

# Attitude embedding predicates and indexicals under role shift in ASL\*

Elena Koulidobrova  
*Central Connecticut State University*

Kathryn Davidson  
*Harvard University*

**Abstract** We discuss some new observations involving attitude predicates in American Sign Language (ASL). We offer more evidence against the uniform treatment of attitudes by revealing new structural and interpretive differences in ASL between two classes of predicates, which we suggest may be due to their status as either proffering or doxastic. Besides providing evidence for this distinction from a new domain, the data also advance the current understanding of the formal syntactic/semantic/pragmatic properties of sign language loci and role-shift (phenomena frequently occurring in sign languages and much discussed in sign linguistics), namely that 1st-person indexicals under doxastics may not shift, and the 3rd-person pronoun under role-shift can be evaluated with respect to the matrix context.

## 1 Introduction

Traditionally, attitude predicates (e.g. believe, think, say) have as a class been treated as quantifiers over possible worlds (Hintikka 1962), but recent analyses have highlighted possible different subclasses of attitude predicates with respect to both semantics and syntax (Kratzer 2006, Moulton 2009). One of these suggested differences stems from the observation that some attitude predicates are sensitive to the sentience of their subjects (as in (1)) and these same predicates interact with epistemics as in (2) (Anand & Hacquard 2008).

- (1) a. {<sup>OK</sup>The book/<sup>OK</sup>Mary} {said/claimed} that he was happy  
b. {\*The book/<sup>OK</sup>Mary} {thought/imagined} that he was happy.
- (2) a. Holmes {#believed/assumed} that every guest might be the murderer.  
Intended: Holmes believed each had the possibility to be the murderer.  
b. John {believes/\*assumes} that the Earth might be flat.  
(Anand & Hacquard 2008)

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Anand & Hacquard (2008) argue that the paradigm in (1)-(2) reflects a subjectivity requirement that certain predicates impose on their complements, captured in their semantic analysis by having beliefs be evaluated with respect to an event involving doxastic alternatives held by the subject, while claims are evaluated with respect to alternatives that are active in the common ground after the claim is accepted by all (i.e. not specific to the subject). The former holds for an entire class of verbs that exhibit this type of behavior: *believe, think, wonder, imagine*, i.a. – the doxastic verbs. The latter are a class of proffering verbs: e.g. *claim, assume, mean*. Anand & Hacquard formalize the contrast as in (3), where  $f_{epistemic}(e) = \lambda w'.w'$  is compatible with  $CON(e)$  (the content of the event).

- (3) a.  $\llbracket believe \rrbracket = \lambda e \lambda p \lambda x \lambda w. Holder(x, e) \wedge believe' \forall w' \in \cap CON(e) [p(w') = 1]$ , where  $\in \cap CON(e) = DOX(1xHolder(x, e), w)$
- b.  $\llbracket claim(e)(p) \rrbracket = claim'(e) \wedge \forall w$  compatible with Goal (e),  
 $[\forall w' \in \cap CON(e_{CG-w'}) [p(w') = 1]]$

(Examples [7], [11],[32] from Anand & Hacquard 2008)

If the suggested doxastic/proffering cut is universal, stemming from the lexical semantics of the verbs themselves, then we may expect to see it distinguished in other languages. We demonstrate, using a new kind of test, that it appears in American Sign Language (ASL), and that manifestation of this difference between predicates (and how their complements are interpreted in discourse) leads to new observations about the nature of two other phenomena in the language – ‘role shift’ and ‘referential loci.’

## 1.1 Notation and methodology

Following conventions in sign language linguistics, all ASL glosses are in SMALL CAPS. The line above the utterance indicates the spread/duration of the nonmanual marking associated with either role-shifted material (RS) or topicalization (t); the letter/number separated with a dash (e.g. a-) indicates the area of signing space dedicated to a particular referent (Mom) and, thus, the locus of the shift. Subindices  $i, j, k, \dots$  on the right indicate coreference.

