Expressing Uncertainty with *gisa* in Tshangla

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1. Introduction to *gisa*

We examine the semantics and pragmatics of the post-verbal particle *gisa* in Tshangla [tsʰaŋla] (Tibeto-Burman). Tshangla (also called Sharchop) is an SOV language spoken by about 150,000 people, primarily in eastern Bhutan. Tshangla is understudied. Previous discussion of *gisa* is restricted to Andvik's (2010) reference grammar. Andvik identifies *gisa* as an uncertainty marker. *Gisa* occurs in both declarative and interrogative clauses, with slightly different effects. We briefly sketch each below.[1]

Gisa is felicitous with a declarative prejacent ϕ if the speaker is unsure about whether ϕ is true or false. The speaker in (1) can be speaking to himself, speaking to an addressee unsure about ϕ, or speaking to an addressee whose knowledge is unknown.[2]

(1)   Ngamsu khen-ca **gisa**.
        rain   fall-CJ   GISA
        'It is raining GISA.'
        Comment: "You're just guessing."

Gisa is infelicitous if the speaker is sure of the truth of the declarative, for instance if the declarative expresses a self-ascribed proposition, as in (2).[3]

(2)   Context: Speaker knows what he is doing.
            Jang emadatshi zan-ca (#**gisa**).
            I   emadatshi eat-CJ   GISA
            ('I am eating emadatshi GISA.')

Gisa is also infelicitous in declaratives if the speaker knows the proposition is true due to, e.g., direct visual evidence, as in (3).

(3)   Context: The price is clearly posted.
            Gong niltrum janiktsing (#**gisa**).
            price niltrum 200   GISA
            ('It costs 200 Niltrum GISA.')

Gisa is felicitous in interrogative sentences where the speaker does not assume that the addressee knows the answer, as in (4).

(4)   Context: You're speaking to a friend who might not know the answer.
            Tshering oga   den-ca **gisa**?
            Tsh.   where go-CJ   GISA
            'Where is Tshering going GISA?'

Gisa can also appear in interrogatives where the speaker expects the addressee to be very likely to know the answer, as in (5), where it is the job of the airline official to be familiar with the flight record.

(5)   Context: Speaking to airline official with a flight record.
            Namdru hale   shekpa-∅ **gisa**?
            airplane when arrive-CJ GISA
            'When did the flight come GISA?'

As shown in (6), *gisa* is only infelicitous in interrogatives if the interrogative questions the addressee's self-ascribed states or actions.

(6)   Nengi   emadatshi zawa-∅ (#**gisa**)?
        you.ERG emadatshi ate-CJ   GISA
        ('You ate emadatshi GISA?')

Our goal in this paper is to propose a formal analysis of *gisa* that accounts for the data above. We propose that *gisa* negates a particular assertion head, realized overtly in Tshangla as the 'conjunct marker' (glossed CJ). The conjunct head returns true if and only if a proposition is true in all of the worlds consistent with the speaker's privileged epistemic beliefs. *Gisa* negates the assertion head. A sentence with CJ *gisa* is true iff it is not the case that the proposition expressed is true in all worlds consistent with the speaker's well-integrated beliefs.

The paper has the following structure. In Sect. 2, we sketch an analysis of the conjunct-disjunct system in Tshangla, relating it to previous work on similar systems in other languages. Since *gisa* can only occur in sentences containing the conjunct marker, it is necessary to first posit a semantics for the conjunct marker before positing a semantics for *gisa* in order to maintain compositionality. In Sect. 3, we give our analysis of *gisa* and consider predictions that follow from the analysis. In Sect. 4, we consider *gisa* in interrogatives. In Sect. 5, we summarize our conclusions and present directions for future work.

