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A NOTE ON WHY AND HOW MANNERS OF ACQUISITION SHOULD BE ANALYZED

1 INTRODUCTION

This paper reviews the history of evidential studies briefly, and points out that the specification of manners of acquisition involved in the semantics of evidentials must not be left as a semantic primitive. Since Izvorski (1997), a number of analyses of evidentials in various languages have been proposed in the formal literature. I do not cast doubt on their description of linguistic phenomena and the empirical validity of their proposal. However, most of them have left the notion *manner of acquisition* unanalyzed, although its internal components, as I will show, must be investigated in order to fully understand the semantic restriction on evidentials: we have to go deeper into the nature of manners of acquisition. The main purpose of this paper is (i) to clarify that it is necessary to analyze internal components of manners of acquisition, and (ii) to show what should be taken into consideration by a desirable analysis.

Henceforth, I refer to manners of acquisition as the term that describes the manner in which the speaker arrives at the prejacent as a conclusion given evidence. For example, when the speaker sees puddles on the ground and infers that it rained, the manner of acquisition is *inferential*. If she is told from someone else that it rained, it is *reportative*. The manner *indirect* covers these two manners, since in both of the two contexts, the speaker does not directly see it raining. If she sees falling raindrops and utters that it is raining, we say that her manner of acquisition is *direct*. I mainly employ these four manner terms, following Willett's (1988) classification of evidence-types. However, I do not commit myself to his theory: the facts around manners of acquisition encoded by evidentials are more complicated than these terms can describe. For the sake of conspicuity, I use them as cover terms as intuitive labels for manners of acquisition.

Caution: this paper does not give any formal proposal that makes sharp predictions, and its main argument is a negative sentence. This paper mainly claims that the notion of manners of acquisition should *not* be treated as a primitive and classification with intuitive labels such as direct, indirect, etc. is *not* plausible. This paper gives no alternative solution, although it presents tentative conditions that a desirable analysis of manners of acquisition should satisfy. A specific formulation of manners of

acquisition must await future research, but I hope that the discussion and tentative argument in this paper will contribute to the evidential literature by invoking more fine-grained future studies on manners of acquisition.

This paper is organized as follows. Section 2 points out that much of the evidential literature has avoided analyzing internal components of manners of acquisition. Section 3 gives motivations for the claim that we need to analyze manners of acquisition, by showing that distributions of evidentials do not follow our intuitive understanding of the simple labels like direct, indirect, etc., and that evidentials are idiosyncratic as to what manner of acquisition they are compatible with. Section 4 clarifies that whether a manner of acquisition is adequate for an evidentials does not depend on the kind of evidence itself, but on the relation between it and the prejacent. Section 5 discusses implications for two previous studies, Speas (2010) and Koev (2017). Section 6 is a conclusion.

2 THE MISSING PIECE IN THE MODAL VS. ILLOCUTIONARY DEBATE

It can be said that much of the formal evidential literature has been devoted to the issue of on what level a given evidential in a given language operates on. Izvorski (1997), who is the first to give a formal account of the semantics of evidentials, analyzes the Bulgarian evidential *-l-* as an epistemic modal whose modal base is the set of propositions that are known to the speaker and qualify as indirect evidence for the prejacent. Since it is a modal, it operates on the propositional (truth-conditional) level. Many authors (Matthewson et al. (2007), Peterson (2010), Smirnova (2013) among others) follow this line of analysis and argue that evidentials in their target languages are epistemic modals. I call this view the modal view. On the other hand, Faller (2002) argues that Cuzco Quechua evidentials operate on the illocutionary content of the utterance (Specifically, she claims that Cuzco Quechua evidentials modify the sincerity conditions of the utterance). I call this view the illocutionary view. Murray (2010) argues that Cheyenne evidentials do not contribute to the propositional content of the sentence, but modify the way the utterance updates the context. Therefore, her analysis is categorized into the illocutionary view in the sense that Cheyenne evidentials do not operate on the propositional level. A number of linguistic tests have been proposed for distinguishing modal evidentials and illocutionary evidentials: embeddability, challengeability, interaction with questions, and so on.¹

Investigation on what level of meaning a given evidential operates on is of significant importance in order to understand the nature of evidentials. However, I claim that the previous studies introduced just above have a problem in common: they leave the manner of acquisition of their target evidentials to be a primitive in their

¹ Though this is not relevant to the current discussion, Korotkova (2016) suggests that those tests in fact do not help to distinguish two types of evidentials. I agree with her. For example, it has been claimed that a modal evidential can be embedded under the scope of other operators. But even though the unembeddability may ensure that the evidential does not operate on illocutionary levels, it does not follow that it is a modal.

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formalization. For example, see the following Izvorski's (1997) semantics for the Bulgarian evidential (EV and p stands for the evidential operator and prejacent, respectively):

- (1) a. $\llbracket \text{EV } p \rrbracket = \lambda w. \forall u \in W [u \in \cap f(w) \wedge \neg \exists v [v \in \cap f(w) \wedge v <_{g(w)} u] \rightarrow p(w)]$.
 b. $\cap f(w) = \{u \in W: \forall p [p \text{ is } \underline{\text{the indirect evidence}} \text{ in } w \rightarrow p(u)]\}$
 c. $v <_{g(w)} u$ iff $\{p: p \in g(w) \wedge p(u)\} \subseteq \{p: p \in g(w) \wedge p(v)\}$, where $g(w) = \{p: \text{the speaker believes } p \text{ with respect to } \underline{\text{the indirect evidence}} \text{ in } w\}$.
 (Izvorski (1997:230))