Observations newly reported in this paper were originally based on data that were originally a part of a language sample collected in early 2000s from Deaf signers of ASL residing in California (we thank J. Pyers for sharing the data). In several instances that we investigated further, elicited examples were presented to two other Deaf individuals who grew up as native signers of ASL with Deaf signing parents in the Northeast and Midwest of the US, respectively. Each reported judgment was later

verified with at least one additional native (hearing (Coda) or Deaf) or near-native (Deaf) signer of ASL. On average, each judgement was verified across 5 signers.

## 2 Observations

Most recent formal analyses of the phenomenon we will be concerned with in this paper focus on the shiftability of indexicals in “role shift” (RS henceforth) and so RS has been the primary term for this, a convention which we follow here. However, the same term “role shift” is also used descriptively in the literature to refer to the addition of nonmanual markers such as torso movement (body shift) and/or a shift in eye-gaze that may accompany attitude reports in many sign languages, including ASL. We can see evidence of both in our first example of interest, the paradigm in (4)-(5) (see [Lillo-Martin 2012](#) and [Cormier et al. 2015](#) for a detailed discussion of related terminology, including *constructed action*, *constructed dialogue*, etc.).

- (4) a. a-MOM<sub>i</sub> SAY  $\frac{\text{RS-a}}{\text{I-IX}_i \text{ BUSY}}$   
 b. ?? a-MOM<sub>i</sub>  $\frac{\text{RS-a}}{\text{SAY I-IX}_i \text{ BUSY}}$   
 ‘Mom says she is busy’ / ‘Mom says: I am busy’
- (5) a. \* a-MOM<sub>i</sub> THINK  $\frac{\text{RS-a}}{\text{I-IX}_i \text{ BUSY}}$   
 b. a-MOM<sub>i</sub>  $\frac{\text{RS-a}}{\text{THINK I-IX}_i \text{ BUSY}}$   
 ‘Mom thinks she is busy’ / ‘Mom thinks: I am busy’

Two properties of RS are immediately apparent in (4)-(5): (i) role shift movements occur concurrently with manual signs and begin after the embedding predicate for SAY (4) but on the embedding predicate for THINK (5); and (ii) in both the element immediately following the embedding predicate (i.e. the embedded subject) is a first person indexical pronoun (I-IX, ‘I’) that refers to someone other than the signer (here: Mom). Typically this type of “indexical shifting” is found in direct discourse (quotation) and not indirect discourse, although a notable exception has been reported to be pronouns found in a small number of (unrelated) languages including Amharic ([Schlenker 2003](#)), Zazaki (6) ([Anand & Nevins 2004](#)), and Ewe ([Pearson 2015](#)). A third semantic property will be illustrated in (8) below.

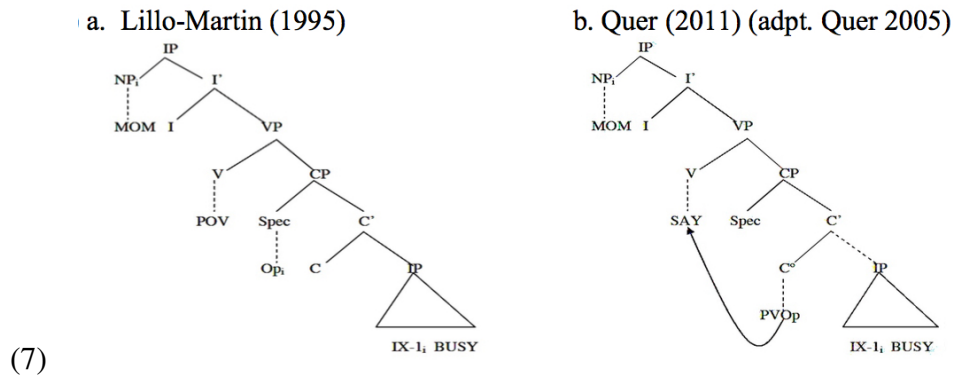
- (6) Heseni<sub>i</sub> (mi<sub>k</sub>-ra) va ke ezi<sub>k</sub> dezletia [Zazaki]  
 Hes.en.OBL (I.OBL -to) said that I rich.be-PRES  
 ‘Hesen said that {I am, Hesen is} rich.’ (Anand & Nevins 2004)