2. Conjunct and disjunct markers

It is difficult to analyze *gisa* without first considering the language's conjunct-disjunct system. Conjunct-disjunct systems are widely attested cross-linguistically and seem to be particularly well-attested in Tibeto-Burman languages. As discussed first by Hale (1980) – and later by DeLancey (1997), Dickinson (2000), Wechsler (2012), and other authors – conjunct marking is canonically found in declaratives with first-person subjects and in interrogatives with second-person subjects.

This canonical distribution is found in Tshangla (7). The conjunct marker is variably realized as *-ca* or *-∅* while the disjunct marker is variably realized as *-la* or *-na* (Andvik, 2010). In (7), the speakers and addressees can be assumed to know what they are doing (e.g., eating emadatshi). In such a context, only the conjunct marker is permitted.

(7)   a.   Jang emadatshi zan-**ca** / *zan-**na**.
                I   emadatshi eat-CJ /   eat-DJ
                'I am eating emadatshi.'
        b.   Nan emadatshi zan-**ca** / *zan-**na** mo?
                you emadatshi eat-CJ /   eat-DJ Q
                'Are you eating emadatshi?'

Like disjunct markers in other languages, the Tshangla disjunct marker is found in declarative and interrogative sentences with third-person subjects. (8) is felicitous in a context where the speaker is observing Tshering eating emadatshi. The conjunct marker is unacceptable in such a context.

(8)   Tshering emadatshi zan-**na** / *zan-**ca**.
      Tsh.   emadatshi eat-DJ / eat-CJ
      'Tshering is eating emadatshi.'

A number of semantic analyses have been proposed for conjunct and disjunct markers. While these proposals differ in their details, they share a common core: the distribution of conjunct marking is at least partially dependent on knowledge and belief. In one class of proposals, represented by DeLancey (1997), disjunct markers are argued to be mirative markers. Mirative systems have been described as distinguishing speaker-new and speaker-assimilated knowledge, where the mirative marker (or, for Delancey, disjunct marker) indicates unassimilated, new, and/or surprising information.[4]

A second set of proposals argues that conjunct morphology indicates that the subject (or, in certain languages, other argument) of the verb is coreferent with the 'epistemic authority' for that utterance. Hargreaves (2005) defines the epistemic authority as the individual who has the primary knowledge of – or privileged access to – the truth of the proposition expressed. Dickinson (2000) builds on this class of proposals, arguing that conjunct markers are only licensed if the subject (or other argument, in some languages) was a "knowing conscious participant" in the described eventuality. That is, conscious participation in an event is one way to become an epistemic authority. Disjunct markers are used whenever the subject (or other argument) is not an epistemic authority.

The distribution of conjunct and disjunct morphology in Tshangla appears to be sensitive to the properties described above. For instance, the sentences in (9) are only felicitous if the context is changed such that the subject was not a "knowing conscious" participant in the event. Consultant comments like "Now you come to realize you ate [emadatshi]" in (9-b) also recall DeLancey's (1997) analysis of disjunct marking as a mirativity marker.

(9)   a.   Ining   jang emadatshi zawa-**la**.
           yesterday I   emadatshi ate-DJ
           'Yesterday I ate emadatshi.'
           Comment: "This is only okay if you were so drunk that at the time, you didn't realize you were eating emadatshi. Now you come to realize you ate it."
      b.   Ining   nengi   emadatshi zawa-**la** mo?
           yesterday you.ERG emadatshi ate-DJ   Q
           'Did you eat emadatshi yesterday?'
           Comment: "Only good if your friend was so drunk he didn't know what he ate was emadatshi, but has since learned what he did."

Tshangla appears to permit the conjunct marker in declaratives even when the speaker (the epistemic authority) is not the subject of the sentence. Although sentences with third-person subjects canonically contain the disjunct marker (e.g., (10-b) and (8)), the conjunct marker can be exceptionally licensed if the speaker participated in the described action, as in (10-a).

