

Role Shift, Indexicals and Beyond – New evidence from German Sign Language

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1 Introduction¹

Human languages provide their speakers and signers with a variety of means to report the utterances and thoughts of somebody else (including their own utterances and thoughts). Role shift (RS) is a common strategy to cover this linguistic function in sign languages.² In this paper, I will focus on instances of RS as reported discourse, more precisely, I will analyze the interpretation of local and temporal indexicals in the scope of RS.

Herrmann & Steinbach (2012: 213) list the following linguistic markers indicating RS:³

1. Eye gaze change towards the locus of the addressee of the reported utterance.
2. Change of head position towards the locus of the addressee of the reported utterance.
3. Body lean including a sideward movement of the upper part of the body towards the locus of the reported signer and a midsagittal body shift towards the locus of the addressee of the reported utterance.
4. Facial expressions associated with the reported signer.

Hence, all the named indicators are so-called non-manual markers that are articulated simultaneously to the manual signs. The RS non-manuals accompany the whole reported utterance and may also have scope over the introducing *verbum dicendi*.

Imagine an original utterance event with Lena telling Anna that she will help her the next day. The example in (1) from German Sign Language (DGS) illustrates how this utterance could be reported making use of RS:

- (1) PAST LENA IX_{3a} ANNA IX_{3b} TELL_{3a} : TOMORROW₁ HELP₂
'Lena told Anna: I will help you tomorrow.'

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² For a comprehensive overview including the discussion whether RS should be integrated into the larger phenomenon of constructed action see Lillo-Martin (2012).

³ Concerning the RS markers involving an adjustment with the addressee and/or signer of the reported utterance, Herrmann & Steinbach (2012:217) claim that RS can be marked more or less overtly and state that there is a dependency between these markers: In their data, they find a change in eye gaze (EG) in 86% of the cases, a change in head position (HP) in 77% of the cases, and a body lean (BL) in 48%, whereby eye gaze depends on head position, and head position on body lean. The hierarchy EG > HP > BL is highly expected, given that a body lean without a change in head position and a change in head position without an eye gaze change require more articulatory effort. Furthermore, they explain their findings in terms of salience, articulation costs and contextual restrictions.

Note that signs are always glossed with small caps in my examples, horizontal lines over the glosses indicate the scope of non-manual features, '<...>' stands for the use of RS non-manuals (instead of other non-manual markings like for example 'headshake'). To understand the indices used in (1), one has to understand how sign languages make us of the signing space in order to establish discourse referents and agreement.

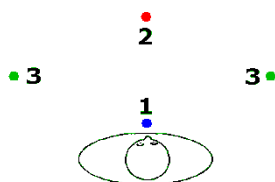


Figure 1: Loci in signing space.

Pronouns correspond to certain loci in the signing space (cf. Fig. 1) and are introduced by a pointing sign INDEX (IX). Simplifying, one can associate a pointing to the signer's chest (i.e. IX₁) with a first person pronoun whereas a pointing to the present addressee (i.e. IX₂) can be interpreted as a second person pronoun. In addition, the INDEX-sign can establish abstract referents that are not present in the current utterance situation, normally on the right (i.e. IX_{3a}) or on the left (i.e. IX_{3b}) side of the signing space (comparable to third person pronouns), as it is the case in (1). Moreover, many sign languages have a certain type of verb class, so-called *agreement verbs*, which mark agreement with one or two of their arguments (see Mathur & Rathmann 2012 for an overview). The arguments are pronominally linked to loci in signing space and agreement verbs show a path movement (and/or change in orientation) from the subject to the (indirect) object of the clause. In (1), this movement is indicated on the verb HELP by use of the subscripts 1 and 2. During RS, however, *I* is no more 'I' (see Herrmann & Steinbach 2007) in the sense that it refers to the speaker/signer of the actual utterance but has to refer to the speaker/signer of an reported utterance—the same applies in principle to second and third person indexicals.

Regarding notational conventions, note the indices at the beginning and at the end of the horizontal line standing for the scope of the non-manual RS markers. The index at the beginning of this line (i.e. 3a) indicates the signer of the reported utterance, the index at the end (i.e. 3b) indicates its addressee. Hence, the indices represent the key features of the above-named RS properties leading to an adoption of the role and perspective of the quoted signer. That is, the non-manuals trigger a context shift in the sense that we interpret the utterance in question being signed in a context *c* different from the current context *C*; namely as Lena being the signer ('3a') and Anna being the addressee ('3b') of *c*. Herrmann & Steinbach (2012: 221) therefore analyze RS as a non-manual agreement operator: "[R]ole shift does not agree with syntactic arguments but with higher-level discourse-semantic entities, namely the signer and the addressee of the reported utterance." For reasons of readability and clarity, I will normally refer to the matrix context of utterance by using the capital *C*, and I will use the lowercase *c* to talk about the reported/shifted context.

In the next section, I will present some additional background information concerning the interpretation of indexicals in the scope of RS and based on that, I will specify the actual question of this paper. I will then focus on the work of Quer regarding RS in Catalan Sign Language (LSC) and will discuss his findings and conclusions. Then, I will present newly

elicited RS examples from DGS including the following deictic adverbs: HERE, TODAY, NOW, YESTERDAY and TOMORROW. As the indexicals behave very inhomogeneously at first glance, I will sketch an analysis that takes into account (i) if the sign in question is directly affected by the use of the non-manual markers, and (ii) if the phonological properties of the sign allow to establish a connection to the current context of the reporting speech act. Both features are relevant to the question of whether the interpretation of indexicals is constrained by modality-specific restrictions. Finally, I will discuss two approaches to analyze free indirect discourse and sketch how these approaches could be applied to the study of role shift.

2 Indexicals in role shift

2.1 Background

A particularly interesting question concerning the interpretation of RS is raised when looking at the behavior of different kinds of indexical expressions. In RS, personal indexicals such as IX_1 (index towards the signer) and IX_2 (index towards the addressee) must be interpreted relative to the context of the reported utterance c (cf. (1)). There are only some constellations preventing the use of RS depending on the role the current signer has taken in the reported utterance. For example, it is not possible to express sentence (2a) (reported in indirect speech) in DGS by making use of RS (examples adapted from Herrmann & Steinbach 2007: 166):

- (2) a. Lena told Anna that she would help me the next day.
 $\overset{3a}{\text{}} < \text{---} > \overset{3b}{\text{}}$
- b. *PAST LENA IX_{3a} ANNA IX_{3b} $3a$ TELL- $3b$: TOMORROW 1 HELP- $3b$
 ‘Lena told Anna that she would help me tomorrow.’
- c. Lena told me that she would help me the next day.
 $\overset{3a}{\text{}} < \text{---} > \overset{3b}{\text{}}$
- d. PAST LENA IX_{3a} $3a$ TELL- 1 : TOMORROW 1 HELP- 2
 ‘Lena told me: I will help you tomorrow.’

The problem is that in (2b), it is not possible for the actual signer of the current context to locate him/herself in the signing space of the reported, thus shifted, context because he/she was not an interlocutor of the reported discourse, the reported utterance only made a statement about him/her. Interestingly, this can be easily done if the “matrix signer” was an interlocutor of the reported speech event as in (2cd) (for an overview to the problem focussing on DGS data, see Herrmann & Steinbach 2007). But note, that in all grammatical cases of RS, personal indexicals have to be interpreted relative to the shifted context.

The type of indexicals I want to focus on in this paper are temporal and local indexicals. Consider example (1) again. There we have the sign TOMORROW in the reported utterance and clearly in the scope of the RS non-manuals. Now imagine that the reported speech event took place on Friday (i.e. c) whereas the reporting speech event takes place on Saturday (i.e. C). The crucial question is if we infer from (1) that (i) Lena wants to help Anna on Saturday or that (ii) she wants to help her on Sunday. In other words, does the temporal indexical shift or not? At first, one could argue that only (i) should be possible since TOMORROW is accompanied by the RS non-manuals. However, in contrast to the personal indexicals, especially IX_1 and IX_2 , a temporal indexical like TOMORROW which is produced with the extended thumb relative to a metaphorical horizontal timeline (see Fig.

2) is not directly affected by the non-manual markers of RS as will be discussed in more detail in the next section. Thus, one could also argue that it is not necessarily the case that TOMORROW behaves like IX_1 and IX_2 , which point to the signer and addressee respectively.



Figure 2: TOMORROW in DGS, taken from Kestner (2009).

A major problem is that only very few studies exist that take into account the behavior of temporal and local indexicals in RS (cf. Lillo-Martin 2012). One exception is the profound work of Quer (2005, 2011) based on data from LSC. His research will be the starting point for my analysis of RS in DGS that will be the subject of section 2.3.

2.2 Mixed shifting in LSC

Let us start with two examples in LSC from Quer (2005); notational conventions have been adapted to the conventions used in this paper. Imagine that both examples are uttered by a signer in Barcelona.

- (3) a. $\overline{\text{IX}_L \text{ MADRID MOMENT JOAN}}_t \text{ THINK } \overline{\text{IX}_1 \text{ STUDY FINISH HERE}}_{3a< \text{ } 3b>$
 ‘When he was in Madrid, Joan thought he would finish his study in Barcelona.’
- b. $\overline{\text{IX}_L \text{ MADRID MOMENT JOAN}}_t \text{ THINK } \overline{\text{IX}_1 \text{ STUDIES FINISH HERE MADRID}}_{3a< \text{ } 3b>$
 ‘When he was in Madrid, Joan thought he would finish his study there in Madrid.’

The difference between (3a) and (3b) is rather subtle at first sight: (3b) contains one additional sign specifying the local adverb *HERE*—but this has a significant influence on the interpretation of the two utterances. Despite the fact that the indexical *HERE* is in the scope of the non-manual RS markers in both examples, only in (3b) both indexicals yield a shifted interpretation where IX_1 refers to Joan, the signer of the reported utterance, and where *HERE* refers to Madrid and thus to the location of the reported utterance. In (3a), we are confronted with a kind of mixed shifting since IX_1 clearly shifts and again refers to Joan whereas *HERE* has to refer to the external context Barcelona. In sum, despite being in the scope of RS, *HERE* cannot shift its interpretation unless it is specified by a lexical sign denoting the location of the reported speech event.

Examples like these are in conflict with Anand & Nevins’ (2004) ‘Shift-together constraint’ which states that indexicals in a shifted context must shift together. But in (3a) we are confronted with a shifted first person indexical and with a non-shifted local indexical. Hence, Quer (2005, 2011) concludes that the crosslinguistic validity of the ‘Shift-together constraint’ has to be relativized with regard to sign languages.

However, the data base concerning the behavior of different kinds of indexicals is rather sparse in sign language linguistics. For ASL, findings of Schlenker (2011) suggest that a mixed shifting of indexicals is not possible in ASL. For DGS, Herrmann & Steinbach (2007) state that there was a strong over-all tendency to interpret temporal and local indexicals in the scope of RS with respect to the reported context *c*.

In order to prove if Quer's claims are LSC-specific—as Schlenker's and Herrmann's & Steinbach's discussions would suggest—or if they can be applied to other sign languages, I elicited and analyzed DGS data that deal exactly with the interpretation of local and temporal indexicals. The relevant data will be discussed in the next section.

2.3 Mixed shifting in DGS?

I elicited RS examples containing the following local and temporal indexicals: HERE, TODAY, NOW, YESTERDAY, and TOMORROW. All example sentences had the same structure. The first sentence introduced two discourse referents, A and B, the second sentence was an utterance of A addressing B. This second sentence contained the crucial indexical. To establish a link to Quer's work, I started with a similar example to the LSC example (3a):

(4) [uttered in Göttingen]

3a< _____ >3b
PAST M-A-R-I-E HANNOVER IX_L SAY : HERE IX₁ LIKE LIVE
'When Marie was in Hannover she said that she would like to live in Göttingen.'

Actually, the interpretation of the DGS example in (4) exhibits the same pattern as the one discussed by Quer: The 1st person pronoun gets shifted and refers to the signer of *c*, Marie, but the deictic adverb HERE has to refer to *C* and thus means Göttingen. Furthermore, again as in LSC, one can force HERE to shift to *c* if one overtly specifies its reference as in example (4')

(4') [uttered in Göttingen]

3a< _____ >3b
PAST M-A-R-I-E HANNOVER IX_L SAY : HANNOVER AREA HERE IX₁ LIKE LIVE
'When Marie was in Hannover she said that she would like to live there in Hannover.'

Interestingly, the same holds for the temporal indexical TODAY in DGS. It does not permit shifted reference (5a) unless it specified with respect to *c* (5b).

(5) [uttered on Thursday]

3a< _____ >3b
a. PAST WEDNESDAY M-A-R-I-E IX_{3a} T-I-M IX_{3b} BOTH EAT IX_L 1INFORM₂ : IX₁
LIKE TODAY DANCE
'On Wednesday, Marie and Tim ate together and she said that she would like to go dancing on Thursday.'

- b. PAST WEDNESDAY M-A-R-I-E IX_{3a} T-I-M IX_{3b} BOTH EAT IX_L ^{3a<}INFORM₂ : IX₁
_{>3b}
 LIKE TODAY WEDNESDAY DANCE
 ‘On Wednesday, Marie and Tim ate together and she said that she would like to go dancing on Wednesday.’

In addition, Quer (2011) states that not all temporal and local indexicals in LSC behave like this in the scope of RS. The temporal indexical NOW does not seem to permit shifted reference to *c* for some of his informants, whereas YEAR THIS is ambiguous and seems to be able to refer to either *c* or *C* (see Quer 2011: 293).

These newly elicited data suggest that in DGS, TOMORROW and YESTERDAY are ambiguous between a shifted and a non-shifted interpretation: Both temporal indexicals can refer to either the matrix context *C* or the reported context *c*. Without any further specification, there seems to be no clear preference how to interpret these two deictic adverbs (6a-c).

(6) [uttered on Saturday]

- a. PAST THURSDAY M-A-R-I-E IX_{3a} K-I-M IX_{3b} MEET IX_{3a} TELL : IX₁ LIKE
_{>3b}
 TOMORROW MOVIES GO
 ‘On Thursday, Marie and Kim met and she told him that she would like to go to the movies on Friday/on Sunday.’
- b. PAST THURSDAY M-A-R-I-E IX_{3a} K-I-M IX_{3b} MEET IX_{3a} TELL : IX₁ LIKE
_{>3b}
 TOMORROW FRIDAY MOVIES GO
 ‘On Thursday, Marie and Kim met and she told him that she would like to go to the movies on Friday.’
- c. PAST THURSDAY M-A-R-I-E IX_{3a} K-I-M IX_{3b} MEET IX_{3a} TELL : IX₁ LIKE
_{>3b}
 TOMORROW SUNDAY MOVIES GO
 ‘On Thursday, Marie and Kim met and she told him that she would like to go to the movies on Sunday.’

The fifth indexical I have elicited is the temporal indexical NOW. Remarkably, with this adverb, the potential to shift lies somehow in between HERE/TODAY on the one hand and YESTERDAY/TOMORROW on the other hand. There is a preference to interpret NOW with respect to *C* but this preference is not as strong as for HERE and TODAY. Summarizing, the investigated DGS indexicals show a complex pattern. Opposed to personal indexicals that always have to shift, temporal and local indexicals need not to shift. In addition, they show different preferences for either *C* or *c*. These findings relativize the assumptions of Herrmann & Steinbach (2007) and suggest that further research to improve the empirical basis is necessary. At the same time, they support Quer’s results and conclusions concerning LSC and indicate that sign language indexicals have modality-specific semantic properties that influence their interpretation when used in a reported utterance marked by RS non-manuals.