A few possibilities arise then for the analysis of the difference in extent of role shift and interpretation of first person pronoun in examples (4)-(5), which we will see below are representative of two classes of attitude predicates in ASL. First, ASL may indeed have a first person pronoun that shifts just as seen in some spoken languages (as has been argued by Lillo-Martin (1995) for 1-IX). This, of course, does not explain anything about the extent of role shift, nor does the presence of such a pronoun in ASL offer an account that distinguishes between its interpretation under SAY vs. THINK, or the case from one of quotation or not. Additionally, one could argue that syntactically (i.e. regarding integration of the complement), the difference in the extent of RS marking and indexical interpretation originates from lexical properties of the embedding predicates. To determine the right path, we'll briefly discuss existing formal proposals for the nature of RS.

### 3 Previous Analyses

#### 3.1 Role-shift

Recent formal analyses of RS-related phenomena (Lillo-Martin 1995, Quer 2005, 2011, Lillo-Martin 2012, Schlenker 2017) generally assume that what is responsible for the shift of certain indexicals in the report clause under RS is the interaction of a higher predicate—namely an attitude verb, null or overt—and some sort of operator below.



Both (7a) and (7b) are syntactic proposals. On the analysis represented by (7a), RS occurs with/is licensed by the Point of View (PoV) predicate – essentially an attitude, which takes as its complement a CP whose Spec is filled with an operator binding the indexicals in the IP below. In contrast, in (7b), the relevant operator is in the head of the lower CP. This head then is stipulated to compose with the embedding predicate, the precise mechanism for which remains left for future research. (7a) does not demonstrate how this attitude and the  $Op_i$  might combine to license the

relevant nonmanual markings over the predicate itself; on the alternative view, RS markings indiscriminately apply to all attitude predicates. Thus, the pattern in (4)-(5) showing an asymmetry between two types of attitude predicates is unexplained by Lillo-Martin (1995) in (7a) and unpredicted by Quer (2005) in (7b).

Semantically, for Quer (see also Zucchi 2004), RS is an overt instantiation of the context-shifting operator proposed by Schlenker (2003) and expanded for sign languages in Schlenker 2017. As such, RS changes the context of evaluation for a clause in its scope. This approach predicts that when under RS, indexicals will necessarily shift, irrespective of the type of attitude predicate in the complement of which they are found. Yet, we observe yet one more asymmetry among these classes of predicates: the aforementioned necessary shift only holds for SAY - and not for THINK -verbs, as in (8). The latter seem to allow RS forms even when there is no “shifted” interpretation of the first person pronoun, unexpected under previous accounts.

(8) *Context: You walk into a conversation and see Mary signing to John...*

- a. Mary<sub>i</sub>: WOMAN<sub>j</sub> a-IX<sub>i</sub> SAY  $\overline{\text{I-IX}_{*i/j} \text{ PLAY-PIANO}}$ <sup>RS-a</sup>  
 ‘A woman said that she [ $\neq$ Mary, =woman] was playing the piano.’
- b. Mary<sub>i</sub>: WOMAN<sub>j</sub> a-IX<sub>i</sub>  $\overline{\text{IMAGINE I-IX}_{i/j} \text{ PLAY-PIANO}}$ <sup>RS-a</sup>  
 ‘A woman said that she [=Mary, =woman] was playing the piano.’