This is a modified version of the Kratzerian style of modal semantics (Kratzer (1981), Kratzer (1991)), which utilizes two contextually determined components: the modal base and the ordering source. Izvorski adds the notion of indirect evidence to both of them, as the underlined and bold parts in (1) indicate. (1a) is true iff p is true in all worlds that are compatible with the speaker's indirect evidence and are ranked the best in terms of what the speaker believes with respect to her indirect evidence. If the speaker acquires the proposition *there are puddles* as evidence, that is, $f(w) = \{\text{there are puddles}\}$, and she believes that if there are puddles, it has rained, that is, $g(w) = \{\text{if there are puddles, it has rained}\}$, then $\llbracket \text{EV it rained} \rrbracket$ is true iff it rained in all worlds in which there are puddles and in which the speaker's belief (if there are puddles, it has rained) is true. This modal analysis nicely captures facts around *-l-* such as its sensitivity to the existence of observable evidence, its incompatibility with the case where the speaker already knows that the prejacent is true, etc. However, what is to be noted is that Izvorski leaves the notion indirect evidence to be a semantic primitive. This may sound problematic in itself because ordinary semantic models do not assume such a primitive notion.

(2a) and (2b) are the modal semantics proposed for the St'át'imcets inferential evidential *-k'a* (Matthewson et al. (2007)) and for the Gitksan inferential evidential *ima* (Peterson (2010)), respectively:²

- (2) a. $\llbracket -k'a \rrbracket^{c, w}$ is only defined if c provides the modal base B such that for all worlds $w', w' \in B(w)$ iff the inferential evidence in w holds in w' .
 If defined, $\llbracket -k'a \rrbracket^{c, w} = \lambda f_{(st, st)} \lambda p_{(s, t)}. \forall w' [w' \in f(B(w)) \rightarrow p(w')]$, where f is a contextually salient choice function over a set of possible worlds.
 (Matthewson et al. (2007:66))
 b. $\llbracket ima \rrbracket^{c, w}$ 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, $\llbracket ima \rrbracket^{c, w} = \lambda p. \exists w' [w' \in O_{g(w)}(B(w)) \wedge p(w')]$, where $O_{g(w)}$ is a function that takes a set of possible worlds and returns a set of worlds that are best-ranked in terms of the ordering source $g(w)$.
 (Peterson (2010: 110))

² Ordinarily, a modal base is defined as a set of propositions, but Matthewson et al. (2007) and Peterson (2010) treat it as a set of worlds compatible with a contextually determined set of propositions. This is just a technical preference that does not affect the following discussion.

In these formulations, too, the inferential evidence is treated as a primitive and left unanalyzed.

Smirnova (2013) argues that the Bulgarian *-l-* signals that the speaker has acquired external evidence for the prejacent. She notes “the external evidence subsumes reports, evidence-based inference and direct perception of *p*” (Smirnova (2013:515)). This looks more precise compared to the description of the evidence types in (1) and (2), but it is still unclear what the terms *evidence-based* and *direct* refer to.

The illocutionary view cannot be said to have sufficiently analyzed the manner of acquisition encoded by their target evidentials, either. For example, Murray (2010) argues that in Cheyenne, a sentence without overt evidentials is felicitous only if the speaker is committed to having direct evidence for the prejacent, so she argues that a sentence without overt evidentials accompanies a covert one instead and it encodes direct evidentiality. However, in her formalism, the evidential contribution of the covert evidential is to signal that the speaker is certain that the prejacent is true (Murray (2010:129-130)), not to signal that the prejacent is acquired in a direct way. Although there is no requirement of direct evidence, her analysis captures that fact that a speaker who has direct evidence for the prejacent will be completely certain that it is true. However, this does not explain what kind of information can serve as direct evidence; in other words, it lacks the definition of directness. As for the contribution of the conjectural evidential *mó*, she argues “It reduces the input common ground *c*₀ to worlds where the speaker has **conjectural evidence** for the at-issue proposition *p*.” (Murray (2010:100), the emphasis being mine). As is clear, she gives no definition to the conjectural evidence.³ The same can be said of Faller’s (2002) description of the Cuzco Quechua conjectural evidential *-chá*. She states that its evidential contribution is that “speaker bases a statement on her own reasoning” (Faller (2002:176)). Her definition, too, does not refer to what kind of evidence is involved, let alone what the conjectural evidence is. Thus I conclude that both of the modal view and the illocutionary view have avoided defining their relevant manner of acquisition in a formal way.

Faller’s (2002) analysis of Cuzco Quechua direct evidential *-mi* is an attempt to clarify in what sense *-mi* is direct. She argues that *-mi* is felicitously used only if the speaker has the best possible ground for making her statement. According to Faller, what is the best possible ground for the utterance depends on the type of information conveyed by the utterance. For example, if the prejacent describes an observable event, the best possible ground is the visual perception of that event. If the prejacent event is an unobservable one, such as an event that is going to occur in the future, the best possible ground is the most reliable source from which the speaker knows the prejacent is true (e.g. if the prejacent denotes the proposition that Inés will go to Cuzco tomorrow, her report that she will go to Cuzco will be the most reliable source). Faller’s analysis of *-mi* is different from other studies reviewed above in that she does not resort to the term *direct* when describing the semantics of *-mi*, which has been referred to as a direct evidential in the Cuzco Quechua literature. But she does not

³ Conjectural evidentials are generally defined as expressions which signal that the speaker conjectures the truth of the prejacent from certain evidence. As far as I notice, conjectural evidentials refer to the same category as inferential ones in the literature, although authors do not seem to agree in which term should be used. I leave this as a terminological preference, and I temporarily follow Murray’s terminology here.

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give a formal definition to what information qualifies as the best possible ground. A more ideal analysis of *-mi* would be the one that describes with the common semantic toolbox what it means for a piece of information to be the best possible ground.