3 The deictic potential of sign language indexicals

In this section, I will sketch an analysis that attributes the presented pattern in DGS to phonological properties of the signs in question. It will turn out that in fact two properties are relevant at this point: the deictic potential of the sign and the potential impact that the RS non-manuals might have on this deictic potential. As we have seen in section 2, personal indexicals generally shift their reference to *c* in the scope of the non-manuals that indicate RS. This is not surprising if we remind ourselves of the articulation and function of these non-manual markers. They reflect iconically the matrix signer's adoption of the role of the reported signer and his/her alignment towards the reported addressee. IX_1 and IX_2 are performed with a movement of the index-finger towards the signer or addressee; hence it directly follows that this type of indexicals has to shift to *c* when being accompanied by the RS markers which are directly related to the loci of the signer and addressee of the reported utterance. In contrast, *HERE* and *TODAY* are not explicitly affected by the non-manuals: They always refer iconically to the locus and (thereby metaphorically) to the time of *C* because of the following two features (see Fig. 3):

- a downward movement
- the index finger pointing towards the current locus of the matrix signer

TODAY and *HERE* exhibit these crucial properties that establish the deictic relationship to *C* (cf. Fig. 3).

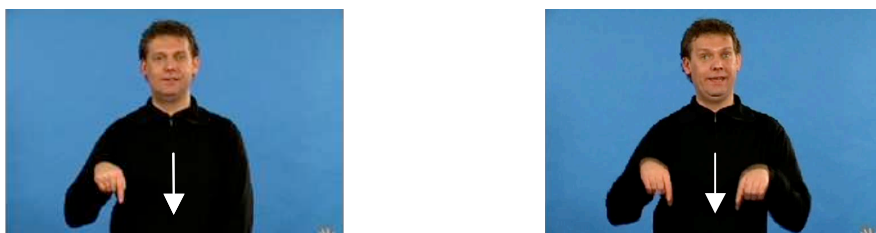


Figure 3: *TODAY* (left picture) and *HERE* (right picture) in DGS, taken from Kestner (2009).

In contrast, *TOMORROW* and *YESTERDAY* show no preference at all because both signs are produced with the extended thumb relative to a metaphorical horizontal time line (see Fig. 4 for *TOMORROW*).



Figure 4: *TOMORROW* in DGS, taken from Kestner (2009).

They both lack the two iconic properties listed above. Consequently, a shifted interpretation is not blocked. However, unlike personal indexicals, they do not have to shift either since their articulation is not immediately affected by the non-manuals. Recall that the main function of the RS non-manuals is to establish a kind of agreement between

signer and addressee of the reported utterance. Hence, RS examples containing TOMORROW and YESTERDAY without any further specification are ambiguous (see (6a-c) again). Assuming a scale with HERE/TODAY at the one endpoint and TOMORROW/YESTERDAY at the other one, we have seen that NOW is in between because it shows only a preference for an interpretation relative to C.

If we stick to the reasoning proposed in this section, we can attribute this to the fact that NOW has one of the two properties listed above but lacks the other. On the one hand, NOW is produced with a downward movement to the current locus, on the other hand, it is articulated with the Y-handshape and not with the INDEX-finger (cf. Fig. 5). Thus, it is clear why the tendency to interpret NOW with regard to C is less strong as for HERE/TODAY. The phonological properties of the sign itself prevent a stronger relation to the matrix context.



Figure 5: NOW in DGS, taken from Kestner (2009).

4 Role shift and free indirect discourse

Next to an increase in empirical research on role shift, we also need an enhanced theoretical analysis of this phenomenon. Based on the results of this paper, the next step is to formalize these results to get a better idea of the semantics of sign language indexicals and role shift in general. The overall aim would then be to embed RS into a general (and possibly modality-independent) formal semantic framework. Promising candidates could be the approaches of Eckardt (2011) and Maier (2012). Interestingly, both approaches deal with the phenomenon of free indirect discourse (FID) which is a mode of reported speech typical of fictional narratives with the main function to report what a protagonist is thinking (see Maier 2012: 2).

(7) Ashley was lying in bed freaking out. *Tomorrow was her six year anniversary with Spencer and it had been the best six years of her life.*

(example taken from Maier 2012: 2; italics added)

In contrast to the first sentence, which is to be read as the narrator's description, the sentence in italics is rather told from the perspective of the protagonist, Ashley, and displays her thoughts. The crucial point concerning FID is that it exhibits a very marked combination of grammatical features (see (7)): On the one hand, the use of past tense and 3rd person pronouns, that seem to be chosen from the perspective of the narrator; on the other hand, the use of temporal and local indexicals and other speaker-oriented expressions that indicate the perspective of the protagonist.

Of course, apart from the fact that both, RS and FID, are modes of reported speech, the two do not seem to have much in common at first sight (but see Lillo-Martin 2012 for a brief discussion of both). And in fact, there are lots of differences that can be explained by taking into account that they belong to two different language modalities (sign

language versus spoken language) and that RS is an integral component of everyday communication in sign languages whereas FID is generally restricted to a certain text type of written language, namely, as mentioned before, to that of fictional narratives.

However, the formal analysis of the structure and meaning of RS as well as of FID requires to consider the same parameters and to answer similar questions. In the study of FID one has to explain why certain expressions and grammatical features are chosen with respect to the context of the narrator (comparable to C of our RS analysis) and why others are chosen against the background of the context of the protagonist (comparable to c). Hence, RS and FID are both somehow in between direct and indirect discourse and show mixed shifting in a certain way. Despite the obvious differences between RS and FID, it is a promising undertaking to apply similar formal mechanisms in the study of both. Besides, Lillo-Martin (2012: 380) supports this hypothesis and states with respect to Quer's crucial examples (see section 2.2): "Examples like this should be considered further, and possibly fruitfully compared with 'free indirect discourse', or 'mixed quotation', mixing aspects of direct and indirect quotation [...]."

Eckardt (2011) presents an analysis based on work of Schlenker (2004) and Sharvit (2008) that explains FID in terms of context shifting by capturing the interpretation of FID by evaluating it relative to two contexts $\langle C, c \rangle$. This basic idea, which seems to hold for FID *and* RS, suggests that—taken carefully modality-specific adjustments for granted—it is possible and plausible to apply Eckardt's analysis of FID to RS.

By contrast, Maier (2012) takes FID as instance of mixed quotation and argues that FID "[...] is essentially quotation with systematically punctured 'holes' [...]" (Maier 2012:2) to adjust tense and personal pronouns to the context of the narrator. It has yet to be proven if a mixed quotation analysis along the lines of Maier (2012) would work out well for RS. We have seen in this paper that in sign languages, the interpretation of deictic expressions is more complex than in spoken languages. There does not seem to be a clear-cut distinction between personal indexicals on the one hand and temporal and local indexicals on the other but rather a gradual transition between different kinds of indexicals.

Note finally that many speaker-oriented expressions, e.g. *unfortunately*, *alas* etc. whose potential to be interpreted relative to the shifted context c has been taken into account with regard to FID but not with regard to RS. In sign languages, such speaker-oriented meanings are often conveyed by the use of non-manuals, namely facial expression—recall that facial expressions are a fourth RS marker (section 1). However, so far, it has not been explicitly and systematically investigated in the literature if facial expressions always *shift*, i.e. if they express the reported signer's or the matrix signer's attitude, emotions, etc. Hence, a comprehensive study of the general context-shifting potential of RS needs to integrate this type of expressions into the analysis.

5 Summary and outlook

In the introduction of this paper I started with a RS example containing the indexical TOMORROW. I discussed that in general two hypotheses can be derived: First, one may argue that TOMORROW should be interpreted with respect to the reported context c since it is accompanied by the RS non-manuals. Second, one may argue that it should be interpreted relative to the matrix context C since it does not have to be the case necessarily that local and temporal indexicals behave like personal indexicals. Moreover, local and temporal indexicals do not even have to constitute a homogenous group of expressions.

The newly elicited data from DGS (section 2.3) support the second hypothesis and suggest a complex pattern of the interpretation of indexicals in the scope of RS. As opposed to personal indexicals that always have to shift, temporal and local indexicals need not to shift and show different preferences for either C or c. Furthermore, the results support Quer's findings for LSC (section 2.2) and indicate that Anand & Nevins' 'Shift-together constraint' has to be relativized as soon as sign languages are taken into account. One central aim of this paper was to present a plausible semantic explanation for the complex pattern that I found in the elicited data (section 3). It became clear that one first has to separate personal from temporal and local indexicals. Then, one has to explain the semantic differences within this second group (see Fig. 6). To answer the first question, I took into account the nature of the non-manual RS markers, which can be analyzed as a non-manual agreement operator establishing agreement between signer and addressee of the reported utterance (see Herrmann & Steinbach 2012). To answer the second question, I argued that the differences in the deictic potential result from phonological features of the signs themselves.

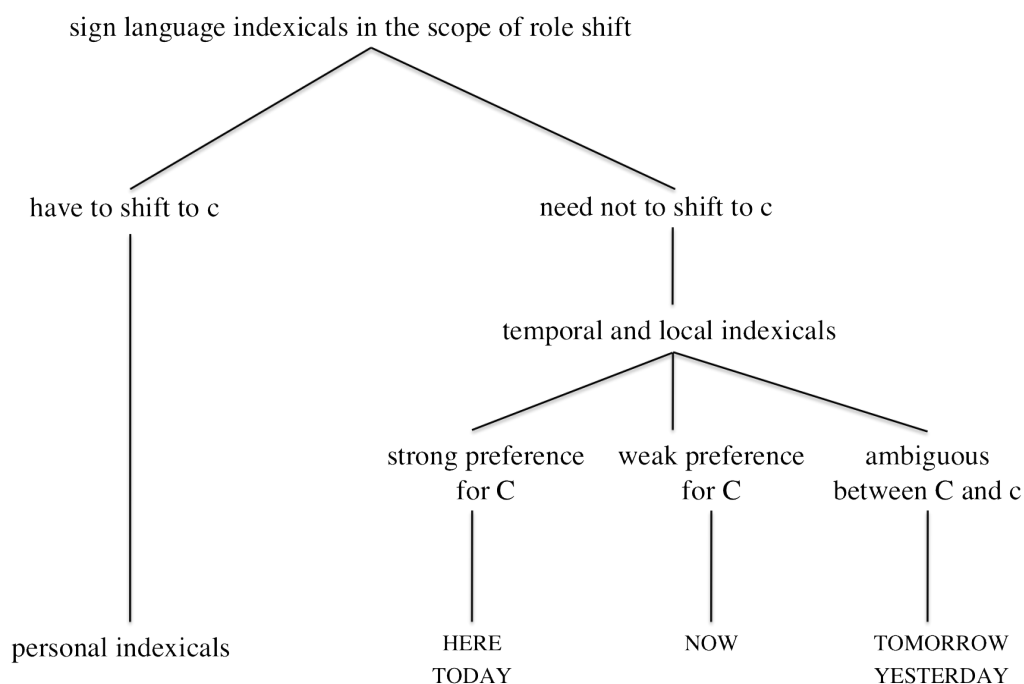


Figure 6: The complex interpretation of DGS indexicals in the scope of RS.

Finally, I outlined how the study of RS could benefit from formal semantic approaches that have been developed for the analysis of free indirect discourse (chap. 4). Although both phenomena are very different modes of reported discourse at first glance, I argued that the same mechanisms can be applied because RS as well as FID can be explained in terms of context shifting (Eckardt 2012) and mixed quotation (Maier 2012).

The results of this paper and of recent research on the interpretation of indexicals in RS suggest that future research should address the 'bigger' question whether there are systematic modality-specific differences in the semantics of indexicals and other context-dependent expressions such as speaker-oriented adverbs in sign and spoken languages.

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Attitude ascriptions in sign languages and role shift

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1 Introduction¹

Sign languages have been shown to share a strategy to mark reports and quotes known as *role shift* or *role taking*. The label refers to the fact that the report looks on the surface as if the signer takes on the role of the reported person, as a kind of enactment of the speech event. Role shift is often presented as some sort of direct quotation that is systematically accompanied by imitation of the actions by the reported agent, in a mimic-like way. In this paper I discuss several properties of role shift that undermine such a simple view. Research on this phenomenon in specific sign languages such as Catalan Sign Language (LSC) shows that more fine-grained distinctions must be identified in the domain of role shift, as it is used in a broader domain of structures than direct quotation. It will be argued, on the one hand, that different kinds of role shift complements must be distinguished in LSC, and on the other, that role shift is not restricted to speech reports but it serves a more general function of marking attitude ascriptions overtly.

2 Characterisation of role shift structures

The grammatical phenomenon identified in sign languages as *role shift* (alternatively called *role taking*, *role switching*, *reference shift* or in some cases *constructed dialogue*, as in Metzger 1995) is usually taken to be the equivalent of a direct discourse report or quotation in the visual-gestural modality. It is the typical means these languages have in order to convey the utterances or thoughts ascribed to a discourse agent, and sometimes to reproduce or rather recreate the dialogue between two or more subjects in a displaced context. It mostly appears in narrative discourse, but not exclusively. General characterizations and analyses of the phenomenon in different sign languages have been put forth by Padden (1986), Engberg-Pedersen (1995), Lee et al. (1997), Poulin (1994), Poulin & Miller (1995), Lillo-Martin (1995, 2012), Zucchi (2004), Quer (2005, 2011), Quer & Frigola (2006), Herrmann & Steinbach (2007, 2009, 2010), Schlenker (2010) Hübl & Steinbach (2012) and Hübl (this volume), among others.

Descriptively, role shift is characterized by two sets of properties: on the formal side, by a whole set of non-manual markers that flag the utterance(s) as reported; on the

¹ This chapter builds on the research reported in Quer (2005, 2011), Quer & Frigola (2006) and takes it one step further. I would like to thank the audiences at SALT 15 (Los Angeles, April 2005), the Sign Language Workshop *Signa Volant* (Milan, June 2005), the conference *Text structure: form, meaning and processing* (Göttingen, July 2010), the 13th Texas Linguistics Society conference (2012) and the Göttingen Fall School *Non-canonical Forms of Reported Discourse in Spoken and Sign Languages* (2012) for their valuable comments and criticism. Special thanks go to Annika Herrmann, Annika Hübl and Markus Steinbach. This work would have been impossible without the collaboration of my Deaf colleagues Santiago Frigola and Delfina Aliaga. The research was partly made possible by a grant awarded by the Spanish Ministry of Science and Innovation to Josep Quer (FFI2009-10492), by the Govern de la Generalitat de Catalunya (2009SGR00763) and by SignGram Cost Action IS1006.

interpretive side, by the referential displacement that 1st and 2nd person markings and other indexicals undergo. In the following, both types of properties are described.

2.1 Formal properties

The overt marking of role shift structures can engage different articulations. The most prominent of those articulations are as follows:

- (a) Temporary interruption of eye contact with the actual interlocutor and direction change of eye gaze towards the reported interlocutor (Fig. 1).
- (b) Slight shift of the upper body in the direction of the locus associated with the author of the reported utterance (Fig 2).
- (c) Change in head position (Fig. 3).
- (d) Facial expression associated to the reported agent (Fig. 4).



Figure 1: Eye gaze break.



Figure 2: Body shift.

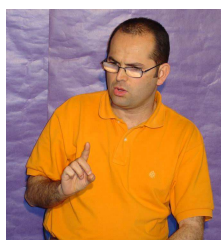


Figure 3: Head position.