Extending the use of such operators, Schlenker (2017) proposes that a context shifting operator occurs not just in cases of reported attitudes but also in reported actions ("action role shift"). In some cases of reported actions, RS occurs on the predicate if the predicate is "iconic", while for noniconic predicates RS occurs only in the following complement clause. For Schlenker, this difference is due to the action role shift predicates being embedded under a (covert) matrix predicate that licenses a context shifting operator, while attitude context shifting operators are themselves part of a matrix clause that licenses context shifting operators within their scope (see Davidson 2015 for an analysis of action role shift that places the action predicate itself in the matrix clause). Since this is one of the few cases in the literature where RS has been discussed as occurring on the predicate and not after, we might wonder whether the verbs we discuss here fall into Schlenker’s categories. However, while THINK and DREAM might be considered iconic because they are pronounced with locations near the head, it is difficult to see this as a distinction between the verb categories, since SAY would probably also be considered as iconic (at least in discussing spoken language, appearing near the mouth), and we have more generally found no relationship between iconicity and SAY - versus THINK -type attitude predicates. So, while it is certainly possible that some cases of more

iconic attitude predicates might also involve action role shift (and thus increase pressure for RS to begin on the predicate), it does not seem to explain the cut that we find, nor the behavior of the indexicals under these verbs.

Some analyses (Shan 2010, Maier 2014) have been proposed that cover cases of mixed (where a single clause includes both shifted and unshifted interpretations, contra, e.g., Anand & Nevins 2004) indexicals, found in other sign languages, including Catalan (LSC, Quer 2005) and German Sign Languages (Herrmann & Steinbach 2012). Incidentally, the asymmetry in extent of role shift on different predicate types under examination here is briefly recorded, albeit not overtly discussed in Quer's work on LSC, comparing LSC's SAY and THINK (9), where RS starts on, not after, the embedding predicate for THINK (there, Quer demonstrates that (9) is a case of indirect discourse).

- (9) a. ANNA<sub>i</sub> 3-SAY-2  $\overline{\text{IX-1}_i \text{ FED-UP LOSE+++}}^{\text{RS}_i}$   
 'Anna told you that she was fed up with losing so often.'
- b. MANUEL<sub>i</sub>  $\overline{\text{THINK IX-1}_i \text{ 1-GIVE-2 AT ALL}}^{\text{RS}_i}$   
 'Manuel thinks that he won't give me anything at all.'

At this stage, of course, (9) remains suggestive until this aspect of LSC is examined more systematically.

### 3.2 Direct or Indirect Discourse (a.k.a. Quote or Clausal Embedding)?

To capture the difference in nonmanual marking and indexical interpretations seen in ASL in (4)-(5) and (8), one might hypothesize a difference in syntactic integration - i.e. one is direct/quotation (nonintegrated) and the other indirect (integrated) discourse. Suppose that in direct discourse, RS begins after the matrix predicate precisely because the complement of this predicate (e.g. SAY ) is not integrated - i.e. a "quote" that is not syntactically and semantically embedded under the matrix verb; otherwise, RS is expected to spread over the attitude predicate. This, essentially, is the upshot of the analysis in Quer (2005, 2011), and an appealing one given the semantics of SAY . However, while this path is plausible and at least one of us has argued for an expanded more flexible view of quotation (Davidson 2015), it runs into a problem: some role-shifted complements of SAY bear characteristics of clausal embedding even when the nonmanual difference holds.

Arguments to determine the status of the syntactic embedding (vis-à-vis direct discourse) of role-shifted (parts of) utterances are presented in detail in the recent work by Schlenker (2017). The argumentation is based on the finding that wh-extraction (10), NPIs licensing (11), and VP-ellipsis (12) are possible only in

syntactic embedding/indirect discourse cases, in contrast to their ungrammatical status in English quotation.