3 WHY SHOULD WE ANALYZE MANNERS OF ACQUISITION?

The previous section points out that the evidential literature has not been interested in internal components of manners of acquisition such as *direct*, *indirect*, *reportative*, etc. One might argue that we need not delve into the issue of what a manner of acquisition consists of, because we intuitively understand its referent as in the case of other semantic primitives. Below, I clarify what prediction is made if it is a primitive notion. First, it is predicted that there should be no cases that go against our intuitive understanding of each manner of acquisition. Consider the semantics of comparatives like John is taller than Bill. It is usually analyzed as denoting the truth condition that the degree of John's height is greater than that of Bill's. This involves primitive notions such as *height*, and *greater than*. But what they actually refer to is rarely called into question, since we can understand their referents quite intuitively, and, importantly, we do not encounter linguistic examples that cannot be captured unless we clarify the internal components of those primitives: we have no examples that require us to rethink what *height* and *greater than* refer to. What if this argument would be applied to the current discussion? Suppose that the semantics of a direct evidential involves the requirement that the speaker has direct evidence for the prejacent. The requirement contains a primitive *direct*. Intuitively, we know that direct evidence for the proposition *p* includes visual, auditory, tactile, olfactory, and gustatory perception of the event/situation described by *p*. Then, evidence that is available when a direct evidential is used should be limited to those perceptions. If this actually holds, we need not give a detailed analysis of what direct means; it suffices to treat that notion as a primitive.

Second, the referent of a primitive notion is constant whatever environment it is in. Take the comparative case as an example again. The notions *height* and *greater than* are primitives, and their referents never vary depending on environments they occur in; it is quite inconceivable that the referent of *height* in the semantics of some expression does not correspond to what it refers to when it occurs in the semantics of another expression. Applying this reasoning to the current discussion, if the notion *direct evidence* is primitive, the evidence types covered by that term is always the same no matter what evidential contains this notion as one of its semantic components.

Thus, we have the following two predictions:

- (3) If a manner of acquisition *A* is a primitive notion,
 - a. an evidential that encodes *A* should not be compatible with contexts where *A* does not intuitively correspond to the speaker's manner of acquiring evidence;

- b. if two evidentials both encode A, their manners of acquisition always should be the same.

The rest of this section will show that neither of the two predictions is borne out, and concludes that formal definitions of manners of acquisition is in order.

3.1. Counter-intuitive cases

This subsection shows that facts are not so simple as (3a) predicts. First, consider the Cuzco Quechua direct evidential *-mi* again for the case where direct evidentials are used in an intuitively indirect way. As Faller (2002) states, *-mi* has been treated as a direct evidential, whose coverage, if it were direct in the intuitive sense, would be limited to visual, auditory, tactile, olfactory, and gustatory perception of the prejacent. But *-mi* can be used in the following case:

- (4) Paqarin Inés-qa Qusqu-ta-n ri-nqa.
 tomorrow Inés-TOP Cuzco-ACC-mi go-3.FUT
 ‘Inés told the speaker that she will go to Cuzco tomorrow’
 (Faller (2002:127))

As is clear from the English translation, the speaker does not have direct evidence for *Inés is going to Cuzco*, but she heard from Inés that she will do so. This kind of evidence is usually referred to as reportative evidence, a subtype of indirect evidence; (4) goes against our intuition about direct evidentiality. The English evidential adverb *apparently* and the Japanese evidential sentence-final particle *yooda* can be used reportatively as in (5):

- (5) a. (You are on the phone with you aunt in California. She tells you that it is raining. After you get off the phone, your girlfriend asks you, “How is the weather?” You say:)
 Apparently it is raining.
 b. (Inés told the speaker that Inés will go to Cuzco Quechua tomorrow:)
 Asita Inés-wa Cuzco-ni iku yooda.
 tomorrow Inés-TOP Cuzco-to go yooda.
 ‘It seems that Inés will go to Cuzco tomorrow.’

But they cannot tolerate contexts where the speaker directly observes the event in the prejacent, as described in (6), while *-mi* can be used in such a context as it is termed as a direct evidential as in (7):

- (6) (You saw Maria ate soup at dinner. After that, you say to a friend:)

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- a. # Apparently Maria ate soup.
 b. # Maria-wa suupu-o non-da yooda.
 Maria-TOP soup-ACC drink-PAST yooda
 ‘It seems that Maria ate soup.’

- (7) Marya-qa lawa-ta-n mikhu-rqa-n.
 Marya-TOP soup-ACC-mi eat-PAST-3
 ‘Marya ate soup (the speaker saw that).’ (Faller (2002:131))

These facts mean that *-mi* is a direct evidential that can refer to indirect evidence. This is a counterexample to (3a), which says that counter-intuitive cases such as (4) are not expected if the notion of direct evidence is a primitive.

Second, there are cases where indirect evidentials are used with several kinds of direct evidence. The Tibetan direct evidential ‘*dug* can be used with all kinds of direct evidence mentioned above (Kalsang et al. (2013:527-528)):

- (8) a. Visual
 bKra.shis stod.gos sngon po zhig.gyon ‘dug
 Tashi shirt blue a wear ‘dug
 Tashi is wearing a blue shirt (and the speaker sees it).
 b. Auditory
 dKun.dg’as gzhas gtang gi ‘dug
 Kunga song sing IPFV ‘dug
 ‘Kunga is singing (and the speaker hears it).’
 c. Tactile
 lug gi bal ‘di ‘jam.po ‘dug
 sheep AGT/INST wool this soft ‘dug
 ‘This sheep’s wool is soft (and the speaker feels it).’
 d. Gustatory
 ja la tsha min ‘dug
 tea OBL salt NEG ‘dug
 ‘There is no salt in the tea (and the speaker tastes it).’
 e. Olfactory
 spos de dri.ma zhim.po ‘dug
 incense this smells good ‘dug
 ‘This incense smells good (and the speaker smells it).’