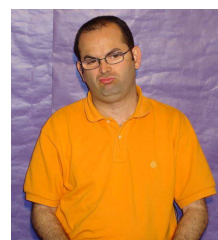


Figure 4: Facial expression.

Although all these non-manual markers can co-occur in a role shift segment, they are not all obligatory. In a small corpus study, Herrmann & Steinbach (2009, 2010) established for German Sign Language (DGS) that the only required articulation to mark role shift is eye gaze break, which seems sufficient to identify a discourse segment as role shift from a formal point of view. This is confirmed by signers' intuitions for LSC. Fact is that, even though marking by the whole array of non-manuals can be very obvious, sometimes it is extremely subtle, especially when only one marker is found.

2.2 Interpretive properties

Next to formal marking, role shift is characterized by referential displacement of indexical elements. The reference of 1st and 2nd person pronouns and all the grammatical elements agreeing with them (verb agreement, possessives, etc.) are not interpreted with respect to the actual context of utterance, but in the reported context; that is, 1st and 2nd person features do not refer in principle to the signer and the addressee of the main context but to those of the derived one. At the same time, temporal and locative indexicals appearing in the role shift segment must shift in their reference. An almost minimal pair of a report with and without role shift can be found in (1) and (2), respectively.² Note that the embedded first person subject in (1) refers to Anna and not

² The usual glossing conventions in the SL literature are followed here, according to which manual signs are represented by the capitalized word corresponding to the translation of the sign. The scope of non-manual markings is represented with a line that spreads over the manual

the actual utterer of the sentence. The equivalent in (2) without role shift requires a 3rd person pronoun coreferent with the main clause subject. Example (1) is a rather standard case of reported speech where pronouns and indexical reference are shifted to the derived context, and consequently IX-1 is interpreted as the referent of ANNA. The contrast in formal marking of those two pronouns can be observed in Figs. 5 and 6.

- (1) ANNA_i 3-SAY-2 IX-1 FED-UP LOSE+++ RS-i
 ‘Anna told you that she was fed up with losing so often.’
- (2) ANNA_i 3-SAY-1 IX-3_i FED-UP LOSE+++ t
 ‘Anna told me that she was fed up with losing so often.’

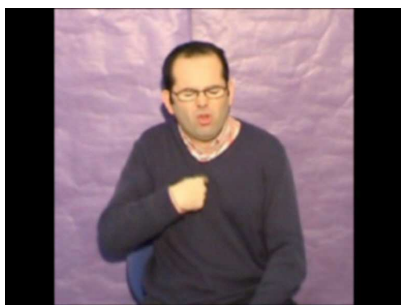


Figure 5: IX-1_i in (1).

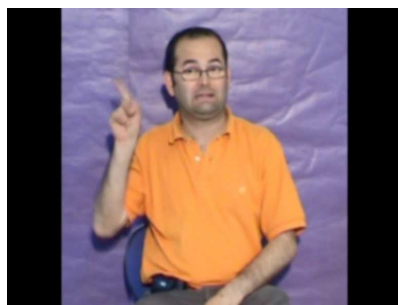


Figure 6: IX-3_i in (2).

With this first characterization of the phenomenon, one could easily conclude that it is equivalent to direct quotation in the visual-gestural modality. However, LSC has been shown to have specific markers of direct quotation like the ones glossed as AUTHOR, DECLARE, VOICE and SAY1-SENTENCE (see Figs. (7)-(10)).

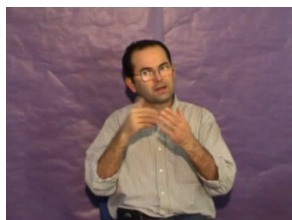


Figure 7: AUTHOR.

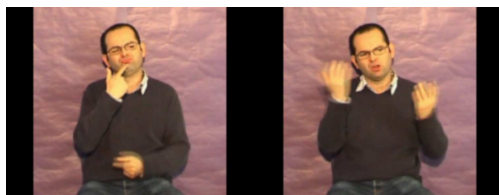


Figure 8: DECLARE.

material with which it is coarticulated. The relevant abbreviations for the purposes of this paper are the following ones: #-VERB-# (verb agreeing with subject and object; the number before the verb refers to the grammatical person of the former and the one after the verb refers to the latter); AGR (unbound agreement marker); eg (eyegaze); IX-a (locative index pointing to locus *a*); IX-# (pronominal index; the number corresponds to person); hs (negative headshake); RS (role shift); t (topic marking); wh (wh marking); +++ (reduplication of the sign). The referential indices *i, j*, etc. link the first person role in RS fragments to the intended author of the reported utterance.



Figure 9: VOICE.



Figure 10: SAY1-SENTENCE.

When one such marker introduces the role shift, it is interpreted unambiguously as a direct quote, as in (3):

- (3) ANNA_i EXPLAIN SAY1-SENTENCE MAN! $\overline{\text{IX-1}}$ BROTHER MAN 3-IGNORE-1 $\overline{\text{RS-i}}$
 ‘Anna told me: “Man, my brother ignores me!”’

This type of examples thus displays a distinctive feature of direct quote, distinguishing them from other introducing predicates such as SAY, THINK, REPLY (cf. Figs. (11)-(13)), which are ambiguous in terms of the direct or indirect status of the report they signal.



Figure 11: SAY.



Figure 12: THINK.



Figure 13: REPLY.

In spontaneous data and especially in connected discourse, it is very common to find instances of reported speech that are not explicitly introduced, or that are introduced simply by indicating the agent of the reported utterance, as in example (4):

- (4) $\overline{\text{RS-i}}$
 $\overline{\text{y/n}}$
 LION_i $\overline{\text{IX-2}}$ WANT 2-HELP-1
 ‘The lion said: “Do you want to help me?”’

The structures that role shift flags are not only used to report utterances, but also the thoughts of an individual, as in (5):

- (5) $\overline{\text{IX-a MADRID}_i \text{ JOAN THINK 1-MOVE-b IX-b BARCELONA}}^{\text{RS-i}}$
 ‘When Joan was in Madrid, he thought about moving to Barcelona.’

In this sense, role shift not only serves the function of reproducing actual discourse, but also that of representing (re)constructed discourse or thoughts. This is not an atypical feature of reported discourse, as we can see in (6) for English:

- (6) And then Barack thought: “What am I going to say next?”

In section 5 below, though, I will show that role shift actually covers a broader domain than pure utterance or thought, and I will argue that it appears more generally in (some types of) attitude ascriptions.

3 Role shift and linguistic reports

As part of role shift another phenomenon is usually discussed, namely *constructed action*. From a descriptive point of view, it consists in the imitative reproduction of actions or gestures attributed to the agent being reported about. It is not simply co-speech gesture in most cases, as it mostly complements or illustrates the utterances or thoughts of that agent that are being reported. In this respect, it appears to be more integrated into signed discourse than co-speech gesture, as in the following ASL example (Emmorey 2002: 162):

- (7) DECIDE DANCE [DANCE+++] THEN GIRL THINK. “PRO_{1st} MUST GO HOME, PRO_{1st} MUST GO HOME.”
 ‘They decide to dance. They dance all around, and then the girl realizes, “I must go home, I must go home.”’

In (7), gestural action is marked between square brackets: in this case gesture is clearly integrated into the narrative line. It constitutes a simple example of constructed action, which is really pervasive in certain types of signed discourse like narratives. Some authors like Liddell and Metzger (1998), subsume role shift under the term constructed action. Here I would like to distinguish between the reportive use of role shift and the non-reportive one, and briefly dwell on the latter. Although the term “role shift” as overt marker of both types of production can function as a useful cover term, I would like to maintain the distinction between its use as represented speech/thought (Smith 2009) and its other use as constructed action as described above, even if they are closely intertwined in production. In the former case, the represented signing is meant to reproduce linguistic content and it resorts to signed sentences that are attributed to an illocutionary agent. In the latter, though, no linguistic strings are used.

The split between represented speech and represented action has been somewhat collapsed by some authors with the distinction between quotational and non-quotational uses of role shift. For instance, Lillo-Martin (2012: 370) states this perspective s follows:

“Some [instances of role shift] report the words or thoughts of another (although not necessarily verbatim). Such cases will sometimes be referred to as quotational role shift. Other examples report a character’s emotional state or actions, including, as

- c. And she was, like, I'm eating it all up.
g(eating)

However, I would like to argue that cases like (10) are simple indirect reports that happen to be accompanied by role shift markers, thus rendering them parallel to cases like (11a) in English. Padden (1986: 50) remarks that “[10] involves changes in facial configuration, eye gaze, but not in body position.” The predicate WORK is part of the report uttered by the actual signer. The non-manual markers associated to it add (some unspecified) information about the emotional state of the subject of WORK, but they do not force the interpretation of that predicate as part of the utterances or thoughts of the agent. I think this is just a misinterpretation derived from the English rendition, which introduces reported speech to make the coarticulation component prominent. The fact that no 1st person appears is not surprising, as it is a 3rd person report by the actual signer. Other temporal or locative indexicals anchored to the reported context are not expected, either, because they would turn it immediately into a direct report.⁴ Admittedly, though, we do not have a good way available to transcribe such coarticulations, as (11a) makes clear, but I propose that, strictly speaking, the role shift in cases like (10) does not fall under quotative role shift, but rather under the non-manual facet of my more restrictive interpretation of constructed action.⁵

From this perspective, the LIS example in (8) is different from the ASL one in (10): it constitutes a case of quotational role shift (*pace* Zucchi), not because of the appearance of a 1st person feature in the subject agreement of the verb, but simply because it is intended to reproduce Gianni's expected utterance upon his arrival. A constructed action correlate would not involve the lexical verb DONATE inflected for subject and object, but rather a gestural form in an imitative way. The fact that the role shift segment is not introduced by a verb of saying does not tell us anything about the quotative or non-quotative status of the role shift. In fact, indicating only the individual anchor of the role shift segment might be the default strategy in signed discourse. A clear illustration of non-introduced role shift segment in LSC is presented in (12): it (re)presents the content of an e-mail message, which has been mentioned in the same sentence and is linked to its author, namely Joan. Notice that the report sentence does not contain a 1st person pronoun and there is clearly no constructed action involved.

- (12) $\overline{\text{JOAN}_i \text{ MAIL ELECTRONIC 3-SEND-1 IX-2 ALL GUILT IX-2}}$ $\overline{\text{RS-i}}$
'In an e-mail Joan sent to me, he was like, "It's all your fault!".'

⁴ Lillo-Martin (2012: 383) actually notices in passing that there are no mentions in the literature of non-quotational role shift involving other indexical elements. I think this follows naturally from the characterization offered in the text.

⁵ The findings in child acquisition of role shift reported in Lillo-Martin & Quadros (2011) point in the same direction: role shift is used at a very young age (1;07 and 1;11 for the first occurrences of their two subjects) for portraying the actions of others; children use non-manual marking including eye-gaze, facial expression and manner of movement correctly to indicate another's point of view. However, reported speech with role shift only occurs at a later stage.

So, from this point of view, such types of alleged non-quotational role shift simply reduce to non-introduced quotational role shift. The proposed role of the presence vs. absence of a 1st person pronoun in order to discriminate between the two types becomes irrelevant: as soon as signs are uttered, we are in front of a linguistic report. Nevertheless, here I will have nothing more to say about constructed action in the restrictive sense, namely, as non-quotational role shift. In the following we will concentrate exclusively on utterance/thought reports.

A further central question that needs to be raised next is to what the status is of role shift in examples like (1): is it direct quotation or rather an indirect report, despite the surface appearance? In the next section we will offer some compelling empirical arguments that show quite clearly that role shift occurs in both direct and non-direct reports.

4 Distinctions within role shift structures

The impression that role shift reports reduce to a single type of structure, namely, direct quotes, dissolves after closer examination of two apparently independent properties in LSC: interpretation of indexicals and syntactic preposing of the reported clause. We will examine them in turn.

4.1 Interpretation of indexicals in role shift

According to Kaplan's (1989) analysis of indexical expressions like 1st and 2nd person pronouns, their semantic value can only be fixed by the actual context of utterance and cannot be affected by any operator. This is what Schlenker (2003) called "the fixity thesis", reproduced in (13):

(13) *Fixity Thesis*

The semantic value of an indexical is fixed solely by the context of the actual speech act, and cannot be affected by any logical operators.

(Schlenker 2003: 29)

Although one can conceive of operators that could shift the context of evaluation of an indexical, Kaplan excludes them as 'monsters'. At first sight, this position seems to capture quite accurately the properties of indexical interpretation in a language like English. Nevertheless, Schlenker (2003) argues that such monsters do exist and are realized in certain languages by attitude predicates. An instance of such a shifted indexical is represented by the 1st person in the Amharic example in (14), where the indexical feature in the scope of 'say' does not refer to the actual utterer but to John, the reported utterer:

(14) Situation: John says: 'I am a hero'

jon jəgna nə-ññ yil-all
 John hero be.PF-1sO 3M.say-AUX.3M
 'John_i says that he_i is a hero.'
 (Lit.: 'John_i says that I_i am a hero.')

[Amharic] (Schlenker 2003: 68)

From a crosslinguistic point of view, this situation is not rare, as work on languages such as Navajo, Slave or Zazaki, among others, testifies (see Anand & Nevins 2004, Schlenker 2003, Speas 1999 for a representative sample). Have a look at another such case from Havyaka Kannada (Dravidian), which uses the same set of pronouns for actual and reported speech act participants. In (15), the 1st person pronoun in the embedded report is ambiguous between the reported and the actual speaker of the sentence, as reflected in the two possible translations of the example.

- (15) en-na ello:ru-de hogaḷuttavu he: ḷi ra:ju enna-tre he:liddā
 me.ACC all.EMPH praise that Raju me-with tell.PERF
- (i) Raju₁ has told me₂: “Everybody praises me₁.”
 (ii) Raju₁ has told me₂ that everybody praises me₂.

[Havyaka Kannada] (Bhat 2004: 58)

Sign languages typically align with this type of indexical behaviour, in the sense that 1st and second person indexical pronouns in the scope of role shift are interpreted in the reported context and not in the main context. We have already seen LSC examples of this in (1), (3) and (12). Almost routinely, other grammatical elements like verb agreement or possessives endowed with 1st and 2nd person features shift accordingly, as illustrated in (16):

- (16) YESTERDAY ANNA_i IX-3a 3a-TELL-1 IX-1_i 1-HELP-2
 ‘Yesterday Anna told me that she would help me.’

From this perspective, sign languages turn out to systematically realize the kind of monster Kaplan claimed not to be possible and its incarnation is actually role shift. As suggested in Quer (2005, 2011), role shift can be conceived of as an abstract operator that quantifies over contexts and determines all its contextual parameters in principle, including indexical reference. It not only accounts for the interpretation of indexical features of pronouns and related categories, but also of locative and temporal indexicals. In those works the abstract operator is dubbed as Point of View Operator, building on Lillo-Martin’s (1995) idea, and it is deemed to be responsible for both the referential shift and the non-manual marking that characterizes role shift. Like other operators in sign languages such as negation or Q (cf. Neidle et al. 2002), it marks its scope overtly with the array of markers presented in 2.1 above through spreading over the relevant c-command domain.

In the work on languages with shiftable indexicals by Anand & Nevins (2004), it was established that all the indexicals appearing in the scope of a propositional attitude must shift, that is, we cannot find a situation where some indexicals in the scope of such an operator are interpreted in the derived context, while other indexicals are interpreted in the main context of utterance, as stated in (17):

- (17) *Shift-Together Constraint*
Shiftable indexicals must shift together.