(10) a.   Tshering ja   jam-**ca**.
           Tsh.   tea drink-CJ
           'Tshering is having tea.'
           Comment: "The speaker and Tshering are having tea together."
      b.   Tshering ja   jam-**la**.
           Tsh.   tea drink-DJ
           'Tshering is having tea.'
           Comment: "Tshering is at a different table. You see him having tea."

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[4]   A frequently discussed use of mirative morphology is to indicate speaker surprisal. This use of disjunct marking is indeed attested in Tshangla (Andvik, 2010). However, the primary use of the Tshangla disjunct marker cannot be to express speaker surprisal. Sentences like (8) are not only felicitous in contexts where the speaker is surprised.

Although they may not apply properly in their particulars to Tshangla, the above conceptualizations of conjunct-disjunct marking all share a common core which we will make use of in our analysis. Conjunct marking indicates that the truth of the proposition is assertable on the basis of what we term 'well-integrated beliefs.' We define well-integrated beliefs as a privileged set of epistemic beliefs. In the examples of conjunct marking we have seen so far, well-integrated beliefs appear to be at least those beliefs accrued through direct participation of the speaker in the described eventuality. We leave the notion of well-integrated beliefs underdetermined by design: in certain contexts, a particular degree of participation may be sufficient to license conjunct marking, while in other contexts the same degree of participation is not sufficient.

Given that well-integrated beliefs are a subset of the broader category of epistemic beliefs, it seems possible that the conjunct marker could be analyzed as some sort of modal. Recent work in unrelated domains has argued that all assertions are implicitly modalized (Alonso-Ovalle & Menéndez-Benito, 2003). That is, all assertions are made on the basis of some type of evidence or set of beliefs.

We propose that the conjunct and disjunct markers are overt forms of the posited assertion head. The conjunct marker is defined such that it returns true if and only if the speaker's well-integrated beliefs are such that in all of the worlds compatible with those beliefs, the proposition holds.

(11)   a. $[\![\text{CJ}]\!] = \lambda p.\lambda w.\forall w' \in WIB(w)[p(w')]$
        b. $[\![\phi\ \text{CJ}]\!]$ is true if and only if for all worlds w' consistent with the speaker's *well-integrated beliefs* in w, ϕ is true in w'.

By contrast, the disjunct marker is licensed if any of the speaker's beliefs - whether or not they are well-integrated - are sufficient for the speaker to assert the truth of the proposition.

(12)   a. $[\![\text{DJ}]\!] = \lambda p.\lambda w.\forall w' \in EPI(w)[p(w')]$
        b. $[\![\phi\ \text{DJ}]\!]$ is true iff for all worlds w' consistent with the speaker's epistemic beliefs in w, ϕ is true in w'.

Given these denotations, the set of beliefs relevant for the conjunct marker will be a proper subset of the beliefs relevant for the disjunct marker. We might expect, then, that the disjunct marker could be used in the same contexts in which the conjunct marker could be used. However, we saw that this is not the case. If the speaker's well-integrated beliefs are sufficient for her to make an assertion, then that assertion must contain the conjunct marker. In order to capture these data, we appeal to the Gricean Maxim of Quantity:

(13)   Make your contribution as informative as required.

This Maxim has been invoked in the literature on evidentials to explain implicatures that arise from the use of 'weaker' evidentials. For instance, if a speaker uses a hearsay evidential, an implicature is triggered that the speaker lacked sufficient evidence to use a stronger one (e.g., an evidential compatible with visual evidence).[5]

We propose that in Tshangla, a similar hierarchy holds between conjunct and disjunct markers. As defined in (12), the disjunct marker is used whenever *any* type of evidence available to the speaker makes it possible for her to make an assertion. By contrast, the conjunct marker (11) can only be used if the speaker's assertion is based on well-integrated beliefs. The conjunct marker can be viewed as the stronger of the two markers in the sense that it indicates that the speaker must have had a specific type of evidence for her assertion. Use of the disjunct marker gives rise to an implicature that the speaker could not have made her assertion on the basis of well-integrated beliefs: otherwise, she would have used the conjunct marker. A similar notion of Quantity returns in our discussion of *gisa*.