(8) shows that these kinds of evidence are compatible with the directness of ‘*dug*. However, the Japanese indirect *yooda* is compatible with some of them. In particular, it can be used in the same contexts as in (8b) and (8d), evidenced by (9). Furthermore, the Bulgarian indirect *-l-* also can be used when the speaker’s evidence is auditory or gustatory as in (10):⁴

⁴ According to Smirnova (2013), it has been claimed in the literature that *-l-* is compatible with direct evidence in its mirative use, which expresses the speaker’s surprise. Therefore, it may be claimed that in

- (9) a. (You hear John singing from the next room:)
 John-ga utat-tei-ru yooda.
 John-NOM sing-PROG-PRES yooda
 ‘It seems that John is singing.’
- b. (You taste tea and do not find it salty at all:)
 Kono ocha-ni-wa shio-ga hait-tei-nai yooda.
 this tea-in-TOP salt-NOM be.contained-PROG-NEG yooda
 ‘It seems that there is no salt in the tea.’
- (10) a. (You visit your brother, who works on a church restoration in a remote Bulgarian village. At midday, you hear the church bell ring. You say:)
 Tja kombanata zvanja-l-a!
 it bell ring.IPFV.PRES-1-FEM
 ‘The bell is ringing (I hear)’ (Smirnova (2013:486))
- b. (You and your friends are cooking dinner together. According to the recipe, dish should cook for 20 more minutes. However, when you taste the dish, you realize that it is ready. You say:)
 Tja manžata bi-l-a gotova!
 it dish be-1-FEM ready
 ‘The dish is ready (I taste)’ (Smirnova (2013:486))

Yooda and *-l-* are indirect evidentials. However, the felicity of these examples clearly shows that they are compatible with evidence-types that are intuitively held as direct, which means that an indirect evidential can be used to refer to direct evidence.

Finally, it seems hard to judge whether the evidence given in the context is direct or indirect in the following context:

- (11) (You go to a vacant lot to play baseball, but you find other people occupying it. You say to yourself:)
- a. Apparently I cannot use this vacant lot.
- b. Kono-akiti-wa tuka-e-nai yooda.
 this-vacant.lot-TOP use-can-NEG yooda
 ‘It seems that I cannot use this vacant lot.’

(10), *-l-* is used as a mirative marker. Smirnova argues against this view with several reasons, which we will not turn to. I take her position and speculate that *-l-* is compatible in its indirect use with auditory and gustatory contexts in (10). This is because *yooda* can be used in the similar contexts (9), although it cannot be used miratively, as in (i):

- (i) (You are surprised to find out that Maria is here:)
 # Mary-ga koko-ni iru yooda!
 Maria-NOM here-in be yooda
 ‘It seems that Maria is here!’

This is the context where Cuzco Quechua indirect evidential *-sqa* is used miratively (Faller (2002: 31)). The felicity of (i) indicates that *yooda* has no mirative use, but it is compatible with direct contexts like (9). This supports the claim that *-l-*'s use in those contexts does not involve mirativity.

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In this example, the speaker observes the condition of the vacant lot, and the prejacent is a modal statement about the impossibility of the speaker using the vacant lot. In the sense that the speaker's observation directly supports the fact that she cannot use the vacant lot, the evidence may be considered direct. However, the speaker does not perceive the content of the prejacent (it is quite inconceivable to experience a modalized statement directly); therefore, the evidence might be said to be indirect. (11) tells us that even if we postulate that the evidence referred to by *apparently* and *yooda* must be indirect, it does not help at all to explain their felicity in (11).

It has been observed so far that our intuitive understanding of direct and indirect does not help to describe the range of manners of acquisitions a given evidential is compatible with. The Quzco Quechua *-mi*, which has been defined as a direct evidential, is compatible with information that is intuitively held as indirect evidence, and indirect evidentials such as *yooda* and *-l-* go well with a certain kinds of direct evidence. In addition, our intuition does not seem to help distinguish between direct evidence and indirect evidence in the case where the prejacent is modalized. These observations go against (3a), indicating that manners of acquisition should not be left as primitives.

3.2. *Idiosyncrasy*

In the previous section, I have claimed that we should analyze internal components of the manner of acquisition encoded by a given evidential without labels like *direct* in order to capture the counter-intuitive cases. However, one might argue that we can handle those examples only by altering the primitive notion of manners of acquisition to accommodate those counter-intuitive examples. For example, to capture the compatibility of *yooda* with auditory and gustatory evidence, we have only to postulate that indirect evidence employed by natural language evidentials includes those types of evidence as well as evidence that is intuitively held indirect. In the same fashion, direct evidence encoded by direct evidentials can be defined as evidence that covers report from someone. In other words, the cases presented in the previous subsection will be unproblematic if we abandon the intuitiveness associated with our understanding of primitive notions.

This subsection shows that such a strategy will not be successful because there are several cases evidentials that are supposed to share the same manner of acquisition behave differently from each other. Those data falsify the prediction (3b) which must hold as long as manners of acquisition are primitives even without the assumption that they should be understood within the domain of our intuition. Moreover, the existence of those cases suggests that the manner of acquisition of evidentials is an idiosyncratic component.

Consider (12). The English *apparently*, the Japanese *yooda*, and the Bulgarian *-l-* are all indirect evidentials, but only *-l-* goes well with tactile evidence. To capture the felicity of *-l-* in (12c), we have to posit that indirect evidence includes tactile evidence, but to rule out (12a) and (12b) requires us to exclude tactile evidence from the coverage of indirect evidence.

- (12) (When you enter the kitchen, you feel sticky to the floor. You just cleaned the floor a couple of hours ago. You say:)
- a. #Apparently the floor is sticky.
- b. #Yuka-ga nebanebasi-te-ru yooda
 floor-NOM sticky-PROG-PRES yooda
 ‘It seems that the floor is sticky.’
- c. Podat bi-l lepkav!
 floor be-l sticky
 ‘The floor is sticky (I feel)’
- (Smirnova (2013:486))

In the same vein, we have seen in (9a) and (10a) that *yooda* and *-l-* can occur in auditory and gustatory contexts. If indirect evidence includes those types of evidence, *apparently* should be compatible with them, but it cannot be used in an auditory context, while compatible with gustatory evidence.