(Anand & Nevins 2004)

However, empirical evidence in LSC has been shown to contradict this generalization. Quer (2005, 2011) discusses cases like (18):

- (18) _____^t _____^{RS-i}
IXa MADRID_m MOMENT JOAN_i THINK IX-1_i STUDY FINISH HERE_b
'When he was in Madrid, Joan thought he would finish his study here (in Barcelona).'

This sentence, uttered in Barcelona, reports on Joan's thoughts while he was in Madrid. In the report marked with role shift we find two indexicals: the personal pronoun IX-1 and the locative indexical HERE. The 1st person pronoun is interpreted, as expected, as referring to the utterer of the derived context that is being reported. Unexpectedly, though, the locative HERE does not receive the shifted interpretation ('in Madrid'), but the main context one ('in Barcelona'). This does not mean that such an indexical can never be interpreted in the shifted context: as (19) shows, there is no problem to get that reading if the location parameter of the embedded context is specified overtly. In that case, we only obtain the shifted interpretation.

- (19) _____^t _____^{RS-i}
IXa MADRID JOAN_i THINK IX-1_i STUDY FINISH HERE MADRID
'When he was in Madrid, John thought he would finish his studies there in Madrid.'

Such behaviour of indexicals in role shift is not limited to locatives: a comparable pattern is found in temporal deixis with elements such as YEAR-THIS 'this year' or NOW in the same environment, as illustrated in (20) and (21), respectively:

- (20) _____^t _____^t _____^{RS-i}
PERIOD LAST-YEAR JOAN_i IX-3 THINK STUDY FINISH YEAR-THIS
'Last year, Joan thought he would finish his studies {this year > then-that year}.'

- (21) _____^t _____^{RS-i}
LAST-YEAR JOAN_i THINK IX-1_i STUDY FINISH NOW
'Last year, Joan thought he would finish his studies {now > then}.'

For these temporal indexicals the interpretation with the parameter of the main context is clearly the one that is strongly preferred over the shifted interpretation. The possibility for indexicals not to shift in embedded contexts has also been documented in German Sign Language (DGS; cf. Herrmann & Steinbach 2012).⁶ Hübl & Steinbach (2012), in their

⁶ Schlenker (2010) and Lillo-Martin (personal communication) report that independent shift of indexicals has not been documented for ASL. Nevertheless, Schlenker notes that it is possible to unshift an indexical if role shift markers are not coarticulated with it. Such cases are different from

discussion of a comparable set of data in DGS, argue that the non-shifted interpretations of indexical elements might be due to their form, which in the DGS signs for *HERE*, *TODAY* or *NOW* is realized as an index pointing to the ground. Their conjecture is that through this indexical points the actual context re-enters the role shift segment, so to say. Although the sign *NOW* in LSC does not have such a clear indexical form, their idea is certainly worth exploring. In fact, further examination of demonstratives in LSC has shown that they can be ambiguous between the displaced and the main context interpretation, as in (22): *IX-a* can refer either to a book present in the actual context of utterance or to a book present in the reported context.

- (22) $\text{_____ t _____ t t _____ RS-i}$
 JOAN_i PERIOD HOLIDAYS IX-3 THINK FEEL LIKE BOOK READ IX-a
 ‘During his holidays, Joan felt like reading that book.’

However, LSC data indicate that such a simple explanation cannot account for the whole set of phenomena that are found in the language. Despite the non-shifted readings for indexicals identified for elements like *HERE* or *YEAR-THIS* in role shift structures such as (18) or (20) in LSC, other patterns have been attested where the very same elements in a non-final position receive the shifted interpretation by default. Thus, the same temporal and locative adverbials that we found in (20), when occurring in non-final position in the embedded clause, only receive the shifted interpretation.

- (23) $\text{_____ t _____ RS-i}$
 LAST-YEAR JOAN_i IX-3 THINK HERE YEAR-THIS STUDY FINISH
 ‘Last year, Joan thought he would finish his studies {there that year > here this year}.’

At this point, it is not clear why the position of the indexical should affect its interpretation, but a plausible explanation might lie in the information structure status of the relevant item, namely focal in sentence-final position vs. non-focal sentence-initial or sentence-medial position. It remains to be understood, then, why and how focus influences indexical interpretation in such structures.

Notice, though, that there is an important asymmetry between locative and temporal indexicals, on the one hand, and person indexicals, on the other, because the latter do not seem to be able to receive non-shifted interpretations, that is, they are always interpreted in the derived context. This might look quite surprising at face value, but on the basis of Navajo data displaying Direct Discourse Complements, Speas (2000) argues for a split between the system determining deixis for person marking (functional) and the system determining deixis more generally (semantic). In view of the data discussed so far, we must conclude that such a clear-cut divide as the one found in Navajo does not fully hold for the LSC (and maybe DGS), but a broad parallelism seems to underlie the empirical map. More detailed comparisons across the relevant languages are needed at this stage.

In any case, even if at first sight the explanation based on the pointing nature of some non-shifted indexicals by Hübl & Steinbach (2012) seems intuitively appealing, personal

the LSC ones discussed in the main text, where the indexicals are in the overt domain of role shift marking. Overt unshifting by “switching off” the role shift non-manuals has also been observed in LSC, but it arguably constitutes a different case from the ones exemplified in (18) and (20)-(21).

- (25) _____RS-i
 IX-1 ANGRY AGR-2 IX-3c SENTENCE SAME IX-3a ANNAi 3a-SAY-3b IX-3b PEDRO
 ‘‘I’m angry at you’ said Anna to Pedro.’
- (26) _____RS-i
 *IX-1 ANGRY AGR-2 YESTERDAY IX-3a ANNAi 3a-SAY-3b IX-3b PEDRO
 ‘Anna said to Pedro that she was angry at him.’

In addition, a reportive complement clause that is not marked with role shift can also be preposed to the main verb, as (27) illustrates:

- (27) _____t _____t
 ANNAi IX-3i FED-UP LOSE+++ 3-SAY-1ALREADY
 ‘Anna already said to me that she was fed up with losing so often.’

On the basis of this evidence we can safely conclude that role shift structures do not form a uniform class and that they actually serve the expression of both direct and indirect reported discourse. The contrasting properties that we were able to identify so far were, on the one hand, the differing interpretation of locative and temporal indexicals in each type, and the possibility to prepose the reportive clause, on the other.

5 Role shift beyond reports

Role shift can be shown to display important properties that have been overlooked in most of the existing accounts of the phenomenon: it can appear in the scope of negation, of a quantified subject and a modal. I would like to claim that these facts are not prototypical for report or quotation and rather align role shift with attitude ascription marking.

In opposition to pure quotes under negation, a role shift fragment in the scope of a negative does not necessarily yield a corrective/contrastive reading of the embedded proposition that we find in a case in English like (28):

- (28) David didn’t say ‘‘Leave me!’’ (but ‘‘Love me!’’).

Contrasting with this type of interpretations, in LSC we find examples like (29)-(31) where role shift is in the scope of a negative and it simply yields the negative attribution of a proposition to a set of individuals. It is in this sense that the role shift structure turns out to be able to mark an attitude ascription more broadly, and not just reports of utterances or thoughts.

- (29) _____RS-i
 JOANi SAY NEVER IX-1 ELECTIONS PARTICIPATE
 ‘Joan never said that he wanted to run for the elections.’

(30) _____RS ____hs
 IX-arc WARN-arc [CLASS CANCEL] NEG2
 ‘Noone warned them that the class was cancelled.’

(31) _____hs _____RS-i
 JOAN_i NOT-KNOW TOWN-HALL WHERE
 ‘Joan doesn’t know where is the town hall.’

(32) _____RS-i _____hs
 JOAN_iIX-1 EXAM FAIL NOT-BELIEVE
 ‘Joan doesn’t believe he has failed the exam.’

In a similar fashion, role shift can also appear in the scope of a modal like CAN, as in (33), and in the scope of a quantified subject as well, as in (34) and (35):

(33) _____RS-i
 SOME THINK CAN IX-1_i EXAM FAIL
 ‘Someone_i may think he_i has failed the exam.’

(34) _____t _____RS-i
 PUPIL EACH-ONE_i THINK^SEE-refl IX-1_i BEST
 ‘Every pupil_i thinks that he_i is the best.’

(35) _____RS-i
 NOONE_i SAY IX-1_i AGR-1 SCARED DARKNESS
 ‘Noone_i says he_i is scared of darkness.’

Note that these examples of role shift under negation, a modal or a quantified subject do not yield a corrective/contrastive reading comparable to the one in (28) for English, but rather the unmarked one where the signer attributes a propositional attitude to an individual or set of individuals (also negatively, as in (29)-(32) and (35)). Observe as well that the set of predicates that overtly introduce role shift is not restricted to verbs of saying and THINK, but it includes other typical propositional attitude verbs such as BELIEVE or KNOW, for instance.

The ability for role shift to naturally interact with negation, modals and quantified attitude holders is a characteristic that arguably takes the phenomenon of role shift to the broader domain of attitude ascription marking. This does not mean that role shift must always mark an attitude ascription, as we saw in (2) that attitude ascriptions can also be expressed without role shift marking. It remains to be explored if there is a proper subset of attitude ascriptions that role shift can mark, and if so, what the shared property of that set is.

In any event, on the basis of LSC data, it can be concluded that role shift is a cover term for a phenomenon that transcends the limits of pure reports and serves the general function of encoding propositional attitudes more generally, by signalling an individual’s perspective overtly.

6 Concluding remarks

In this paper a detailed characterization of role shift in Catalan Sign Language has been offered, both at the level of formal marking and at the level of interpretation. Role shift structures have been shown to be sometimes flagged overtly by specific lexical markers that identify them as direct discourse, which has led us to conclude that role shift is actually used for both direct and indirect reports. Correlating with that finding, it has been demonstrated that shifted indexical interpretation and the ability for the report to be syntactically preposed depend on the direct or indirect character of the reported utterance or thought. It has been further argued that some instances of alleged non-quotative uses or role shift reduce to non-introduced role shift structures, which are different from constructed action understood in the narrow sense of the term. Finally, it has been demonstrated that role shift transcends the domain of utterance and thought reporting, and that it covers the broader domain of propositional attitude ascriptions.

Some recent analyses such as Hübl & Steinbach (2012) propose a connection between role shift and Free Indirect Discourse (FID). Although there are certainly interesting lessons to be learnt from the comparison of the two phenomena, some of their core formal properties keep them apart. As we saw above, while locative and temporal indexicals can shift under certain circumstances in some sign languages like LSC or DGS, 1st person indexicals strictly flag the role shift fragment and they obligatorily shift. However, in FID 3rd person pronouns typically stand for the attitude holder, just like in standard indirect discourse. In Sharvit's (2008: 354) example of English FID, the underlined items indicate shifted parameters, while items in boldface mark unshifted parameters (as if they occurred in standard regular indirect reported speech).

(36) John looked at my picture. Yes (, he thought,) **he** wanted to marry me today.

Although FID also appears to involve mixing perspectives in the report, role shift treats the shift of contextual parameters in a different way and therefore cannot be reduced to it in a straightforward fashion. An alternative analysis of the partial shifting in terms of free direct quotation/unquotation as in Maier (2012) is promising, but potentially problematic too, because it would render the overt marking of the role shift fragment inconsistent with its interpretation. In fact, we do find instances of overt unquotation in LSC (and ASL, according to Schlenker 2010) where role shift markers are interrupted to mark non-shifted reference in the report, so it remains to be understood what the potential differences are between overt unquoting and non-shifted reference marked overtly by role shift. Understanding the mechanisms underlying the different types of phenomena (role shift, FID, unquotation) will certainly shed light on the broader issue of perspective taking and encoding in natural language discourse.

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A typological view of possessive constructions in Sign Language of the Netherlands

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1. Introduction¹

All cultures, independent of the value they assign to material belongings, have linguistic means for expressing the relationship between a possessed item (concrete ones such as *cars* as well as abstract ones, like *honour*) and its possessor. Typological studies of the range of possessive constructions and their characteristics abound for spoken languages (cf. Nichols 1988; Heine 1997; Stassen 2005), yet to date, only one typological study on expressions of possession in sign language exists (Zeshan & Perniss 2008). Looking at language in its different manifestations, both spoken and signed, is vital to uncovering "the full range of possibilities of the structure of human language" (Perniss & Zeshan 2008: 1). At the same time, including sign languages in typological studies of possession allows linguists to discern possible influences of the oral-aural or the visuo-manual modality on possessive constructions.

The present paper seeks to expand the range of studies on possession in sign languages presented in Zeshan & Perniss (2008) by taking a preliminary look at the expression of possession in Sign Language of the Netherlands (NGT) and comparing it to possessive constructions in other sign languages. The comparison focuses both on strategies employed to express possessive notions as well as on whether an (in)alienability distinction is realised in any of the sign languages under analysis and if so, where the cut-off point between alienably and inalienably possessed items lies.

NGT is the primary means of communication for approximately 30,000 sign language users in the Netherlands. It is genetically related to French and Flemish Sign Language, as the first instructors of the deaf in the Netherlands were trained at the deaf school in Paris, and Belgian teachers of the deaf in turn studied under Dutch instructors several decades later. Dialects of NGT developed around the five major schools for the deaf in Haren, Amsterdam, Voorburg/Zoetermeer, Rotterdam and St. Michielsgestel. Despite ongoing attempts at standardising NGT since the late 1990s, some of the dialects are still in use today.

The term possession is saliently associated with notions of ownership and control. In prototypical cases of possession, the possessor is assumed to have the power to dispose of the possessed item, henceforth the possessum, as s/he wishes, as well as to terminate the possessive relationship (see, for example, Taylor 1989a and 1989b, cited in Heine 1997). In his seminal work on the topic, Heine (1997) characterises possession as a "vague" or "fuzzy" concept (1997: 1). At the center of this concept, we find prototypical possession, which is characterised by a specific human being serving as possessor to a specific inanimate and concrete possessum. According to Taylor (1989a and 1989b, cited in Heine 1997), the prototypical possessive relationship is time-stable and involves the

¹ I would like to take the opportunity to thank my deaf consultants, without whom this study would not have been possible. I am deeply grateful to the two participants in the elicitation tasks employed here, as well as to Richard Cokart, Shane Gilchrist, and Peter Hagel, who patiently answered all my questions on NGT.

possessor taking responsibility for the possessum, while both are spatially close to each other. The "fuzzy" edges of relations that can be expressed via possessive predicates or attributive constructions may be described as general "intrinsic connections" between two entities (Hawkins 1981, cited in Heine 1997), such as the relation between a whole and its parts or the relationships of family members to each other.

A related distinction that will be examined in the present study is the one between alienable and inalienable possession. Heine (1997) proposes a rough semantic characterisation for inalienable possessums as "[i]tems that cannot normally be separated from their owners" (1997: 10), which leaves alienables to denote all other possessed items. He lists kinship terms, body parts, relational spatial concepts (e.g. the *front* or *bottom* of an entity), other part-whole relations, as well as psycho-physical states as prone to inalienability given their semantics (1997: 10). However, the (in)alienability distinction is not a strictly semantic but a grammatical one: The boundaries of the alienable and inalienable category may differ from language to language or even language-internally from construction to construction, and (in)alienability may not be distinguished grammatically at all in a language (see, for example, Nichols 1988: 561-562).