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[5] Faller (2002) ultimately abandons the use of the Maxim of Quantity because there do not seem to be a fixed evidential hierarchy. However, the 'hierarchy' between the conjunct and disjunct marker as defined here is fixed, so an explanation in terms of Gricean implicature seems suitable.

3. Analysis of *gisa*
3.1. Semantics of gisa

The conjunct-disjunct system is relevant to the study of *gisa* since *gisa* can only appear in sentences in which the verb bears the conjunct marker, exemplified in (14).

(14) Ngamsu khen-**ca** gisa / *khen-**na** gisa.
      rain   fall-CJ GISA / fall-DJ GISA
      'It is raining *gisa*.'

If the analysis of *gisa* is to be compositional, then we must determine how composition of *gisa* and the conjunct marker results in the felicity conditions attributed to *gisa* sentences as a whole.[6]

This co-occurrence requirement is particularly surprising since it is also the case that *gisa* is infelicitous in the types of contexts where the conjunct marker is canonically licensed. For instance, *gisa* cannot appear in declarative sentences with first-person subjects (15). The only exception to this generalization is if the context is such that the speaker or addressee lacks well-integrated beliefs about the proposition. For instance, *gisa* is licensed if the speaker was drunk at the time of the emadatshi-eating event and cannot self-ascribe the property of eating emadatshi.

(15) Ining   jang emadatshi zawa-∅ (#**gisa**).
      yesterday I   emadatshi eat-CJ   GISA
      ('I am eating emadatshi GISA.')
      Comment: "*Gisa* is only good if you're still asking yourself. You're still not sure if what you ate was emadatshi."

Recall that we saw the disjunct marker unexpectedly licensed in similar types of 'drunken' contexts (9). It is not the case, however, that *gisa* is an analytic version of the disjunct marker. That is, it does not indicate that the speaker has non-well-integrated beliefs that permit her to make a particular assertion. For instance, while the disjunct marker is licensed in (16-a), *gisa* cannot appear in the same sort of context (16-b).

(16) Context: Speaker is watching Tshering eat emadatshi.
      a. Tshering emadatshi zan-**na**.
          Tsh.   emadatshi eat-DJ.
          'Tshering is eating emadatshi.'
      b. *Tshering emadatshi zan-**ca gisa**.
          Tsh.   emadatshi eat-DJ GISA
          (Tshering ate emadatshi *gisa*.)

We proposal that *gisa* is a (type $\langle st, st \rangle$) negation operator (17).

(17) $[\![gisa]\!] = \lambda p.\lambda w.\neg p(w)$

However, *gisa* is not simply a clausal negation marker. Clausal negation in Tshangla is expressed through special verb forms, as exemplified in (18).

(18) Tshering emadatshi mazanji-∅.
      Tsh.   emadatshi NEG.ate-DJ
      'Tshering did not eat emadatshi.'

Rather, *gisa* is a special form of negation. It has the denotaion in (17), but selects for clause containing the conjunct marker (19-b). As shown in (19-b), *gisa* negates the modal assertion component of an utterance: it does not negate the prejacent ϕ.

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[6] All examples of *gisa* sentences considered below are matrix sentences. However, our fieldwork has shown that *gisa* can be embedded beneath the predicates 'think,' 'wonder', 'ask', and 'not know.' *Gisa* cannot be embedded under 'know'. We leave to future work integration of these facts with our current analysis.

(19)   a. $[\![\phi \; \text{CJ}]\!] = \lambda w.\forall w' \in WIB(w)[\phi(w')]$

        b. $[\![\phi \; \text{CJ} \; gisa]\!] = \lambda w.\neg\forall w' \in WIB(w)[\phi(w')]$

           "It is not the case that for all of the worlds w' consistent with the attitude holder's well-integrated beliefs, ϕ is true in w'."

