials.

As seen from the following quote in Davis *et al.* (2007), it has been noted that evidential sentences demonstrate that various types of meaning can arise from a single sentence.

- (31) Evidential sentences have multifaceted meanings-in-context, and this makes them of vital interest to researchers exploring all kinds of multidimensionality, including those that derive from presupposition accommodation (Sauerland and Schenner 2007), conventional implicature (Potts 2005), and illocutionary force.

(Davis *et al.* 2007: 73)

While no previous researcher has proposed a comprehensive work on this issue, this

paper provided a starting point for future work about various meaning types arising from evidential sentences. Although the proposed taxonomy is restricted to the empirical patterns that have been reported in the previous work in formal semantics, I believe that properties like (not-)at-issueness and (non-)projectivity can be extended to the identification of the meaning categories expressed by evidential sentences in other languages. Examining the applicability of the proposed taxonomy to evidentials in other languages will shed light on the meaning of evidentiality, and furthermore different types of meanings in natural language in general.

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