The paper is structured as follows. First, a short description of the methodology employed to collect the data for this study is provided, followed by a description of attributive possession in sign languages in general and NGT in particular. Predicative possession in NGT and other sign languages forms the focus of the second part of the paper, which concludes with some observations on how NGT fits typologically into the pattern of possessive constructions observed in sign languages.

2. Methodology

The data for this study were collected from three sources. The first consists of video recordings of conversations between two proficient signers of NGT who completed some of the exercises created by Zeshan & Perniss (2008) for their typological survey of possession and existential constructions in sign languages. These included talking about family relations with the help of a family tree and eliciting body parts and physical states in a doctor-patient game. Examples in the text that derive from these video recordings are marked [recordings]. Due to logistic difficulties, I did not have access to the subjects who participated in the elicitation tasks and consequently do not know whether they are native signers nor further details about their language background. From an acquaintance of one of the signers in the recording I learnt that he went to the deaf high school St. Michielsgestel in the south of the Netherlands for two years and then changed to a mainstream public school. His signing is judged to be influenced by NmG (*Nederlands met Gebaren*), a form of signed Dutch.

The online *VanDale Basiswoordenboek Nederlandse Gebarentaal* served as a second source of information on possessive constructions in NGT. Most of its entries contain examples of usage for a particular sign, which were partially analysed here. The dictionary was compiled in cooperation with the *Nederlands Gebarencentrum*, a lexicographic institute that promotes the standardisation of NGT, hence the example sentences presented here are expected to represent a consensus of the different varieties of NGT signed in the Netherlands. Data taken from the dictionary are marked as [VanDale] plus the respective entry from which the example is taken. Remaining questions on possessive constructions were discussed with a native² signer of NGT from

2 The signer's parents are both deaf and he thus acquired NGT from birth.

Amsterdam. Data marked [Amsterdam, p.c.] stem from this source.

In summary, the data for the present study contain some regional variation (Amsterdam vs. St. Michielsgestel vs. the variety represented in *VanDale* vs. the variety used by the second consultant in the recordings) as well as a certain degree of influence from contact with spoken Dutch via NmG. Both factors may account for some of the variation that is presented below.






3. Attributive possession

Attributive possession encompasses all linguistic constructions in which a possessive relationship between two (abstract or concrete) entities is expressed within a noun phrase. According to Heine (1997: 26), the possessive relationship is presupposed in attributive constructions, while it is established in predicative possession. Compare Heine's examples in (1a) and (1b): In the attributive construction (1a), the fact that whoever utters this phrase owns a credit card is presupposed, while in (1b), the possessive relation between the speaker and a credit card is asserted.

- (1) a. my credit card [Heine 1997: 26]
 b. I have a credit card.

The possessor in an attributive possessive construction can be expressed either as a lexical noun or as a pronoun. We will look at both types of construction in turn, starting with pronominal possessors.

3.1 Pronoun possessors

In many sign languages, attributive possession is indicated via dependent-marking on the pronominal possessor. In other words, personal and possessive pronouns are formally distinguished in these languages: Where personal pronouns commonly involve the index finger pointing at the (present) referent or the location in space associated with a particular absent referent, possessive pronouns employ a different handshape for pointing, while maintaining the same location and movement as their personal pronoun counterparts. In their typological survey of possessive and existential constructions in sign languages, Perniss & Zeshan (2008) find that of the 26 sign languages analysed for their project, only five do not employ formationally distinct possessive pronouns. The three handshapes that are most frequently assigned to possessive pronouns in sign languages are the -handshape, used for example in American, Austrian, and Flemish Sign Language, the -handshape, which is found, among others, in Jordanian Sign Language, and the -handshape, which is employed in French, Mexican, Turkish, Brazilian, and Greek Sign Language (2008: 17). Both the flat hand and the fist handshape are unmarked handshapes in many of the world's sign languages and its use in possessive pronouns is thus not surprising (for a discussion of markedness of handshapes in ASL see Sandler & Lillo-Martin 2006, for NGT see Harder & Schermer 1986). The -handshape is slightly more marked among sign languages, and its use in possessive constructions across several sign languages can partly be explained by historical ties between French, Mexican, and Brazilian Sign Language (Zeshan 2011). Greek Sign Language is furthermore said to have developed under influence from American and French Sign Language (Ethnologue) and may have adopted the possessive pronoun handshape from the latter. It is not clear whether Turkish Sign Language inherited or borrowed the -handshape for possessive pronouns or whether it developed this form independently.

NGT falls in line with typological expectations in having a possessive pronoun that exhibits one of the more frequently used possessive handshapes, namely a flat hand (☞). Unlike in American, Flemish, and Austrian Sign Language, however, the ☞-handshape seems to be employed only with a first-person possessor, where the flat hand taps against the chest once, and can in all contexts be replaced by an index point. In fact, the elicitation data did not contain any clear instances of the possessive pronoun in attributive constructions. The *VanDale* online dictionary contains various uses of the first person possessive pronoun (glossed as POSS1) with prototypical instances of possession with an animate possessor and an inanimate concrete possessum (2a) as well as with an animate concrete possessum (2b), interpersonal relations (2c) and kinship terms (2d):

- (2) a. INDEX3 POSS1 DREAM-HOUSE [VanDale DROOM]
'That is my dream house.'
- b. POSS1 DOG LAST YEAR DIE [VanDale HOND]
'My dog died last year.'
- c. _____ pol-q [VanDale VRIEND]
POSS1 FRIEND ALREADY INSIDE
'Is my friend already inside?'
- [VanDale NICHT]
- d. INDEX1 HAVE TWO NIECE: ONE INDEX3a DAUGHTER
POSS1 SISTER INDEX3a OTHER INDEX3b POSS1 UNCLE
DAUGHTER INDEX3b
'I have two nieces: One is my sister's daughter, the other is my uncle's daughter.'
- e. POSS1 LEG HURT [Amsterdam, p.c.]
'My leg hurts.'

The consultant from Amsterdam adds that POSS1 can furthermore be used with abstract possessums such as NAME or IDEA, as well as with body parts such as LEG (2e).

Whenever the possessor is not the speaker, a personal pronoun (INDEX) is chosen, independently of the typicality of the possessive relation, and the possessive relationship is not marked overtly. As the examples in (3) illustrate, a prototypically possessed item such as a car occurs with a non-first person index pronoun (3a), as do the less typical abstract possessums (3b) and kinship terms (3c), which in many languages of the world are grouped with inalienable possessums (Heine 1997: 10). In other words, the choice of possessive vs. index pronoun in attributive constructions is not influenced by (in)alienability considerations.

- (3) a. _____ top [VanDale PROBLEEM]
INDEX2 CAR PROBLEM INDEX3 INDEX1pl SOLVE
'We can solve the problem with your car.'
- b. INDEX1 INDEX3 E-MAILADRES ASK [VanDaleE-MAILADRES]
'I ask him for his e-mail address.'

- c. INDEX3 PARENTS LIVE-STILL THE-TWO [VanDale OUDERS]
'His parents are still alive.'

Perniss & Zeshan (2008) note that in most sign languages that have a paradigm of possessive pronouns, the latter is more limited than the paradigm of personal pronouns in the language and thus behaviourally more marked. They mention the unavailability of dual or plural forms in the possessive paradigm, yet NGT forms a more radical instance of markedness in the realm of possessive pronouns: Not only does the language lack plural forms but it also does not have non-first person forms. Wherever POSS1 does occur in the data, the first-person possessive precedes the possessum.

As noted earlier, dependent marking on the first-person possessor is not obligatory in NGT; the elicitation data contain multiple examples of attributive possessive constructions with an index pronoun possessor. As (4) illustrates, the index pronoun may be used with concrete specific possessums (4a)³ as well as with kinship terms (4b) and body parts (4c).

- (4) a. _____ top [VanDale CAMERA]
INDEX1 NEW CAMERA INDEX1 VACATION GO INDEX1
PRETTY PICTURE-TAKE
'While I was on vacation I took brilliant pictures with my new camera.'
- b. INDEX1 MOTHER INDEX3 54 [recordings AGE2 01:24]
'My mother is 54 years old.'
- c. INDEX1 INDEX1 HAIR DYE⁴ [VanDale HAAR]
'I have my hair dyed.'

Similar to Japanese, Catalan, and Austrian Sign Language (Morgan 2008, Quer & GRIN 2008, and Schalber & Hunger 2008), the pronominal possessor in NGT has a strong tendency to precede the possessum: The elicitation data contained 52 instances of possessor + possessum NPs, compared to ten possessum + possessor combinations. In seven cases, the possessor both precedes and follows the possessum. According to the consultant from Amsterdam, these three variants do not differ in meaning.

Looking at a potential (in)alienability distinction in the distribution of personal vs. possessive pronouns, we may assume that zero marking of the possessive relation is more likely to occur with potentially inalienable possessums, as family members, body parts or physical states are typically not controlled by the possessor (in the sense that s/he can usually not terminate the possessive relationship) and may therefore not be marked by a language in the same way that prototypical ownership is. Since zero marking (the INDEX pronoun) occurs with specific concrete items such as CAMERA, however, it is

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- 3 There is a possibility that (4a) INDEX1 NEW CAMERA constitutes a predicative possessive structure ('I have a new camera') rather than an attributive one. Since the omission of a possessive predicate seems to be conditioned by sufficient context clues and (4a), as an example sentence from the *Van Dale*, lacks contextual embedding, an attributive interpretation is more likely here.
- 4 In this example, the second INDEX agrees with the possessum such that it does not point at the signer's chest but at her head, closer to the possessum hair.

unlikely that the distribution of the personal pronoun in attributive possessive constructions distinguishes an alienable vs. inalienable category. The broad range of possessums compatible with POSS1 furthermore suggests that overt dependent-marking in the possessive NP is not restricted to an alienable set of possessums, hence we do not seem to find an alienability distinction affecting possessive marking in attributive constructions in NGT. This finding mirrors Nichols' (1988: 577) observation that an (in)alienability distinction is predominantly realised via head-marking in the (spoken) languages of the world, and is all but absent in languages that express possession via dependent-marking⁵.

Before moving on to describing the behaviour of nominal possessors in NGT, it should be noted that, at least for some types of possessums, the possessor is understood from context and need not be expressed overtly, as illustrated in (5). An interesting direction for further study might be to investigate whether the omission of the possessor depends only on contextual set-up or also on the nature of the possessum, and whether possessor-dropping is more frequent in constructions that contain typically inalienable possessums such as kinship terms.


[VanDale MAN echtgenoot]

- (5) HUSBAND WE-TWO 25 YEAR MARRY
'My husband and I have been married for 25 years.'

3.2 Nominal possessors

Many of the sign languages analysed in Zeshan & Perniss' (2008) survey employ two strategies for attributive possessive constructions relating a nominal possessor to a nominal possessum: 1. juxtaposition and 2. insertion of a possessive marker between possessor and possessum (see, for example, the chapters on Japanese, Catalan, Austrian, and Jordanian Sign Language). This possessive marker is often formationally similar or identical to the possessive or index pronoun in the respective sign language. Here, alienability seems to play a role in the choice of construction in that the former strategy is most commonly found with abstract possessums or part-whole relations, both with animate and inanimate possessors. A possessive or indexical pronoun tends to mark alienable possession and, at least in Austrian, American and Jordanian Sign Language (for ASL see Chen Pichler & Hochgesang 2008), is barred from marking part-whole relations⁶.

NGT likewise employs juxtaposition, as the examples in (6) illustrate. The possessor predominantly precedes the possessum in these constructions, although the reverse order is attested (see 6d). Juxtaposition can be used for human possessums (6a),

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- 5 While Nichols (1988) describes a strong typological trend for marking (in)alienability via head-marking, we do find an example of alienability distinguished via dependent marking in Jordanian Sign Language (Hendriks 2008), where the possessive pronoun (signed with an -handshape) is used with alienable possessums while inalienable possessums such as body parts and names are signed with personal pronoun possessor. Kinship terms seem to mark the boundary between alienables and inalienables, as they occur with either possessive or index pronouns.
- 6 In Austrian Sign Language (ÖGS), the cut-off point for the (in)alienability distinction is found within the class of part-whole relations: While constructions with body-part possessums can contain a possessive marker inserted between possessor and possessum, only juxtaposition is possible for part-whole relations with inanimate possessors (Schalber & Hunger 2008: 175).

abstract ones (6b), as well as for kinship terms (6c, 6d) and part-whole relations with animate (6e) and inanimate possessors (6f). Juxtaposing nominal possessors and possessums in NGT then does not seem to be restricted to alienable or inalienable possession.

- [VanDale COACH]
- (6) a. DUTCH NATIONAL-TEAM COACH INDEX3 EVERYBODY
ALWAYS CRITICISE3
'The coach of the Dutch national (soccer) team is always criticised by everybody.'
- q
[VanDale DOEL]
- b. THIS MEETING GOAL WHAT
'What is the goal of this meeting?'
- c. BEST FRIEND FATHER [recording FAMILY TREE]
'the father of (your) best friend'
- d. SON UNCLE DEAD [recording FAMILY TREE]
'(Your) uncle's son is dead.'
- [VanDale ANGST/ANGSTIG]
- e. PHOTO CL:rectangular INDEX3 WOMAN FACE FEAR
'On the photo you can see the fear on the face of the woman.'
- f. HEARING-AID BATTERY LOW [VanDale BATTERIJ]
'The battery of the hearing aid is low.'

Concerning the insertion of a possessive marker between possessor and possessum, the data are less clear. Only in the data elicited in relation to kinship did instances of such insertion of an index pronoun occur, as exemplified below.

- (7) a. BEST FRIEND INDEX3 MOTHER [recording FAMILY TREE]
'the mother of (your) best friend'
- b. BEST FRIEND INDEX3 PARENTS [recording FAMILY TREE]
'the parents of (your) best friend'
- [recording FAMILY TREE]
- c. OLDEST UNCLE INDEX3, SPOUSE DEAD
'(My) oldest uncle's wife is dead.'
- d. AUNT INDEX3, HUSBAND DEAD [recording FAMILY TREE]
'(My) aunt's husband is dead.'

However, sentences (7c) and (7d) exhibit signs of the possessors forming part of a different constituent than the possessum (indicated here with a comma). The pronominal possessor is accompanied by a headnod followed by a small pause, then for the possessums SPOUSE and HUSBAND, the chin is lifted again. Non-manual marking such

as headnods or pauses frequently mark phrasal boundaries in NGT (Crasborn 2009: 359), hence it is likely that, at least in (7c) and (7d), the index pronoun merely anchors the possessor in space. The possessive construction would then exhibit a topic comment structure and (7c) could be translated as 'As for my oldest uncle, (his) wife is dead'⁷. Morgan (2008) argues that Japanese Sign Language employs topicalisation of the possessor as one strategy for marking attributive possession, and an intriguing direction for future research would be to investigate how systematically NGT topicalises a nominal possessor to express an attributive possessive relationship. With the data at hand we can only suggest that topicalisation might be at work in addition to a potential structure that involves an index pronoun intervening between the possessor and the possessum. The latter would mirror a structure used in Dutch (see (8)), with which NGT is in constant contact.

- (8) *Anne d'r moeder* [Quer & GRIN 2008: 38]
'Anne her mother'

Given that this structure was only elicited in the context of kinship possessums, we cannot draw conclusions about its use or frequency with more and less alienable possessums. Observations on American, Jordanian and Austrian Sign Language suggest that part-whole relations might form the cut-off point for the insertion of a possessive or pronominal element in some sign languages, and further data needs to be elicited in order to see whether NGT follows this pattern or not. From the point of view of iconicity, we would expect alienable possessums to be more easily separated from their possessors by an intervening sign, while inalienable possessums are just that - inseparable from their possessors by another sign and hence preferably juxtaposed.