3.2. Three predictions of the analysis

First, the analysis correctly predicts that *gisa* will be infelicitous with a declarative ϕ when ϕ is one of the speaker's well-integrated beliefs. If ϕ is a well-integrated belief, then all worlds returned by WIB are necessarily ϕ worlds. Consider the example in (20). In (20-b), ϕ is 'I [the speaker] am eating emadatshi.' The truth conditions are given in (21).

(20)   Context: Speaker knows what he is doing.

        Jang emadatshi zan-ca (#**gisa**).

        I   emadatshi eat-CJ   GISA

        ('I am eating emadatshi GISA.')

(21) $[\![\phi \; \text{CJ} \; gisa]\!] = \lambda w.\neg\forall w' \in WIB(w)[\phi(w')]$

        'It is not the case that the speaker is eating emadatshi in all of the worlds consistent with his well-integrated beliefs determined relative to the world of evaluation w.'

We predict that the sentence with *gisa* will be false in the context in (20). By virtue of being a participant in the emadatshi-eating event, the speaker's well-integrated beliefs include that he is eating emadatshi. All worlds returned by the function WIB are worlds in which the speaker is eating emadatshi. As predicted, inclusion of *gisa* makes (20) unacceptable in the context. It seems that our semantics for *gisa* makes the correct prediction in this case.

Second, *gisa* is predicted to be felicitous in scenarios where ϕ is true in some – but not all – of the worlds consistent with the speaker's well-integrated beliefs. This prediction is borne out. The speaker in (22) does not know whether it is raining. The speaker's well-integrated beliefs say nothing about whether it is raining or not: it is raining in some of the world's consistent with the speaker's well-integrated beliefs, and not raining in others. Thus, *gisa* is predicted – and found – to be felicitous in such a context.

(22)   Context: You are sitting inside a windowless room. You don't know what the weather is like.

        You say to yourself:

        Ngamsu khen-ca **gisa**.

        rain   fall-CJ GISA

        'It is raining GISA.

We also correctly predict that *gisa* is felicitous if ϕ is true in only some of the worlds consistent with the speaker's well-integrated beliefs. In (23), the consultant said that *gisa* can only be used if the speaker still is uncertain whether she ate emadatshi or not: perhaps she does not know that what she ate was emadatshi, or perhaps she was drunk when she ate and does not remember what she consumed. In both cases, having eaten emadatshi is not one of her well-integrated beliefs and *gisa* is licensed.

(23)   Ining   jang emadatshi zawa-∅ **gisa**.

        yesterday I   emadatshi ate-CJ   GISA

        'Yesterday I ate emadatshi GISA.'

        Comment: "You're still not sure if what you ate was emadatshi."

Finally, we predict that since our account has *gisa* contributing to the propositional content, *gisa* will pattern like a propositional-level element with respect to certain diagnostics. One such diagnostic is the Assent/Dissent test (Faller, 2002; Papafragou, 2006). The idea underlying this test is that one cannot disagree with the speech act (or illocutionary) level operators because speech acts lack truth values (Peterson, 2010). By contrast, the contribution of propositional operators – like *gisa* – can be disagreed with. This prediction is borne out. In (24), Alice says 'The language is Dzongkha GISA'. Tshering can then reply 'No, that's false,' because he knows that Alice is certain.

(24)   Context: Alice is teaching a field methods class. She knows what the language but is keeping it
         a secret. Tshering asks her what the language is.
  Alice: Lo   Dzongkha ∅ **gisa**.
         language Dz.   CJ GISA
         'The language is Dzongkha GISA.'
  Tshering: Manggi, mandenma! Nan sele!
            no   not.true   you know
            'No, that's false! You know [whether it is Dzongkha].'

So far, our analysis of *gisa* appears to make the correct predictions. In the next section, however, we consider cases where it seems that the analysis does not make the right predictions.