- (10) a. What did John say he understands?  
 b. \*What did John say 'I understand'?
- (11) a. John didn't say he understands any chemistry.  
 b. \*John didn't say 'I understand any chemistry.'
- (12) *Context: The addressee and John have never met each other.*  
 a. You love Obama. John told me that he doesn't [love Obama].  
 b. (#) You love Obama. John told me: 'I don't [love Obama].'  
 (Schlenker 2017)

Diagnostics along the lines of (10)-(12) remain under investigation, complicated by the fact that (i) our consultants appear to lack clear NPIs and (ii) VP-ellipsis in ASL raises independent questions regarding the possibility of the bound-variable interpretation with (vs. without) previously assigned loci (Koulidobrova & Lillo-Martin 2016, Koulidobrova 2017). Here, we offer preliminary VP ellipsis data in (13) and wh-extraction data in (14) for some examples with these predicates (we follow the arguments by Braze (2004) and others that YESTERDAY marks clausal boundary in ASL).

- (13) a. 1-IX LOVE BROCCOLI COOKIES.  $\overline{1\text{-POSS KID}_i \text{IX}_i}^t$  SAY  $a\text{-IX}_i \overline{\text{NOT}}^{RS_a}$  BUT  
 LIE EAT-UP  
 'I love broccoli cookies. My kid says he doesn't [love broccoli cookies],  
 but he is lying, he'll eat them up'
- b. 1-IX LOVE BROCCOLI COOKIES.  $\overline{1\text{-POSS KID}_i \text{IX}_i}^t$   $\overline{\text{THINK A-IX}_i \text{NOT}}^{RS_a}$   
 BUT WATCH WILL EAT-UP  
 'I love broccoli cookies. My kid thinks he doesn't [love broccoli cookies],  
 but watch, he'll eat them up.'

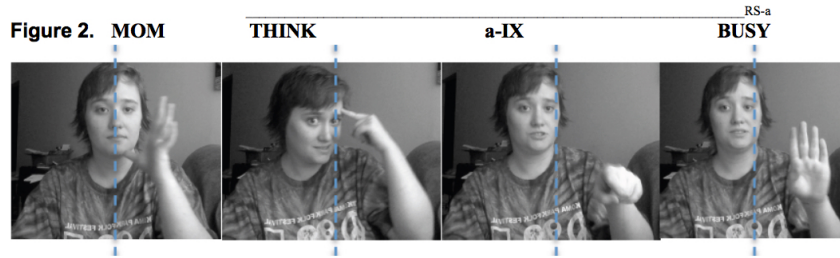
- (14) a. WHO WOMAN<sub>i</sub> SAY YESTERDAY  $\overline{\text{BUSY}}$  WHO ?  
 ‘Who did the woman say yesterday was busy?’
- b. WHO WOMAN<sub>i</sub>  $\overline{\text{THINK YESTERDAY BUSY}}$  WHO ?  
 ‘Who did the woman say yesterday was busy?’

There is, of course, a possibility that a-IX NOT in (13a), e.g., is a case of ellipsis in direct discourse - i.e. that the child says ‘I don’t.’ However, here, such ellipsis is not licensed in the same way ‘I don’t’ is not licensed in (11b). For an extensive discussion of ellipsis in ASL, see [Koulidobrova \(2017\)](#).

In addition to this, however, we suggest another piece of evidence for some integration in these examples coming from the use of pronouns. Existing literature has tended to focus on the 1st person indexical and its shiftability in the context of utterance vs. report; no one would expect the same of the 3rd person pronoun. In fact, fairly uncontroversially, a 3rd person subject in the complement of an attitude predicate, when co-indexed with some NP serving as an argument of that predicate, signals indirect discourse (as in (a.) sentences in (10)-(12)). Thus, if we demonstrate that the phenomenon under discussion holds with a 3rd person embedded subject (a-IX), then it is rather unlikely that we are dealing with direct discourse but, instead, with a case of clausal embedding. Consider (15) (Figures 1-2): although grammatical without any RS markings across the embedded clause, it is also acceptable with them.

- (15) a. A-MOM<sub>i</sub> SAY  $\overline{\text{A-IX}_i \text{ BUSY}}$   
 ‘Mom<sub>i</sub> says she<sub>i</sub> is busy.’
- b. A-MOM<sub>i</sub>  $\overline{\text{THINK A-IX}_i \text{ BUSY}}$   
 ‘Mom<sub>i</sub> thinks she<sub>i</sub> is busy.’