In this section, we have focused on nominal possessors, which precede their possessums. The data elicited for this study also contains a construction that fronts the possessum and is used mostly when the possessor is itself complex. This construction is judged by my native consultant to constitute a form of signed Dutch (*Nederlands met Gebaren*), is marked as thus in the *VanDale* dictionary and was predominantly used by the consultant who is said to frequently use a form of NmG. In Dutch, the possessum precedes the possessor and is connected to it via the preposition *van*. In NmG, *van* is expressed via a sign that is formationally identical to POSS1 and is accompanied by the mouthing 'van' or 'fff' as illustrated in (9). While this construction is attested frequently in the data on family relations, we will not consider it further as it is judged to not constitute a part of NGT. However, in the following discussion of predicative possession, a formally similar construction will be introduced.

- (9) a. 'fff' [recording AGE2]
SECOND SIBLING VAN INDEX2 FATHER INDEX2
'your father's second sibling'
- b. 'fff' [recording AGE2]
SIBLING VAN INDEX2 FATHER SPOUSE

7 While topics in NGT are often non-manually marked by raised brows and a forward head position, such prosodic marking is not obligatory (Crasborn *et al.* 2009: 359) and seems to be absent in the present data.


'the sibling of your father's spouse'

4. Predicative possession

In addition to being expressed within a phrase, a possessive relation can be indicated with the help of a possessive predicate that takes possessor and possessum as its respective subject and object. As Heine (1997) comments, many languages have at least two constructions which foreground either the possessor or the possessum. Strategies that highlight the possessor in making it the clausal subject or topic are commonly referred to as 'have' constructions, taking their name from the English verb *have* whose subject is a possessor. Constructions that foreground the possessum as the subject or topic, as for example *the chocolate* in *This chocolate belongs to me* are termed 'belong'-constructions, again named after the behaviour of the corresponding English verb (1997: 29). *Belong*-constructions are often associated with prototypical possession involving true ownership and/or control over the possessum (1997: 31-32). In the following sections, we will first discuss *have*-constructions and then briefly look at predicative juxtaposition and *belong*-constructions in NGT.

4.1 *Have*-constructions in sign languages

The overwhelming majority of *have*-constructions in the sign languages surveyed in Zeshan & Perniss (2008) may also be used to express existence (and/or location) and thus instantiate Heine's (1997) existence schema. Heine observes that possession is a relatively abstract notion, which is frequently expressed with the help of more concrete schemata involving basic human experiences such as "what one does [...], or what exists" (1997: 45). He identifies eight major event schemata on which predicative possessive constructions in spoken languages are based, and one of them hinges on an association between existence and possession via the notion "Y exists with reference to X", where Y is the possessum and X functions as the possessor (1997: 57-58). The existence schema is so productive in Zeshan & Perniss' survey that most sign languages analysed have a predicate that expresses possession and existence. Consequently, constructions containing these EXIST/HAVE signs do not distinguish between alienable and inalienable possession. Given that *have*-constructions are overall less restricted to cases of 'true' possession than their *belong* counterparts, the lack of an (in)alienability distinction is expected, but it is certainly promoted by HAVE/EXIST doubling as an existential predicate and thus allowing an existential reading for less typical possessive relations.

Several of the sign languages discussed in Zeshan & Perniss have a secondary possessive predicate whose usage is more restricted to prototypical possession: Catalan Sign Language has a predicate HAVE signed with an -handshape which cannot be used with inalienable possessums such as kinship terms, body parts, psychological-physical states and part-whole relations (Quer & GRIN 2008); Austrian Sign Language has a sign OWN which involves a grabbing motion and can only be used with inanimate large immovable possessums (Schalber & Hunger 2008); and Japanese Sign Language exhibits a sign HOLD which is also executed with a grabbing movement and implies a high degree of control on the part of the possessor, hence only true ownership or physical possession can be expressed via HOLD (Morgan 2008). In the next section we will discuss which *have*-type possessive predicate(s) NGT employs and how they pattern with respect to *have*-constructions in the sign languages described here.

4.2 Have-constructions in NGT

The predicate most frequently employed to express possession in NGT is glossed HEBBEN 'have' and is frequently accompanied by mouthing the Dutch translation equivalent 'heb'. As Figure 1a shows, the citation form of the sign involves a palm-up flat hand moving down in neutral space.

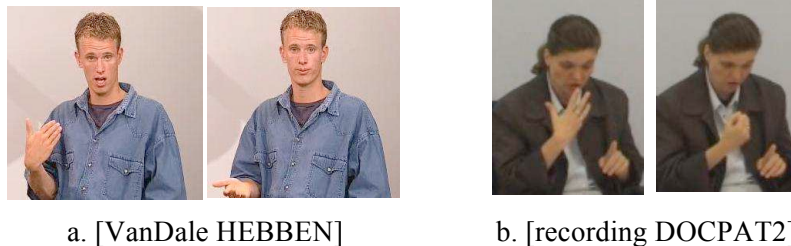


Figure 1: Variants of HEBBEN

An interesting variant of the sign is illustrated in Figure 1b, attested in the elicitation data during the doctor and patient game. Here, the sign exhibits a downward movement of the palm-up hand as the standard variant does, yet in addition, the fingers close in a grabbing movement, reminiscent of possessive predicates in Japanese and Austrian Sign Language. This variant may derive from another event schema argued by Heine to underlie possessive constructions: the action schema (1997: 47). Based on the possessor taking hold of the possessum via a seizing or grabbing action, this schema is frequently attested among the world's spoken and signed languages. Note that possessive verbs which imitate a seizing or grabbing action in the above-mentioned sign languages denote more prototypical notions of (alienable) possession. In the present study, the grabbing variant of HEBBEN was employed with physical states like FEVER and kinship terms, which constitute less prototypically alienable possessums, but further research is necessary to determine whether there is a correlation between the typicality of a possessum and the form of HEBBEN.

In the elicitation data, only two predicative possessive constructions were attested, one employing HEBBEN and one using simple juxtaposition of possessor and possessee. HEBBEN may either precede the possessum or follow it without noticeable differences in meaning. Regional variation may be a factor in deciding the placement of HEBBEN in the data presented here. HEBBEN was used with kinship terms (10a) as well as with physical states (10b) and specific illnesses (10c, where # indicates that the following sign is fingerspelled).

- (10) a. $\overline{\text{INDEX2 SPOUSE HAVE INDEX2}}$ ^{pol-q} [recording FAMILYTREE3]
'Do you have a wife?'
- b. $\overline{\text{INDEX1 HEAD PAIN HAVE INDEX1}}$ ^{neg} [recording DOCPAT2]
'I don't have a headache.'
- c. INDEX2 HAVE #MEASLES [recording DOCPAT2]
'You have the measles.'

While the examples in (10) contain possessums that are often grouped in the inalienable category, my Amsterdam consultant confirmed that HEBBEN spans the whole range of possible possessive relations. In (11a), it occurs with a concrete inanimate possessum, in (11b) with an animate possessor and possessum, in (11c) it takes an abstract possessum, and in (11d) it can be used to mark part-whole relationships with inanimate possessors.

- (11) a. INDEX3 HAVE NEW CAR [VanDale AUTO]
'He has a new car.'
- b. DOG FLEA HAVE [Amsterdam, p.c.]
'The dog has fleas.'
- _____ pol-q
c. IDEA HEB [Amsterdam, p.c.]
'Do (you) have an idea?'
- d. CAR FOUR DOOR HAVE [Amsterdam, p.c.]
'The car has 4 doors.'

It thus seems as if the sign HEBBEN is an instance of the EXIST/HAVE-type verbs described for most of the sign languages in Zeshan & Perniss (2008). This observation is surprising given that NGT has an existential predicate AANWEZIG 'present' which may be used in possessive contexts, albeit less frequently than HEBBEN. AANWEZIG is illustrated in Figure 2. According to my consultant, AANWEZIG in its possessive use is more restricted than HEBBEN in terms of possible possessums that can co-occur with it. It tends not to occur with animate possessums such as FRIEND or BROTHER and is rare with abstract



Figure 2: [VanDale AANWEZIG]

possessums like NAME or IDEA. A possible context of usage for 'IDEA AANWEZIG' would be a discussion that is leading nowhere, in which one participant asks the other if they have any idea at all. This example illustrates that AANWEZIG does not lose its existential 'ring' even when used possessively as we might paraphrase the participant's desperate question as "Is there any idea present in the room?". In less emphatic contexts, HEBBEN would be the possessive predicate chosen for IDEA (Amsterdam, p.c.). AANWEZIG predominantly occurs with inanimate and/or concrete possessums, as the examples in (12) illustrate.

- (12) a. EXIST CIGARETTE [Amsterdam, p.c.]
'Do (you) have cigarettes?'

- b. EXIST FLEA
'Does (the dog) have fleas?'
- c. CAR FOUR DOOR EXIST
'The car has four doors.'

Hence we may summarise that both HEBBEN and AANWEZIG may be used in *have*-constructions in NGT, and since both seem to have existential meaning components, neither instantiates an (in)alienability distinction in the language. AANWEZIG shows an interesting distribution in dispreferring human and abstract possessums, yet since it occurs in part-whole relations, which tend to form part of the inalienable category in sign languages that make an (in)alienability distinction, as well as with prototypically possessed items such as CIGARETTE, AANWEZIG is unlikely to make an (in)alienability distinction.

4.3 Juxtaposition and *belong*-constructions in NGT and other sign languages

In addition to marking predicative possessive constructions via a possessive predicate, various sign languages allow clausal juxtaposition of possessor and possessum under certain conditions. In Catalan Sign Language, kinship terms and body parts may be juxtaposed with their (human) possessor (Quer & GRIN 2008), in Austrian Sign Language this option exists whenever the possessive relation is clear from context (Schalber & Hunger 2008), in Jordanian Sign Language a possessive predicate can be dropped if the possessum is modified (Hendriks 2008), and in ASL inanimate possessums can be juxtaposed, as can kinship terms when they are modified by a numeral (Chen Pichler & Hochgesang 2008).

In NGT, juxtaposition occurs with kinship terms when the possessive context is clear, as in the sentence (13a), which was elicited during the family tree game. Abstract concepts also frequently occur without a possessive predicate (13b), as do body parts (13c).

- (13) a. $\frac{\text{pol-q}}{\text{BROTHER INDEX2}}$ [recording FAMILYTREE2]
'Do you have a brother?'
- b. TONIGHT DO WHAT INDEX2 IDEA INDEX2 [VanDale IDEE]
'Do you have an idea what we could do tonight?'
- [VanDale LICHAAM]
- c. INDEX1 LUCKY STRONG HEALTHY BODY INDEX1
'Luckily I have a strong and healthy body.'

The native signer from Amsterdam that was consulted for this study mentioned that modification via a numeral is not a necessary condition for dropping the possessive predicate with kinship terms. He further noted that, given the right context, juxtaposition is possible with concrete inanimate possessums such as CAR (for example, a legitimate reply to the question 'Could somebody give me a ride?' in NGT may be INDEX1 CAR 'I have a car' accompanied by a headnod). Since he considered juxtaposition ungrammatical for the possessum MONEY, however, we cannot conclude that this strategy can be

employed with all alienable possessums in NGT⁸. The language thus patterns with the other sign languages described for which predicative juxtaposition is attested, but it seems to be rather more permissive concerning the types of possessums, which allow juxtaposition. Possibly it resembles Austrian Sign Language most closely in allowing predicate dropping whenever context signals the possessive relationship.

In addition to *have*-constructions and juxtaposition, several sign languages exhibit a *belong*-construction that places the possessum in subject position. Often, the *belong*-predicate seems to derive from an attributive possessive marker or pronoun found in the respective sign language as well as in its main spoken contact language. In Catalan Sign Language (LSC), for example, the signs DE 'of' and BELONG serve as possessive linkers between possessum and possessor in both attributive and predicative constructions and are only distinguished formally by the movement parameter: DE has a simple tapping movement and BELONG a repeated one (Quer & GRIN 2008). Both Catalan and Spanish employ the preposition *de* 'of' in attributive possession, hence LSC exhibits innovation via generalisation of this construction to the predicative domain. Flemish Sign Language (VGT) exhibits a similar construction using the linker VAN 'of' which is accompanied by mouthing the Dutch word *van* 'of' along with the sign. In VGT, VAN is used both attributively and predicatively just as it is in Dutch, the major spoken contact language of VGT. Example (14) contrasts the respective possessive structures in VGT (14a) and Dutch (14b): The two only differ in Dutch employing the copula *is* in addition to *van* to link possessum and possessor. It can thus be argued that VGT has not innovated the predicative use of VAN but has borrowed it from Dutch.

[de Weerdt & Vermeerbergen 2008: 207]

(14) a. HOUSE OF TEACHER

'This house is the teacher's.' or 'This house belongs to the teacher.'

b. Dat boek is van Jan.

[Hendriks 2008: 63]

'That book belongs to John.' / 'That book is John's.'

For our data, we have already shown that the attributive VAN-construction is associated with signed Dutch (NmG) and would thus not form part of the inventory of possessive constructions of NGT. However, the predicative use of VAN is attested in *VanDale*, which differentiates NGT and NmG. There, we find it co-occurring with a second-person pronoun in the example *Is die fiets van jouw* 'Is this bike yours?' The illustration in Figure 3 shows that the possessive predicate VAN is formationally similar to the first-person possessive pronoun in NGT, differing only in the mouth gesture accompanying VAN (closed mouth, corners of the mouth stretched and pointing downward). The first-person form of VAN differs from the non-first-person form in exhibiting a repeated tapping movement as well as the mouth gesture 'mmm'.

8 One possible explanation for why the possessive predicate may be omitted with CAR but not MONEY is that the former is typically associated with only a few actions, namely having and buying, while the latter is more versatile: money can be found, lost, spent, or earned. Cars are thus possibly more typically associated with 'having' than money, hence the omission of the default predicate with CAR but not with MONEY. Thanks to Pamela Perniss for pointing out this potential analysis.



Figure 3: [VanDale VAN-JOUW]

Formational similarities between a belong-type sign and a possessive pronoun are not uncommon among the sign languages surveyed in Zeshan & Perniss (2008). In Austrian, Jordanian, and Ugandan Sign language, the *belong*-construction employs a predicate that resembles a pronoun used in attributive possession (see the respective chapters in Zeshan & Perniss (2008)).

In addition to the VAN-construction, a second *belong*-predicate has been observed in NGT, glossed as VAN-JOUW 'of you' and VAN-MIJ 'of me' in Figure 4. It differs from all the belong-predicates discussed in Zeshan & Perniss (2008) in showing possessor agreement. Thus, while the handshape and mouth gesture 'pu' are identical in Figure 4a and Figure 4b, the orientation of the fingers at the final location of the sign points towards the second-person possessor in Figure 4a, while the radial side of the hand contacts the chest of the first-person possessor in Figure 4b. Further research is necessary to determine whether Figure 4a can be used for second and third-person pronominal predicates and how frequently this predicate is used in comparison with the VAN-construction.



Figure 4: *belong*-predicate in NGT

In summary, we have seen that predicative juxtaposition is comparatively common in NGT and seems to be determined mostly by contextual set-up. NGT furthermore has two *belong*-predicates, one which resembles the possessive pronoun in attributive constructions formally and a second one which shows possessor agreement.