- (13) a. (The same context as (9a):)
 #Apparently John is singing.
- b. (The same context as (9b):)
 Apparently there is not salt in the tea.

These patterns are unexpected if there is a primitive *indirect evidence* that encompasses auditory and gustatory evidence. What we are seeing here is that there are subtle idiosyncratic differences in what type of evidence is available for evidentials: *-l-* is compatible with all of the tactile, auditory, and gustatory evidence, *yooda* is compatible with auditory and gustatory evidence, and *apparently* is compatible only with gustatory evidence among the three.

A similar observation is obtained for direct evidentials: in some cases, a direct evidential is not compatible with a certain kind of evidence that another direct evidential co-occurs with. Tibetan direct evidentials *‘dug* and *shag* are both direct evidentials, which is seen in the following, where the speaker directly witnessed the event described in the prejacent:

- (14) kha.sang khong ‘khrom la slebs ‘dug/shag.
 yesterday he market LOC arrived ‘dug/shag
 ‘Yesterday he arrived at the market (and the speaker witnessed the event).’
- (Kalsang et al. (2013:530))

However, *shag*, but not *‘dug*, is infelicitous in the following context:

- (15) mdangs.dgong kBra.shis sngur.pa rgvabs kyi ‘dug/#shag
 last.night Tashi snore AUX IPFV ‘dug/shag
 Last night Tashi was snoring (and the speaker heard it).’
- (Kalsang et al. (2013:531))

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The evidence available in (15) is auditory, which is generally categorized into direct evidence, but *shag* cannot be used with it. Here occurs the same problem as in indirect evidence: to account for the felicity of *'dug* in (15), direct evidence must include auditory evidence, but that is inconsistent with the infelicity of *shag*, which is also a direct evidential. We suffer from this paradox as long as we stick to the primitive notion of direct evidence, since the referent of a primitive should always be the same.

3.3. Interim summary

The data presented in this section indicate (i) that the manners of acquisition that evidentials are actually (in)compatible with cannot be appropriately described by intuitive labels such as *direct* and *indirect*, and (ii) that manners of acquisition are idiosyncratic: *apparently*, *yooda* and *-l-* differ in their compatibility with tactile, auditory, and gustatory evidence, and *'dug* is compatible with auditory evidence while *shag* is not. Suppose that we use the primitive *indirect evidence* in the semantics of an evidentials that are supposed to be indirect; for example, suppose that we posit that *-l-*, *yooda*, and *apparently* are all defined only if there is *indirect evidence* on the part of the speaker. Then, we will not be able to capture the precise distribution of the three evidentials and will miss the idiosyncrasy of their manners of acquisition. Therefore, it is concluded that we have to analyze formally for each evidential what manner of acquisition it is compatible with, so that the analysis can account for the fact that some evidentials appear in contexts which do not fit with their intuitive evidence-labels and the fact that not all evidentials under the same evidence-label show the same behavior.

4 A MANNER OF ACQUISITION AS A RELATIONAL NOTION

Let me bring into picture one aspect of manners of acquisition that seem to be sometimes taken for granted blindly but has not been emphasized in the literature, in order to show how a desirable analyses of manners of acquisition should be. I argue that manners of acquisition are relational notions that are sensitive to the relation between the prejacent and the proposition serving as evidence (henceforth, the evidence proposition). The felicity of a manner of acquisition of a given evidential is not determined considering only the nature of the evidence, but based on whether the relation between the prejacent and evidence proposition is appropriate for the evidential. This section claims that manners of acquisition should be such relational notions.

In (9), I have shown that the indirect *yooda* is compatible with certain types of direct evidence (auditory and gustatory). However, if the prejacent describe the speaker's perception itself, *yooda* becomes infelicitous:

- (16) a. (You hear John singing from the next room:)
 #Oto-ga kikoe-ru yooda.
 sound-NOM hear-PRES yooda
 ‘It seems that I hear a sound.’
- b. (You taste tea and do not find it salty at all:)
 #Kono ocha-wa mattaku siokaraku-nai yooda.
 this tea-TOP at.all salty-NEG yooda
 ‘It seems that this tea is not salty at all.’

The same observation is obtained for apparently:

- (17) a. (You hear John singing from the next room:)
 #Apparently I hear a sound.
- b. (You taste tea and do not find it salty at all:)
 #Apparently this tea is not salty at all.

The point here is that between the acceptable case and the unacceptable one, the speaker’s evidence is the same but what is described in the prejacent differs.

Conversely, the infelicitous examples (12a) and (12b) become acceptable even with the same context if the prejacent expresses a different thing:

- (18) (When you enter the kitchen, your feel sticky to the floor. You just cleaned the floor a couple of hours ago. You say:)
 a. Apparently someone spilled dressing or something like that.
 b. Dareka-ga doressingu-ka-nanika-o kobosi-ta yooda.
 someone-NOM dressing-or-something-ACC spill-PAST yooda
 ‘It seems that someone spilled dressing or something like that.’

These facts indicate that whether a manner of acquisition is compatible with a given evidential does not depend on the manner itself, but on the relation between the evidence proposition and the content of the prejacent. Take tactile evidence as an example. The manner of acquisition encoded by *apparently* is compatible with the relation between the stickiness of the floor and the past event in which someone spilled something that makes the floor sticky as in (18a), but not with the relation between the stickiness and the speaker’s sensation of the stickiness as in (12a). The Tibetan *‘dug*’s manner of acquisition is compatible with the relation between the softness of the wool to the prejacent *this sheep’s wool is soft*, as in (8c). In this sense, it is inadequate to analyze evidentials just as designators of types of evidence in such a way that *such and such an evidential refers to such and such types of evidence*; a desired characterization will be *such and such an evidentials is felicitous if the speaker’s evidence and the prejacent are related by such and such a manner*. Manners of acquisition should be defined taking the semantics of the prejacent, as well as what the evidence is, into account. Several recent studies attempt to formulate (in)directness in such a relational fashion (Chung (2007), Lee (2013), Kalsang et al.