The contrast in (15) is surprising for existing analyses of role shift. First, it cannot be analyzed as direct discourse, since to quote Mom would be to use a first person pronoun 1-IX . There is also no obvious analysis of this as a full context shifting operator (Zucchi 2004; Schlenker 2017), since nothing throughout the "role shift" actually shifts interpretation, and yet the role shift movements occur, with different extents in the two cases. Finally, it's not clear how to analyze the RS here as a manner adverbial (Davidson 2015), since no extra manner seems to be demonstrated in THINK versus SAY .

We propose that a complete analysis of RS must consider data like those in (15). Although we will not offer one here, we suspect that a solution will depend on increasingly sophisticated dissociations of the locus itself from the point to the locus (IX), as begun in work by Barberà Altimira et al. (2012) and Koulidobrova & Lillo-Martin (2016). For now, we turn to the issue of the proffering/doxastic cue and merely note that behavior like (15) helps us rule out a pure direct discourse analysis of the RS-markings in our SAY vs. IMAGINE examples. Moreover, this same pattern in (15) can be observed with other clearly nonquotational predicates: ASSUME, SHOW, MEAN, INFORM, CLAIM vs. THINK, BELIEVE, IMAGINE, DREAM, WONDER , despite the difference in RS extent.

- (16) a. A-MOM<sub>i</sub> { ASSUME, CLAIM, MEAN, INFORM-2 } <sup>RS-a</sup> A-IX<sub>i</sub> BUSY  
 'Mom<sub>i</sub> {assumed, claimed, meant, informed-you} she<sub>i</sub> was busy.'
- b. A-MOM<sub>i</sub> { BELIEVE, DREAM, WONDER-IF } <sup>RS-a</sup> A-IX<sub>i</sub> BUSY  
 'Mom<sub>i</sub> {believed, dreamed, wondered-if} she<sub>i</sub> was busy.'

#### 4 Towards an account

The difference among the predicates in (16) follows precisely the one found in Anand & Hacquard (2008): profferings vs. doxastics. As mentioned at the outset, they argue that this division is based on how the complement clause enters the common ground and the role it plays: for proffering verbs, the worlds in which the proposition expressed by the complement must hold are considered with respect to the existing common ground, while the truth of the proposition expressed by the complement of doxastics is evaluated with respect to the private intensional domain of the subject/belief-holder and his/her conversational goals, not the overall common ground. Formally then, the account along these lines follows (3) (Koulidobrova & Davidson 2015):

- (17) a.  $\llbracket \text{MOM IMAGINE A-IX BUSY} \rrbracket$   
 $= 1$  iff  $\text{Holder}(\text{mom}, e) \wedge \text{imagine}'(e, w) \wedge \forall w' \in \cap \text{CON}(e) [\text{Busy}(\text{mom})(w')]$ ,  
 where  $\cap \text{CON}(e) = \text{DOX}(\iota x \text{Holder}(x, e), \text{Word}(e))$
- b.  $\llbracket \text{MOM SAY A-IX BUSY} \rrbracket$   
 $= 1$  iff  $\text{Holder}(\text{mom}, e) \wedge \text{say}(e, w) \wedge \forall w' \in \text{Goal}(e) [\forall w'' \in \cap \text{CON}(e_{CG} - w') [\text{Busy}(\text{mom})(w'')]]$

Pragmatically, what results from the Anand & Hacquard-style account is the suggestion that the two classes of predicates interact with the question under discussion (QUD, Roberts 1996) in different ways: the argument of the proffer (the complement) is what is up for discussion "proffered" to be entered to the common ground (17a); doxastics offer up for discussion the entire proposition (as given in the main clause), (17b).