5. Conclusion

The present study set out to provide a preliminary survey of possessive constructions in NGT and how the latter pattern with respect to possessive expressions in other sign languages. It was demonstrated that NGT behaves in accordance with typological observations for sign languages in having a possessive pronoun, as do 80 per cent of the sign languages studied in Zeshan & Perniss (2008). The possessive 'paradigm' in NGT is behaviourally highly marked, however, in not distinguishing number and having only a first-person form. The distribution of the possessive pronoun is not linked to an (in)alienability distinction, which is expected from Nichols' (1988) finding that alienability is rarely distinguished via dependent-marking.

Concerning nominal possessors, we could not confirm a trend towards marking alienability via the insertion of a possessive marker between possessor and possessum in NGT. While in Austrian, American, and Jordanian sign language such a tendency seems to exist and mark part-whole relations as inalienable (the possessive marker cannot occur there), we lack sufficient data to test these claims for NGT. Juxtaposition seems to be the most commonly used strategy for attributive possession with a nominal possessor here, possibly accompanied by topicalisation of the possessor.

Looking at predicative possession in NGT, we found the strong tendency in sign languages to conflate possession and existence in one predicate confirmed. NGT has two predicates that encompass existential meaning to different degrees, with HEBBEN foregrounding possession and AANWEZIG highlighting existence. Since in contrast to some other sign languages, NGT does not have a predicate which expresses prototypical possession, no alienability distinctions are found among *have*-constructions in this language. It is conceivable that AANWEZIG marks temporary rather than permanent possession, which is reserved for HEBBEN, yet further research is necessary to examine this hypothesis.

Lastly, we noted that NGT has two *belong*-predicates. One resembles the possessive pronoun in attributive constructions formally, the second agrees with the possessor, which, to my knowledge, has not been attested for any of the other sign languages analysed in Zeshan & Perniss (2008) and may well constitute a typological anomaly.

Several directions for future research have been suggested throughout this paper, yet many more may be added to these. An interesting topic for analysis might be to explore whether and how spatial modifications may be employed to indicate possession in NGT. In some sign languages, the possessum may be signed at the location of the possessor to indicate the possessive relationship; it would be interesting to see whether NGT allows such modification. Most importantly, however, we need to investigate how sign languages fit into the broader typology of spoken and signed languages with respect to the expression of possession. While developing a typology of sign languages is important in its own right, for example to assess the degree of genetic relatedness or areal contact between two given sign languages, integrating the findings of sign typology into the broader typology of languages provides access to the whole range of linguistic structures. Not only does a typology of signed and spoken languages paint a more holistic picture of human language, but it also allows linguists to identify influences of modality on linguistic expressions of possession.

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Grammatical Functions of Mouth Gestures in Japanese Sign Language

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1 Introduction

Japanese Sign Language (JSL, *Nihon Shuwa*) refers to the sign language that deaf children in Japan acquire as their first language, typically in a deaf household or through early exposure to the language. Its linguistic characteristics are very different from those of spoken Japanese, as many research results have revealed (Fischer 1996, Ichida 2005, Ichida 2010, among others.) It has been reported that mouth gestures, a type of non-manual expressions (NM)¹, carry various grammatical or functional roles (Sakata, et al. 2008, Matsuoka, et al. 2010, Kimura 2011, Oka and Akahori 2011). The mixture of communicative and grammatical functions associated with mouth gestures made it challenging for sign language researchers to clearly identify their linguistic characteristics. Nevertheless, one cannot over emphasize the importance of the study of mouth gestures, since influences from spoken Japanese cannot explain the majority of the mouth gesture functions.

In this paper, we provide a summary of mouth gestures described in previous publications (Section 2), report a type of grammatical mouth gestures in sign language, Polarity sensitive mouth gestures, which have not been previously documented (Section 3), and consider their linguistic characteristics (Section 4).

2 Mouth gestures reported in previous literature

Mouth gestures are frequently mentioned in books about JSL written for the general public (Sakata et al, 2008, Kimura 2011, Oka and Akahori 2011). We give a brief introduction of two types of mouth gestures, which are well-known in the JSL community: the ‘Aspect, Mood, and Affect’ mouth gestures and the ‘Degree Adverbial’ mouth gestures. Even though those different mouth gestures tend to be introduced as one group of non-manuals, their function types vary and require more sophisticated classification and detailed analysis in future studies.

2.1 Aspect, Mood, and Affect

Sakata, et al. (2008) described various types of mouth gestures. With an intention to create a reference for JSL-Japanese translators, they provided examples of JSL combined with different mouth gestures, coupled with suggested Japanese translation samples. Descriptions of the different mouth gestures covered in their book are supplemented in more detail by example sentences in a series of DVDs (*Shuwa Kokei no Yakuwari* ‘Functions of Mouth Shapes in Sign Language’), available from the Shuwa Bunka Mura Corporation. Unfortunately, though, there was no example in which different mouth

¹ Other non-manuals include eyebrow raising/furrow (see Section 5), eye widening/narrowing, head movements, shoulder movements, cheek puff, etc.

gestures combined with identical signed sentences, which makes it difficult to compare the linguistic functions of these gestures.

For our study, we selected six mouth gestures ('pa', 'po', 'pi', 'pu', 'pe', 'm'), which are widely accepted by native signers, and are among the mouth gestures described by Sakata et al. (2008) and the supplementary DVD materials. We videotaped an identical JSL expression (see the example below) signed by native signers (Yano and Minamida) with the six mouth gestures. We viewed the videotaped materials to confirm or modify the descriptions by Sakata, et al.

The following is a summary of functions of the six mouth gestures:

Mouth gestures	Functions
pa	Perfective
po	Unexpected, interrogative, declaration
pi	Reluctantly accepted, bragging
pu	Critical, unacceptable, discontent
pe	Unstable, uneasy
m	As expected, as scheduled

Table 1: Functions of Aspect/Mood/Affect mouth gestures (cf. Sakata, et al. 2008).

Let's take a look at actual examples. One of the six mouth gestures, produced with the verb *AU* 'meet' in (1) below, influences the meaning (or nuance) of the entire sentence, as indicated in the possible translations in the following chart. (The line with 'mg' indicates a mouth gesture that overlapped with the manual sign.)

(1)	<i>pro</i>	<i>TOMODACHI</i>	<i>mg</i> <i>AU</i>
		friend	meet
	'(I) met/meet a friend.' ^{2 3}		

Table 2 below shows how each mouth gesture corresponds to the information communicated to the perceiver:

² JSL is a discourse-governed pro-drop language. The grammatical subject or object is frequently dropped in the surface form (as indicated by 'pro'), as long as it can be recovered from the discourse.

³ JSL does not have an overt tense marker.

Mouth gestures	Possible Translations
pa	I met a friend.
po	I happened to meet a friend (unexpectedly, I wonder why)
pi	I met a friend (which ended up with an unhappy outcome).
pu	I was supposed to meet a friend (but was not happy about that)
pe	I met a friend (but felt uneasy)
m	I met a friend (as scheduled)

Table 2: Sample translations of the example sentence (1) with different mouth gestures.

The functions of those mouth gestures belong to different linguistic categories and hence need to be analyzed separately. For instance, ‘pa’ (perfective) is a type of Aspect marker⁴, ‘po’ (interrogative) is a Mood marker, and ‘pi’, ‘pu’, ‘pe’, and ‘m’ pertain to the attitude of the signer (Affect).

2.2 Degree Adverbials

According to Kimura (2011), there are also mouth gestures which indicate the degree of the intensity of the action described by the verb. The pattern described by Kimura is summarized in Table 3. Unlike the mouth gesture ‘m’ in Section 2.1., the Degree Adverbial mouth gesture ‘m(+eb)’ must be accompanied by an eyebrow furrow.

Mouth gestures	u	m(+eb)
Degrees indicated	Less/Neutral	More

Table 3: Functions of Degree Adverbial mouth gestures (cf. Kimura 2011).

The chart in Table 4 provides examples of JSL verbs combined with the Degree Adverbial mouth gestures presented with their possible translations:

⁴ A mouth gesture similar to ‘pa’ (perfective) has been observed in American Sign Language. Such a mouth gesture seems to be strongly associated with a few specific signs (e.g. ‘FINALLY’), which is not necessarily the case in JSL.

	Mouth gestures and possible translations	
	u	m(+eb)
ARUKU 'walk'	easy, short walk	walk for a long time
MIRU 'see'	look (neutral)	stare intensively

Table 4: Examples of Degree Adverbial mouth gestures.

It is important to note that the mouth gestures introduced so far are not required. Aspectual/affective effects of those mouth gestures can also be achieved by using manual signs or other non-manuals. For example, the sign OWARU 'finish', when attached to the predicate, functions as the perfective aspect marker.

- (2) *pro* *PAN* *TABERU* *OWARU*
 bread eat finish
 '(I) have eaten the bread.'

Similarly, the Degree Adverbial mouth gestures can be replaced by an intensified or prolonged movement of the verb, as well as various choices of NMMs such as squinted eyes, head/shoulder positions and movement, etc. However, the mouth gestures to be reported in Section 3 demonstrate a very different nature. We classified those mouth gestures as 'Polarity-sensitive'.

3 A New type: Polarity-sensitive mouth gestures

We present here another type of mouth gesture ('ho' and 'hee/ee'⁵), commonly used among native signers of JSL. In an emphatic context, the mouth gesture 'ho' appears with adjectives with positive polarity, while 'hee/ee' is chosen for those with negative polarity. Typical examples are shown in (3) and (4) below:

- (3) *FUKU* ho/*hee/*ee
 clothes *TAKAI*
 expensive
 '(The) clothes are awfully expensive.'
- (4) *FUKU* *ho/hee/ee
 clothes *YASUI*
 inexpensive
 '(The) clothes are awfully inexpensive.'

The characteristics of 'ho' and 'hee/ee' are strikingly different from the mouth gestures reported in Section 2, in the following ways:

⁵ There is a regional variation 'hii'.

- (a) They co-occur with adjectives, unlike other mouth gestures which can be used with various types of predicates.
- (b) They are observed only in an emphatic context. In a neutral context, neither mouth gesture is used.
- (c) Unlike other mouth gestures, they are required in an emphatic context.
- (d) The choice of the mouth gesture is sensitive to the lexical polarity of the adjective.

The following is a list of the adjectives which take the mouth gestures ‘ho/hee/ee’.

ho		hee/ee	
(Positive polarity)		(Negative polarity)	
<i>takai</i>	‘expensive’	<i>yasui</i>	‘inexpensive’
<i>ookii</i>	‘large/big’	<i>chiisai</i>	‘small’
<i>ii</i>	‘good’	<i>warui</i>	‘bad’
<i>omoi</i>	‘heavy’	<i>karui</i>	‘light in weight’
<i>ooi</i>	‘in large quantity’	<i>sukunai</i>	‘in small quantity’
<i>fukai</i>	‘deep’	<i>asai</i>	‘shallow’
<i>hayai</i>	‘fast/early’	<i>osoi</i>	‘slow/late’
<i>se-ga-takai</i> ⁶	‘tall’	<i>se-ga-hikui</i>	‘short in height’
<i>reberu-ga-takai</i>	‘higher in quality’	<i>reberu-ga-hikui</i>	‘lower in quality’

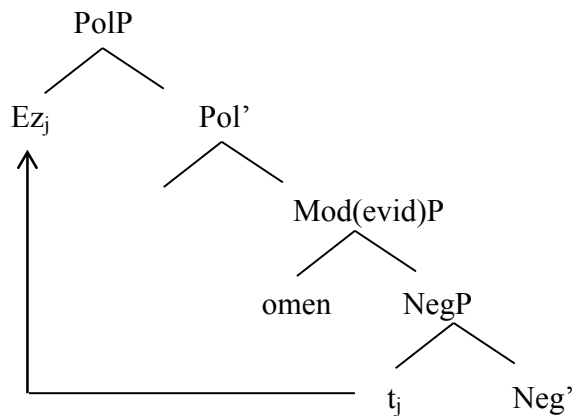
Table 5: Adjectives which co-occur with the Polarity-sensitive mouth gestures⁷.

The characteristics (a)–(d), listed above, suggest that those mouth gestures are of fundamentally different type of mouth gestures than the ones widely reported (‘Aspect, Mood, and Affect’ or ‘Degree Adverbial’ mouth gestures). It is of particular interest that the emphatic context and (lexical) polarity both play a role in the choice of mouth gestures. As we will mention briefly in Section 4, it has been pointed out in the analysis of spoken languages that emphasis and polarity are closely related.

⁶ *SE-GA-TAKAI/HIKUI* ‘tall/short in height’ and *REBERU-GA-TAKAI/HIKUI* ‘high/low in quality’ are expressed by one JSL sign, though the Japanese translations are clausal.

⁷ The adjectives included in this lists are all ‘gradable’ pairs. As for non-gradable pairs such as *SHINDE-IRU* ‘dead’ vs. *IKITE-IRU* ‘alive’, similar mouth gestures may be used, but not required, unlike the gradable adjectives presented here.

(8)



(Haddican 2004:99)

In Haddican's analysis, polarity and emphasis are closely related in that the same functional head is responsible for the polarity-sensitive raising, as well as hosting the emphatic morpheme.

The interaction of the polarity and the emphasis is discussed in the field of semantics⁸. The verum focus operator (Höhle 1992, Romero and Han 2004, etc.), being an epistemic conversational operator, reflects the speaker's previous assumption, as shown in the following example. In (9), because of the presence of the emphatic stress (which the verum operator is associated with) on the verb *study*, the implicature arises that the speaker B believed or expected that Tom had not studied for the class.

- (9) A: Tom got an A in Ling106.
B: Did he **STUDY** for that class?

(Romero and Han 2004)

The example (9) exemplifies a close connection between the emphasis and polarity: the emphatic stress in B's utterance activates the negative proposition (Tom did not study for Ling 106) even though no negative expression is included in the sentence.

The studies briefly reviewed in this section both discuss the relationship between emphasis and polarity at the propositional-level. The Polarity-sensitive mouth gestures in JSL, reported in the current study, seem to be sensitive to the lexical polarity of the adjectives. Nevertheless, the mouth gestures appear only in the emphatic context. This observation suggests that the polarity can interact with the emphasis at the lexical level, in addition to the propositional level. More cross-linguistic investigation is called for to further investigate this hypothesis.

In Section 5, we will briefly describe how eyebrow movements (another instance of non-manuals) combine with the Polarity-sensitive mouth gestures. Mouth gestures and eyebrow movements each express polarity of a different nature.

⁸ We thank Kathryn Davidson for pointing this out.

5 Two types of polarity

As described in Section 3, the Polarity-sensitive mouth gesture is sensitive to the lexical polarity of the adjective it overlaps with. In the example (3), repeated below, the mouth gesture ‘hee’ or ‘ee’ appears with the adjective of negative polarity (*YASUI* ‘inexpensive’):

- (3) *FUKU* *YASUI*
 clothes inexpensive
 ‘(The) clothes are awfully inexpensive.’

Interestingly, the mouth gesture can be combined with either raised eyebrows or furrowed eyebrows. The former combination yields the connotation that the signer has a positive attitude about the content s/he is communicating, while the later indicates the opposite (negative) attitude of the signer.

In examples (10) and (11), below, the different attitude of the signer is indicated in the parenthesized part of the English translation. (*ebr* refers to the eyebrow raise, and *ebf* refers to eyebrow furrow.)