3.3. Constraining the use of gisa through competition

We repeat below the denotation of a sentence containing *gisa*:

(25) $[\![\phi \text{ CJ } gisa]\!] = \lambda w.\neg\forall w' \in WIB(w)[\phi(w')]$

Given this denotation, sentences with *gisa* are predicted to be verified by a large number of contexts. *Gisa* is not, in fact, felicitous in all of these contexts. We argue that the 'missing' uses of *gisa* sentences are absent because they are less informative than with other competing utterances. Again, we appeal to a pragmatic notion of informativity, namely Grice's Maxim of Quantity (13).

3.3.1. Infelicity where ϕ is false

Gisa is predicted to be felicitous in scenarios in which ϕ is false in all worlds consistent with the speaker's well-integrated beliefs. However, *gisa* is not the usual method of expressing negative assertions. Tshangla has special negative verb forms.[7]

(26)   Tshering emadatshi mazanji.
         Tsh.   emadatshi NEG.ate
         'Tshering did not eat emadatshi.'

We propose that *gisa* sentences are in competition with negated sentences like (26). If the speaker utters (26), then the addressee can conclude that the speaker believes that Tshering did not eat emadatshi. If the speaker had uttered a sentence with *gisa*, then the speaker would have simply said that Tshering eating emadatshi was not one of his well-integrated beliefs. The addressee could not determine whether the speaker believes ϕ, but not on the basis of well-integrated beliefs, or whether the speaker believes $\neg\phi$, or whether the speaker has no beliefs regarding ϕ.

The Maxim of Quantity can be flouted by speakers in Tshangla, like in English. In (27), Alice utters two statements, one true and one false, each with *gisa*. The use of *gisa* in the second clause in (27) is licit even though Tshangla is not the subject language in any of the worlds consistent with Alice's beliefs. We posit that *gisa* is possible in (26) because Alice is flouting Quantity: she could answer the question, but she chooses not to.

(27)   Context: Alice is teaching a field methods class and knows the subject language is Dzongkha.
         You ask her what the language is. She wants to keep the language a secret from you.
  Alice: Lo   Dzongkha ∅ **gisa**, lo   Tshangla ∅ **gisa**
         language Dz.   CJ GISA, language Tsh.   CJ GISA
         'The language is Dzongkha GISA, the language is Tshangla GISA.'

3.3.2. Infelicity when there is (non-well-integrated) evidence

We have defined *gisa* such that ϕ is asserted to not be true in all of the worlds consistent with the speaker's well-integrated beliefs. However, this meaning for *gisa* does not prevent it from being used in contexts where ϕ is true in all worlds consistent with the speaker's *non*-well-integrated beliefs. We find

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[7] Negative verb forms apparently lack the conjunct-disjunct distinction.

that *gisa* is, in fact, infelicitous in such contexts (28-a). The speaker must instead use disjunct marking on the verb (28-b).

(28) Context: You are in a cafe. Tshering is sitting at another table and you see he is drinking tea.
    a. #Tshering ja jam-ca **gisa**.
       Tsh.   tea drink-CJ GISA
       ('Tshering is drinking tea GISA.')
    b. Tshering ja jam-**la**.
       Tsh.   tea drink-DJ
       'Tshering is drinking tea.'

In (28-b), the speaker asserts that Tshering is drinking tea. However, since the speaker is observing – but not participating in – the event, the assertion cannot be based on well-integrated beliefs. Since the assertion cannot be made on the basis of the speaker's well-integrated beliefs alone, we expect *gisa* to be possible. However, the speaker's other (non-well-integrated) beliefs are sufficient for the assertion to still be made with the disjunct marker: recall from Sect. 2 that the disjunct marker is licensed in assertions made on the basis of any type of evidence available to the speaker.