- (18) a. MOM A-IX {SAY, CLAIM, ARGUE, ASSUME}  $\frac{\text{RS-a}}{\text{A-IX BUSY}}$ .  
 $\rightarrow$  Question under discussion: *Is mom busy?*
- b. MOM A-IX  $\frac{\text{RS-a}}{\{\text{THINK, BELIEVE, IMAGINE}\} \text{A-IX BUSY}}$ .  
 $\rightarrow$  Question under discussion: *Does mom {think, believe, imagine} she is busy?*

Perhaps then the difference in the duration of RS marking associated with different types of predicates in ASL may not be syntactic but rather semantic and pragmatic. One way to refer to a proposition in ASL discourse is to assign it to a locus, which can be done through RS. By extending RS over only the embedded clause in (18a), the signer makes the proposition that Mom is busy a target for later anaphora. This is in contrast to (18b) where RS extends over the matrix predicate

and thus can make the entire proposition Mom thinks she is busy a target for later anaphora by later indexical points (IX ) to the locus provided through RS. Consistent with this view is Sandler’s (e.g. 2010) account of nonmanual spreading as determined by a mapping at the interface of the prosodic component and the semantic/pragmatic component, which here may be affected by this potential for a proposition to provide a locus for future anaphora.

Finally, sign languages also allow the attitude embedding predicate to remain phonologically null, as is common in spontaneous discourse. Lillo-Martin (1995) dubs this (null) embedding predicate PoV (see (7a)), typically translated as ‘be like.’ More recently it has been analyzed as a classifier predicate that takes a demonstration as an argument (Davidson 2015). A natural question arises which of the two classes of verbs we have been discussing this predicate belongs to. Of course, since the predicate is phonologically null, the extent of RS-marking over this predicate cannot be determined. Yet, the data offered here provide another avenue for better understanding the nature of this predicate: are the available readings compatible with proffering or doxastic verbs? Preliminary data (three signers but not as part of the full paradigm) suggest the former (compare (19) with (8)).

- (19) Mary<sub>i</sub>: MOM<sub>j</sub>  $\overline{\text{I-IX}_{*i,j}}$  <sup>RS-a</sup> BUSY  
 ‘Mom is like I[≠Mary, =mom] am busy.’

These data offer additional testing ground in sign languages for both PoV and for SAY. In particular, while our consultants overwhelmingly reject SAY under RS, native signer reactions to such sentences contrast with those involving lack of RS-markings on THINK/IMAGINE . A next step will be to contrast SAY with and without RS-marking in order to test the possibility of subjective stance.

## 5 Conclusion

While the main focus of this paper has been the nature of nonmanual markings that vary in form (both extent and expression) depending on embedding predicates (this has been unsystematically, albeit frequently, noted in the SL literature, Sandler & Lillo-Martin 2006), the data presented here offer a path previously unexplored in the examination of RS and morpho-syntactic realization of indexicals in sign languages. The upshot is this: shift-related phenomena have been considered to be a defining property of a particular type of discourse: direct, indirect, or ‘mixed’ (Zucchi 2004). However, if the analysis presented here is on the right track, the nonmanuals associated with RS may be independent of these categorizations. Instead, they depend in part on semantics of the embedding predicate, which means that the ‘doxastic-proffering cut’ ought to reveal itself, for instance, in interaction with

epistemics as well as with other quantificational elements. The suggestion for the analysis of RS markings put forth here should also revive the debate regarding the views on nonmanual spreading, since in some embedded questions (e.g. with WONDER and KNOW), nonmanual markings begin on the embedding predicate and extends over the embedded clause (Sandler & Lillo-Martin 2006). We suggest that the difference of interpretation and duration between doxastic and proffering verbs, as well as new data concerning the shiftability of a third person pronoun associated with a locus, brings a new perspective to these issues.

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Elena Koulidobrova  
341 Clarence Carroll Hall  
Central Connecticut State University  
1615 Stanley Street  
New Britain, CT 06050  
elena.koulidobrova@ccsu.edu

Kathryn Davidson  
305 Boylston Hall  
Department of Linguistics  
Harvard University  
Cambridge, MA 02138  
kathryndavidson@fas.harvard.edu