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(2013), and Koev (2017)).

5 IMPLICATIONS

This section is devoted to illustrating the implication that the discussion so far gives to some previous studies. Chapter 5.1 addresses Speas (2010), who attempts to define four manners of acquisition personal experience, direct, indirect, and reportative with inclusion relations between situations. It will be shown that her approach is not applicable to some evidentials in languages in which evidentials are not obligatory, because manners of acquisition in them show idiosyncrasy as has been shown in the discussion so far. Chapter 5.2 addresses Koev (2017), who analyzes the indirectness involved in indirect evidentials in terms of the spatio-temporal relation between events. I will claim that his formulation nicely captures our intuitive understanding of indirectness, but there seems to be a problem in its applicability to the case where the prejacents is modalized.

5.1. Speas (2010)

Speas (2010) proposes that the four manners of acquisition, *personal experience*, *direct*, *indirect*, and *reportative* differ in how they restricts the relation between the situation in which the prejacents is true, the situation in which the evidence holds, and the situation in which the utterance is made.⁵ Her argument that the primary function of evidentials is to restrict the relations among the three situations is motivated by the fact that in languages where evidentials are obligatory, the range of evidence types that evidentials can refer to are cross-linguistically limited to the four types, although languages differ in how to make distinctions. For example, some languages are sensitive only to the direct/indirect distinction (in that case the direct evidence includes personal experience and indirect evidence includes reportative evidence, as well as ordinary indirect evidence), while other languages divide direct evidence into personal experience and sensory evidence and have distinct evidentials for each of them. However, in languages of obligatory evidentials, the evidential paradigm never contains more than four manners of acquisition. Therefore, Speas makes use of inclusion relations between the three situations in order to define the four manners. The number of possible ways to relate those three situations is limited, so this approach can restrict the possible variation in manners of acquisition. Her attempt has an additional advantage: we can dispense with evidentiality as a semantic primitive by

⁵ So far I have not introduced personal evidence (cf. Aikhenvald (2004)). It refers to a piece of information associated with the speaker's internal sensation, knowledge, or memory. For example, if the speaker utters 'my finger is burned' with an evidential of personal evidence, the evidential implies that the speaker feels the sensation of burning in her hand. So called ego-evidentials belong to this type (cf. Garrett (2001)).

assuming that the internal components of evidentiality are specifications of such relations.

She claims that treatment of evidentiality as a primitive is problematic because that makes it inaccessible that there is a limitation on the possible evidence types. Recall (1), repeated here as (19), where the notion *indirect evidence* is primitive. According to Speas (2010), if we are allowed to posit such primitives without any restrictions, we expect to find evidentials that refer to evidence types other than the four types just mentioned (e.g. evidence from foreigners) but such evidentials have not been discovered.

- (19) a. $\llbracket \text{EV } p \rrbracket = \lambda w. \forall u \in W [u \in \cap f(w) \wedge \neg \exists v [v \in \cap f(w) \wedge v <_{g(w)} u] \rightarrow p(w)]$.
 b. $\cap f(w) = \{u \in W: \forall p [p \text{ is } \underline{\text{the indirect evidence}} \text{ in } w \rightarrow p(u)]\}$.
 c. $v <_{g(w)} u$ iff $\{p: p \in g(w) \wedge p(u)\} \subseteq \{p: p \in g(w) \wedge p(v)\}$, where $g(w) = \{p: \text{the speaker believes } p \text{ with respect to } \underline{\text{the indirect evidence}} \text{ in } w\}$.

If evidentials' function is specification of relations between situations, we have a plausible motivation for why such a limitation exists, since the number of ways to relate those situations is also limited.

Let us see the detail of her proposal. She argues that the three situations relevant to the interpretation of evidentials are Evaluated Situation (ES), Reference Situation (RS), and Discourse Situation (DS), all of which are defined as below:

- (20) Let p be the prejacent.
 a. Evaluated Situation: the situation of which p is true.
 b. Reference Situation: the set of assumptions upon which the judgment of the prejacent's truth is based.
 c. Discourse Situation: the situation where the sentence is being uttered.

Although the definition of RS in (20b) looks somewhat vague, it is to be understood as the situation in which the evidence proposition is true. With these definitions, Speas proposes that each of the four manners of acquisition is defined as follows:

- (21) Personal Experience: RS includes ES, and RS includes DS.
 Direct: RS includes ES, and RS is accessible from DS.
 Indirect: RS includes DS, and RS is accessible from ES.
 Reportative: RS is accessible from ES, and RS is accessible from DS.

Since the direct and indirect evidence is relevant in the following discussion, let us see what the requirements in those manners of acquisition mean.

The inclusion relation between RS and ES in direct evidence is a clear notion and sounds plausible. Suppose that you are in a tent, and there is a bear in front of the tent. You see the bear and says *there is a bear*+*Direct*. In this case, ES is the situation where there is a bear in front of the tent, and RS is the one where the speaker sees the

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bear. The requirement that RS include ES holds because RS contains two individuals, the speaker and the bear, while ES contains only the bear, so ES can be said to be a subpart of RS. However, the accessibility relation between RS and DS is somewhat unclear. To my understanding, by “RS is accessible from DS”, Speas (2010) seems to mean that the knowledge (or belief) that the prejacent is true is acquired by the speaker solely by virtue of RS, that is, the situation that the speaker witnesses the event in the prejacent, and such knowledge does not hinge on the state of affairs in DS. That is, she expresses the independence of RS from DS by the term *accessible*, in the sense that the two situations are related to each other but mutually independent.