    We propose that the infelicity of *gisa* in (28-a) is due to competition between (28-a) and the assertion with disjunct marking in (28-b). When the disjunct marker is used, the speaker asserts that ϕ is true given all of his knowledge (both well-integrated and non-well-integrated beliefs). Given this assertion, the addressee concludes that the speaker believes that Tshering is drinking tea. If *gisa* is used, however, the speaker asserts only that his well-integrated beliefs do not permit him to assert whether Tshering is drinking tea or not. Based on this assertion, the addressee cannot conclude that the speaker believes that Tshering is drinking tea. It could also be that the speaker has no beliefs, or believes that Tshering is not drinking tea. According to a pragmatic notion of informativity like the Maxim of Quantity, (28-b) is more 'informative,' as it can only communicate that the speaker believes Tshering is drinking tea. The assertion with *gisa* is less 'informative' because it is consistent with a wider range of speaker beliefs.

4. Extending the account to interrogatives
4.1. Conjunct-disjunct morphology in interrogatives

    Before considering *gisa* in interrogatives, we briefly return to consider conjunct-disjunct marking in interrogatives. As discussed in Sect. 2, while conjunct marking is canonically found in declaratives with first-person subjects, it is also the case that interrogatives with second-person subjects bear the conjunct marker (29-a). Verbs with non-second person subjects bear the disjunct marker (29-b).

(29)   a. Nengi   lamche lek-**ca** mo? / *lek-**la** mo?
       you.ERG elephant like-CJ Q   / like-DJ Q
       'Do you like elephants?'
    b. Dechengi lamche lek-**la** mo? / *lek-**ca** mo?
       D.ERG   elephant like-DJ Q   / like-CJ Q
       'Does Dechen like elephants?'

This distribution of conjunct-disjunct marking is cross-linguistically typical. Conjunct-disjunct marking has been described as exhibiting 'interrogative flip' (Hale, 1980), a phenomenon also discussed for evidentials (Garrett, 2001; Tenny & Speas, 2004). In Sect. 2, we saw that conjunct marking appears in declaratives when the speaker is the epistemic authority for the truth of the utterance. In interrogatives, conjunct marking instead indicates that the addressee is the epistemic authority. Likewise, disjunct marking appears in interrogatives when the addressee is not the epistemic authority. In order to formally capture this pattern, we propose that interrogatives are sets of possible answers (Hamblin, 1973). Each possible answer is an assertion so it bears a conjunct or disjunct marker. In a question like (29-a), the addressee can only reply on the basis of well-integrated beliefs: she has privileged knowledge of whether or not she likes elephants. The denotation of the question is as in (30-a). In (29-b), the addressee can only

reply on the basis of non-well-integrated beliefs. Thus, each assertion corresponding to a possible answer contains the disjunct marker, which we argued was compatible with all types of epistemic beliefs.[8]

(30)   a. $[\![(29\text{-}a)]\!]= \{$CJ(D. likes elephants), CJ(D. does not like elephants)$\}$
        b. $[\![(29\text{-}b)]\!]= \{$DJ(D. likes elephants), DJ(D. does not like elephants)$\}$

4.2. Gisa *in interrogatives*

With this treatment of interrogatives in place, we are now ready to consider the use of *gisa* in interrogatives.[9] Given the contexts in which *gisa* is licit in declaratives (Sect. 3.2), we might expect that *gisa* can only appear in interrogatives if the speaker believes the addressee to be uncertain whether ϕ. In other words, *gisa* can only appear in interrogatives if all possible answers also contain *gisa*.

This prediction is partially borne out. *Gisa* is infelicitous in interrogatives that question the speaker's knowledge of themselves, such as their own experiences or thoughts.

(31)   a.   Nengi   emadatshi zawa-∅ (#**gisa**)?
            you.ERG emadatshi ate-CJ   GISA
            ('Have you eaten emadatshi GISA?')
        b.   Oga   den-**ca** (#**gisa**)?
            where hurt-CJ   GISA
            ('Where do you hurt?')