Relatedly, by the requirement that RS *include* DS in (21b), Speas seems to express that the knowledge state in RS is affected by DS in the case of indirect evidence. She suggests that this is because indirect evidence involves some kind of inference, which cannot be inconsistent with the state of affairs in DS; that is, the validity of the inference is assessed in terms of the information available at DS. The second requirement in (21b) is that RS is accessible from ES. This seems to mean that ES, the situation described by the prejacent, is based on the evidence that describes RS, but RS and ES are separate situations unlike the direct evidence, which encodes the inclusion relation between ES and RS.

However, I claim that Speas’s (2010) proposal is technically inadequate and that the analysis cannot be applied to all evidentials, because it is inconsistent with the idiosyncrasy we have seen so far. First, the technical inadequacy is that definitions of *include* and *accessible* are unclear, and those notions are used in arbitrary ways. As is clear from the illustration of what (21b) and (21c) are intended to mean, the term *include* is used in different ways. In the case of direct evidence, it refers to an ordinary inclusion between situations, but in the case of indirect evidence, it is used to specify whether one of the two situation affects the knowledge state in another. The accessibility has a different referent depending on the occasions. It is used in the case of indirect evidence to mean ‘if A is accessible from B, A serves as a piece of information from which B is derived.’ In other words, A serves as a possible world (or situation) in a proposition in the modal base (therefore, the regular interpretation of accessibility relations). However, in the case of direct evidence, ‘A is accessible from B’ is used to express that the knowledge acquired in A is independent from the state of affairs in B. This is completely different from what this term means in the indirect context. Because of this arbitrariness in interpretation of *include* and *accessible*, the empirical coverage of Speas (2010) is hard to evaluate.

The second problem is not concerning the technical details of her analysis, but to its entire picture: it cannot capture the idiosyncrasy we have seen in Section 3, if her analysis is applied to evidentials in non-evidential-obligatory languages such as English, Japanese and Bulgarian. Suppose that the formulations in (21) are revised so that it avoids the first problem. It will predict, whatever formulations it contains, that all evidentials that share the same manner of acquisition behave in the same way. However, as the data in Section 3 suggests, this is not the case. I repeat relevant examples:

- (22) a. (You hear John singing from the next room:)
 (i) #Apparently John is singing.

- (ii) John-ga utat-tei-ru yooda.
 John-NOM sing-PROG-PRES yooda
 ‘It seems that John is singing.’
- b. (You visit your brother, who works on a church restoration in a remote Bulgarian village. At midday, you hear the church bell ring. You say:)
 Tja kombanata zvanja-l-a!
 it bell ring.IPFN.PRES-I-FEM
 ‘The bell is ringing (I hear).’
- (23) (When you enter the kitchen, you feel sticky to the floor. You just cleaned the floor a couple of hours ago. You say:)
- a. # Apparently the floor is sticky.
- b. # Yuka-ga nebanebasi tei-ru yooda
 floor-NOM sticky PROG-PRES yooda
 ‘It seems that the floor is sticky.’
- c. Podat bi-l lepkav!
 floor be-l sticky
 ‘The floor is sticky (I feel)’

Note that the felicity of (22a-ii) and (22b) is not expected in (21), where direct evidence requires RS to include ES. In those examples, RS (the situation where the speaker hears the sound) contains two individuals, the speaker and John (in (22a-ii)) or the church bell (in (22b)), and ES contains only the latter individual. Therefore, those examples satisfy the condition for direct evidentials, although *yooda* and *-l-* are both indirect. Meanwhile, *apparently* is infelicitous in both auditory and tactile contexts. If all indirect evidentials have the identical distribution with respect to their manner of acquisition, we do not expect the difference in their acceptabilities.

One might argue that we can maintain Speas’s (2010) argument if we abandon the assumption that the requirement of direct evidence in (21b) is specific to direct evidentials, and instead assume that *-l-* is felicitous if it satisfies either (21b) or (21c) (that is, *-l-* is compatible with both direct and indirect evidence). This enables *-l-* to accommodate (22b) and (23c). However, it is still unclear how to differentiate *-l-* and *yooda*, since *yooda* is compatible with (22) but not with (23). Moreover, the difference between *apparently* and *yooda* remains to be unsolved. To account for it within Speas’ framework requires us to posit another type of evidence, for example, *Indirect'*, which goes well with auditory evidence but not with tactile evidence, and to assume that *yooda* encodes it. However, this treatment makes Speas’ (2010) analysis lose its original motivation; we have to posit more than four manners of acquisition to capture this idiosyncrasy.

In summary, Speas’s (2010) attempt seems conceptually advantageous because it can get rid of primitive notions such as direct/indirect/reportative... evidence and can pose a restriction on the variation in manners of acquisition. However, it does not give sufficient formalism, so its empirical adequacy is quite unclear. Furthermore, the assumption that all evidentials belonging to the same category of evidence types show identical distributions is inconsistent with the idiosyncrasy we have seen.

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5.2. Koev (2017)

This section reviews Koev's (2017) definition of indirectness. He investigates the semantics of the Bulgarian *-l-*, and makes two proposals: (i) the indirect evidentiality of *-l-* should not be postulated as a primitive, but should be derived from the spatiotemporal distance between the event described by the prejacent and the event in which the speaker acquires the evidence (the learning event, in his terminology), and (ii) its evidential component (the information that the speaker acquired indirect evidence) is not-at-issue. This section focuses on (i), and claims that modeling indirectness in terms of events encounters a problem when applied to the case where the prejacent is modalized.

Koev (2017) points out that the indirect evidential *-l-* is felicitous if the runtime of the learning event does not overlap with that of the prejacent event, or if the location of the learning event is disjoint from that of the prejacent event. As such, he proposes that *-l-* requires the following spatiotemporal distance:⁶

- (24) $e_1 \Delta e_2$ if and only if e_1 is disjoint from the time of e_2 or the location of e_1 is disjoint from the location of e_2 , where e_1 is the prejacent event and e_2 is the learning event. (Adapted from Koev (2017: 16))

I believe that this analysis is superior to the traditional treatment of evidentiality in two points. First, it decomposes what it means for evidence to be indirect: it makes objective predictions without resorting to our intuitive conception of indirectness. Second, the analysis mentions the relation between the prejacent and evidence. As I claimed in Section 4, an analysis of manners of acquisition should make reference to this relation in order to capture the fact that the felicity of an evidential varies with the content of the prejacent even with the same evidence.

When applied to *apparently* and *yooda*, this analysis explains the contrast between (12) and (18), repeated here as (25):

- (25) (When you enter the kitchen, you feel sticky to the floor. You just cleaned the floor a couple of hours ago. You say:)
- a. # Apparently the floor is sticky.
 - b. Apparently someone spilled dressing or something like that.
 - c. # Yuka-ga nebanebasi tei-ru yooda
 floor-NOM sticky PROG-PRES yooda
 'It seems that the floor is sticky.'
 - d. Dareka-ga doressingu-ka-nanika-o kobosi-ta yooda.
 someone-NOM dressing-or-something-ACC spill-PAST yooda
 'It seems that someone spilled dressing or something like that.'

⁶ Koev (2017) does not consider the cases where *-l-* is used with direct evidence, some examples of which have been presented in Section 3.

The learning event is the same in both felicitous and infelicitous cases. In the infelicitous cases (25a) and (25c), the prejacent describes the event of the floor being sticky. The runtime of the floor-being-sticky event clearly contains the runtime of the learning event (the event in which the speaker feels sticky to the floor). The locations of the two events overlap with each other, too. Therefore, the requirement of the spatiotemporal distance is violated. Meanwhile, in (25b) and (25d), the prejacent event is the one where someone spilled some liquid that makes the floor sticky. The locations of this event and the learning event overlap with each other, but their runtimes are disjoint, since the spilling-dressing event should precede the speaker's sensation of the sticky floor. This fulfills the requirement of the spatiotemporal distance, making (25b) and (25d) felicitous.

However, in Koev's analysis of indirectness, it is unclear how it can handle cases where the prejacent is modalized as in (11), repeated here as (26):

- (26) (You go to a vacant lot to play baseball, but you find other people occupying it. You say to yourself:)
- a. Apparently I cannot use this vacant lot.
 - b. Kono-akiti-wa tuka-e-nai yooda.
 this-vacant.lot-TOP use-can-NEG yooda
 'It seems that I cannot use this vacant lot.'

In this case, since the prejacent is modalized, it is difficult to determine what the prejacent event corresponds to. Following the traditional and standard assumption, modals are interpreted relative to the utterance situation (or the possible world in which the utterance is made); it is not an event predicate, and neither is the prejacent containing a modal. This indicates that event-based formulation of manners of acquisition in (24) may not be applied to cases such as (25) straightforwardly.

What if event variables in the formulation (24) are replaced by situation variables, which can be predicated of modalized propositions? Then, the modified formulation says that indirect evidentials are felicitous only if the situation in which the prejacent is true is spatiotemporally distant from the situation in which the speaker perceives the evidence (I tentatively call this situation the learning situation). Roughly, the prejacent in (26) becomes true in a situation *s* iff the relevant facts and the speaker's ability in *s* jointly entail that the speaker does not use the vacant lot. Therefore, the temporal trace of the prejacent situation is the time interval at which such facts and abilities hold. This overlaps with the learning situation, because these facts and abilities should be holding while the speaker is seeing the evidence (i.e., people playing soccer in the vacant lot). The location of the prejacent situation is where those facts and abilities are available, so it is the vacant lot where other people playing soccer. This location is contained in the learning situation, which contains the speaker, the vacant lot, and these people playing soccer. Therefore, the two situations are not spatiotemporally distant, which predicts that indirect evidentials are infelicitous in examples such as (26), contrary to the fact. Therefore, Koev's (2017) analysis of indirectness does not give a satisfactory account for examples of modalized prejacent even if we replace events with situations.

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6 CONCLUSION

This paper has reviewed how manners of acquisition in evidentials' semantics have been treated in the formal literature, and has shown that we cannot reach an adequate description of evidentials' semantics unless we analyze internal components of manners of acquisition, instead of leaving them to be primitive notions. We have seen two motivations for this claim. First, a manner of acquisition encoded by an evidential sometimes does not follow our intuition. Second, there is idiosyncrasy in what a manner of acquisition of evidentials refers to, even if they are categorized into the same type evidentials. These two facts clearly proved that traditional labels such as direct, indirect, etc. should not be treated as primitive notions. After the discussion of idiosyncrasy, I have proposed that manners of acquisition must be defined in terms of the relation between the prejacent and the evidence proposition, rather than of the evidence simpliciter, because even with the same evidence, an evidential can be felicitous depending on the content of the prejacent. For the implication of the discussion so far, we have seen that Speas's (2010) attempt to restrict possible kinds of manners of acquisition is not promising if her analysis extended to evidentials in languages where evidentials are not obligatory. The reason is that, in addition to the problem in the rigidity of her formalization, it cannot capture the idiosyncrasy in the referent of manners of acquisition. Finally, I have reviewed Koev (2017). His analysis of indirectness involved in the Bulgarian indirect evidential *-l-* is superior to the traditional treatment of manners of acquisition because it analyzes internal components of indirectness and it refers to the relation between the prejacent and the evidence. However, his event-based definition of indirectness faces a problem when handling modalized prejacent.

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