We propose that when a speaker asks an addressee a question using an interrogative with *gisa*, *gisa* indicates that the speaker expects the addressee not to answer on the basis of well-integrated beliefs. This outcome is consistent if the denotation of a question like (31-a) is as in (32).

(32) $[\![(31\text{-}a)]\!]= \{$You have eaten emadatshi *gisa*, You have not eaten emadatshi *gisa*$\}$

As we might expect, then, it is also possible for *gisa* to be used in interrogatives that appear in contexts where the addressee is assumed not to be able to answer on the basis of any type beliefs (well-integrated or non-well-integrated).

(33)   Context: You and your friend have been in a windowless room all day. You say to your friend,
        Ngamsu khen-**ca gisa**?
        rain   fall-CJ GISA
        'Is it raining GISA?'

However, a final puzzle remains. It is also possible for a speaker to use *gisa* in interrogatives used in contexts where the addressee is assumed to know the answer:

(34)   Context: Speaking to Dechen's mother who is sure to know her daughter's likes.
        Dechengi lamche lek-**ca gisa**?
        D.ERG   elephant like-CJ GISA
        'Does Dechen like elephants?'

Given our reasoning above, the denotation of (34) is (35). However, (36) is a possible answer to (34).

(35) $[\![(34)]\!]= \{$D. likes elephants *gisa*, D. does not like elephants *gisa*$\}$

(36)   Dechengi lamche lek-**la**.
    D.ERG   elephant like-DJ.
    'Dechen likes elephants.'

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[8] For a similar analysis of modals as they occur within Hamblin answer sets, see Littell et al. (2010).
[9] A complication to the discussion here is that in matrix interrogatives, the interrogative marker *mo* cannot co-occur with *gisa*. *Gisa* can, however, occur in *wh*-questions. Throughout this section, we treat utterances as 'interrogative' if they are morphological interrogatives (i.e., they contain a *wh*-word), or are interrogatives by virtue of appearing in an information seeking context.

As a partial solution to this puzzle, we propose that (36) is a possible answer to (34) since it is logically consistent with the answers with *gisa* in (35). We discussed this issue in Sect. 3.3.2. If *gisa* appears in each possible answer, the only type of answer that is completely unavailable is one that contains the conjunct marker. Depending on the addressee's knowledge, however, any other type of answer is possible. If the addressee can assert ϕ on the basis of her non-well-integrated beliefs, then she uses the disjunct marker.

Although English lacks a particle with the semantics of *gisa*, it is worth noting that a phenomenon similar to *gisa* questions also occurs in English. Consider the following question. The addressee can give either answer in (37), or she can make a stronger statement (e.g., 'Mary is at home') which is logically consistent with the answer 'Mary might be at home.'

(37)   a.   Might Mary be home?
      b. $[\![(38a)]\!] = \{$M. might be home, M. must not be home$\}$

The use of both *gisa* and English *might* in questions seems to have the function of giving the addressee the wider range of possible answers. This widening of the possible space of answers may explain why English interrogatives like (37) and Tshangla interrogatives with *gisa* are both judged to be 'polite' interrogatives. For further discussion of modality in interrogatives leading to 'polite' or 'indirect' interrogative meanings, see Littell et al. (2010).

5. Conclusions

We proposed an analysis of the Tshangla conjunct and disjunct markers in which they are both types of assertion modals. The conjunct marker CJ combines with a proposition ϕ and delivers true if and only if ϕ holds in all worlds consistent with the speaker's well-integrated beliefs. We proposed that *gisa* negates the modal claim introduced by the CJ morpheme. *Gisa* is felicitous if and only if it is not the case that ϕ is true in all worlds consistent with the speaker's well-integrated beliefs. Given this semantics and through pragmatic competition with other possible utterances, we correctly predict that *gisa* is only licit in declaratives if the speaker is uncertain – according to any of her epistemic beliefs – whether ϕ is the case or not.

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