- (10) *FUKU* *YASUI*
 clothes inexpensive
 ‘(The) clothes were awfully inexpensive (and it was a good deal.)’

- (11) *FUKU* *YASUI*
 clothes inexpensive
 ‘The clothes were inexpensive (and it was junk.)’

In those examples, different non-manuals are responsible for different types of polarity: the mouth gesture reflects linguistic polarity (a part of the lexical information of the adjective), while the eyebrow movement conveys the positive or negative attitude of the signer.

Distinguishing those two types of polarity and their effect on linguistic expressions have been proposed in the analysis of morphemic choice in Swedish. Saury (1984) conducted a corpus analysis of spoken Swedish to find that two derivational morphemes of the same meaning systematically alternate according to the attitude of the speaker. Based on that observation, he argued that there are two different types/levels of polarity: cognitive and attitudinal.

For example, the noun *skuld* ‘debt’ can be followed by a derivational suffix *-fri* or *-lös*, which derives two words of the same meaning, ‘without debt’. The choice of the two morphemes, though, is determined by the context, as shown in the following:

Expressions 'being without debt'	Appropriate contexts
<i>skuld-fri</i>	(You are free when you pay off the debt.)
<i>skuld-lös</i>	(No one can live without debt in this society.)

Table 6: Attitudinal polarity expressed by different suffixes in Swedish (cf. Saury 1984).

The morpheme *-fri* is selected when *skuld* is meant (by the speaker) to be something negative (i.e., a debt one does not want to have). On the other hand, the other morpheme *-lös* is used when *skuld* refers to something desirable (a debt, i.e., kindness or consideration that one receives from people around her/him). The positive/negative polarity discussed here is not a part of the lexical information of the noun *skuld*. Rather, the 'polarity' is a reflection of the attitude of the speaker.

The JSL examples in (10) and (11) clearly show that the two types of polarity in Saury's analysis are expressed with different non-manuals. The linguistic/cognitive polarity appears in the form of the mouth gesture, and the attitudinal polarity is indicated by the form of eyebrow movements. Our data provide empirical support for the distinction of cognitive/attitudinal polarity discussed in Saury (1984). It is also interesting to consider how non-manual items in a sign language divide the labor of expressing different types of semantic/pragmatic information.

6 Conclusions

In this paper, we presented the data of Polarity-sensitive mouth gestures, a new addition to the collection of mouth gestures attested in Japanese Sign Language. The linguistic characteristics of those mouth gestures suggest an interesting possibility that the association of the polarity and emphasis is established at the lexical level, as well as at the propositional level. Furthermore, the fact that the mouth gestures can co-occur with eyebrow raise/furrow suggests the possibility that different types of polarity are expressed by different non-manual expressions. There are no facial gestures used by hearing Japanese speakers which are comparable to the mouth or eyebrow movements reported in the current study⁹. A further analysis of the Polarity-sensitive expressions would lead us to a deeper understanding of non-manuals in sign languages, as well as to provide insights into the nature of the polarity realized in a variety of linguistic expressions in signed and spoken languages.

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⁹ There are interjections in spoken Japanese such as *hoo* (more typical in masculine speech) and *hee* (gender-neutral). They indicate that the speaker became interested in what they perceived verbally or non-verbally, whether it is positive or negative (i.e. the use of those interjections is not influenced by any sort of polarity.)

Japan. We would like to show gratitude to participants of those meetings. The authors appreciate Kathryn Davidson, Megumi Kawakami, Takeo Kurafuji, Diane Lillo-Martin, Jon Gajewski, and participants in the Sign Language Reading and Discussion group at the University of Connecticut for comments and discussion. John Helwig provided editorial help. All errors are our own.

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Emergence of Lexicons in Family-Based Homesign Systems in Nicaragua

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1 Introduction

Where does language come from? What role do learner and environment play in its development? These are age-old questions that, despite the time and attention paid them, continue to prove difficult to investigate, as nearly all situations of language development have both typical learners and rich environments. Instead, researchers must look to the rare experiments of nature where learner and environment vary independently. In the present work, we investigate such a case: homesigners.

1.1 Homesigns

Homesigners are deaf¹ individuals who are not exposed to and thus do not acquire any signed, spoken, or written language. In the absence of such linguistic input, they develop proto-linguistic gestural systems to communicate with their hearing family and friends. These systems have been shown to have many linguistic properties, such as grammatical subject (Coppola & Newport, 2005), proto-pronouns (Coppola & Senghas, 2010), simple morphological structure (Goldin-Meadow & Mylander, 1990a; Goldin-Meadow, Mylander, & Franklin, 2007), and phonological complexity closer to that of signers than to that of hearing gesturers (Brentari, Coppola, Mazzoni, & Goldin-Meadow, 2012). In addition, hearing family members appear not to fully share (Goldin-Meadow & Mylander, 1990b; 1984) or understand these structures (Carrigan & Coppola, 2012), suggesting that the source of these systems is the homesigners themselves, and not the family members. Thus, there is substantial evidence that homesigners create aspects of syntax, morphology, and phonology *de novo*. However, there is an aspect of language structure that has been not been as thoroughly investigated in these homesign systems: the lexicon.

1.2 Homesign lexicons

Despite being arguably the most fundamental linguistic *and* communicative level of organization of languages, there have been only two studies investigating lexicons of homesign systems: Goldin-Meadow, Butcher, Mylander, and Dodge (1994) and Osugi, Supalla, and Webb (1999). Goldin-Meadow et al. (1994) were primarily concerned with whether a child homesigner named David displayed a noun-verb distinction in his system, but they also investigated the degree of consistency over time of form-meaning mappings of gestures produced in a naturalistic context by David and his hearing mother. They found that, from ages 3 to 5 years (their window of study), 90% of David's 706

¹ We use deaf with a lower-case “d” to refer to homesigners, because, according to the traditional view of membership, they have not entered any capital “d” Deaf community. However, all deaf people, by virtue of living as deaf people in a hearing world, share certain experiences that are common to Deaf cultures around the world.

gesture tokens (containing 109 lexical types) conformed to prototype², and 67% of these types never varied from prototype (the 706 tokens did not include types that only appeared once). In contrast, David's mother showed much less consistency in her form-meaning mappings over time: only 59% of her 290 gestures conformed to prototype (significantly less than David), and only 35% of the 74 gesture types she produced more than once never varied from prototype (again significantly less than David). Goldin-Meadow et al. concluded from these data that David, and not his mother, innovated a lexicon of form-meaning mappings.

While Goldin-Meadow et al. (1994) investigated users' consistency *within themselves over time*, Osugi et al. (1999) examined the extent of lexical consistency *among users at a single time point*. They investigated consistency among 21 deaf and hearing individuals in the Koniya region of Amami Island south of Japan. Due to geographical isolation from the rest of the island and Japan, residents in the Koniya region intermarried at a high rate, leading to a higher incidence of genetic deafness in the area than elsewhere in the population. As a result, many Deaf individuals on the island have contact with other Deaf individuals, and many hearing villagers are familiar with the gestures used by Deaf villagers. This variability in Deaf individuals' contact with other Deaf and hearing individuals allowed Osugi et al. to test whether patterns of lexical consistency among users mirrored their patterns of social interaction. Indeed, using a gestural elicitation method (in contrast to Goldin-Meadow's naturalistic observational method), Osugi et al. found that participants' gestures for 25 basic objects and concepts (20 of which were derived from Swadesh, 1971) overlapped to the extent these participants interacted with one another. Specifically, a family of Deaf (and hearing) individuals and their friends shared forms for 16 items, this group and isolated Deaf individuals shared forms for 10 items, and these two groups and hearing individuals with little to no contact with Deaf people shared forms for only 3 items.

In sum, Goldin-Meadow et al. examined lexical consistency within a child homesigner and his mother, and found greater consistency within the child homesigner; Osugi et al. examined lexical consistency among deaf and hearing individuals, and found that users were consistent with each other to the extent that they interact with each other. Goldin-Meadow et al. and Osugi et al. thus examined two different dimensions of lexical consistency: consistency within individuals over time, and consistency within individuals at a single time point. A more comprehensive investigation of the emergence of lexicons in homesign systems would investigate *both* dimensions of lexical consistency in the same population. We did so in the present study, but we also investigate another crucial element of lexicons: efficiency.

1.3 Lexicon efficiency: Ease and clarity

In addition to having consistent form-meaning mappings, natural language lexicons tend to have an efficient balance between *clarity* of intended meaning and *ease* associated with learning, storing, and retrieving form-meaning mappings (Zipf, 1949; Ferrer i

² For frozen forms, the prototype was the most frequent form. For componential gestures that expressed motion events (known as classifier predicates in sign languages), the prototype was determined separately for handshape, location, and movement, again on the basis of frequency of each of these for a given meaning.

Cancho & Sole, 2003; Piantadosi, Tily, & Gibson, 2012)³. To illustrate how these two constraints compete, consider a lexicon with a 1-to-1 mapping between forms and meanings – every meaning has its own form (Figure 1a). Such a lexicon is perfectly clear – when a speaker utters a form, the listener knows exactly what the speaker meant – but it would also be impossible to learn, store, and retrieve such an astronomical (perhaps infinite) number of form-meaning mappings.

Contrast the lexicon exemplified in Figure 1a with another in which one form is used for absolutely every meaning (Figure 1b). This lexicon is trivial to learn and store, yet leaves the listener completely uncertain as to what the speaker meant. Natural languages of course find an efficient solution to these constraints by using one-to-few mappings between forms and meanings (among other things, like context, which allows the lexicon to sacrifice some clarity for the sake of ease; Piantadosi et al., 2012). However, little is known about how this efficiency emerges (but see Ferrer i Cancho & Sole, 2003 for a simulation of the emergence of efficient lexicons). For example, what determines a lexicon's balance between clarity and ease? We take up these questions in the present study.

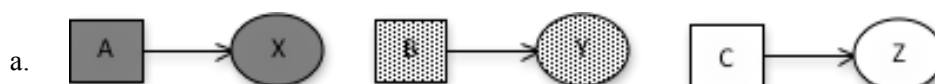


Figure 1a. An example of a lexicon high in clarity and low in ease; a different form (A, B, or C) is paired with each meaning (X, Y, or Z, respectively). The intended meaning is thus unambiguous, but users of the lexicon must learn, store, and retrieve many form-meaning mappings.



Figure 1b. An example of a lexicon low in clarity and high in ease: there is a single form (A) for every meaning (X, Y, and Z). The intended meaning is ambiguous, but users only need learn, store, and retrieve one form.

Figure 1. Contrasting lexicons favoring clarity versus ease, respectively

1.4 Present study

Building on Goldin-Meadow et al. (1994) and Osugi et al. (1999), we investigate how lexical consistency in homesign arises both *i*) within individuals, across time, and *ii*) within a time point, across individuals (see Figure 2 for illustrations of these two different dimensions). In addition, we report on the first stage in our investigation of how lexicons of naturally emerging language systems achieve efficiency, focusing here on clarity and ease of production. While Goldin-Meadow et al. (1994) observed their participants in naturalistic situations, we follow Osugi et al. (1999) and use an elicitation method.

³ Some think of efficiency as minimizing and balancing listener effort and speaker effort (Zipf, 1949; Ferrer i Cancho & Sole, 2003). However, along the lines of Piantadosi et al. (2012), we prefer to recast these as just clarity and ease, respectively. We do this because it is not clear that these pressures fall uniquely upon the listener or the speaker.

Assessing consistency among users necessitates an elicitation method, as observation methods do not guarantee that participants will talk about the same things. Our predictions are as follows:

1. If homesigners and their partners have or are constructing a lexicon like those of natural languages, then consistency among individuals should increase over time, or be at ceiling (insofar as we can test for ceiling⁴).

2. If homesigners are the primary drivers of innovation of the lexicon of the homesign system, then they should be more consistent within themselves over time than are their partners (as in Goldin-Meadow et al., 1994). Similarly, if any individual has a lexicon like those of natural languages, they should be close to ceiling in measures of consistency.

3. Given that homesigners' only communication system is the homesign system, and that their hearing communication partners also have a spoken language, homesigners are behooved to make themselves understood with the homesign system. Accordingly, we expect that homesigners' lexicons will reflect more clarity/less ease than those of their hearing communication partners. That is, we expect homesigners to have lexicons more like Figure 1a, and their partners to have lexicons more like Figure 1b.

⁴ X	Homesigner	Partner
Time 1	A	C
Time 2	A	A

Table 1. This table illustrates predictions 1 and 2 with idealized data for a single meaning X. Observe that the two users grow more consistent with each other over time (Prediction 1), and that the homesigner is more consistent than his/her partner (Prediction 2).

2 Methods

2.1 Participants

Participants were four deaf Nicaraguan homesigners [3 male; aged 11 to 33 years (M=24) at various times of testing] and nine of their hearing family members and friends (4 male; aged 10 to 59 (M=30) at various times of testing; we henceforth refer to these family and friends as *communication partners*). The homesigners have minimal or no interaction with other deaf individuals, including each other, and have minimal or no knowledge of Nicaraguan Sign Language or Spanish, spoken or written. Instead, these homesigners have been using their invented homesign system all their lives. Despite this

⁴ As will become clear, we use two measures of consistency here. Only one has a theoretical ceiling, and it doesn't capture the whole picture with respect to consistency. Regardless, we are confident in the conclusions we reach with respect to participants' (lack of) being at ceiling levels of consistency.

lack of linguistic knowledge, they socialize with others, hold jobs, have families, and otherwise have typical lives. Table 2 shows the relationships of individuals within each family group.

Family Group 1	Family Group 2	Family Group 3	Family Group 4
Homesigner	Homesigner	Homesigner	Homesigner
Mother	Mother	Mother	Younger brother
Older brother	Younger brother		Younger sister
Friend	Younger sister		

Table 2. The top row indicates the designation we have given to each family group. Rows 3-5 indicate the relation of the communication partners to the homesigner in their group.

2.2 Stimuli

Stimuli were images of 21 basic objects and concepts (see Appendix for complete list of items). Examples include ‘fish’, ‘boy’, and ‘hot’. All items were familiar to participants. Nineteen of these objects and concepts were taken from Osugi et al. (1999), which itself was derived from Swadesh (1971).

2.3 Procedure

In 2002, 2004, 2006, and 2011, M.C. showed participants images of the objects and concepts outlined above. Participants were tested individually. Using gesture and non-manual markers, M.C. elicited participants’ gestural responses to these images. Participants responded to the camera, *not* to each other, and were not allowed to see each other’s productions. All responses were videotaped for later analysis.

2.4 Coding

Participants’ responses were coded by J.F. in consultation with R.R. A majority of responses (62%) contained more than one gesture: we coded every gesture individually for its *Conceptual Component* (CC), or aspect of the items’ meaning that the gesture iconically represented. For example, a response to ‘cow’ might contain two gestures, one iconically representing horns (its CC is thus HORNS) and another iconically representing milking (its CC is thus MILKING).⁵ See Table 3 for example responses to ‘cow’ for two different participants across the four time points (and for an illustration of how we calculated the measures of consistency).

2.5 Measuring Consistency

To measure consistency in CC’s among multi-gesture responses, we borrowed two measures of consistency from Meir, Aronoff, Sandler, and Padden (2010): Mode and

⁵ We have also coded every gesture for its formal components, but this coding does not bear on the current analysis, and so we do not discuss it further.

Number of Variants (NoV). Mode is simply the proportion of responses containing the most frequently used CC. NoV, as used by Meir et al., is simply the number of unique types of Conceptual Components used by a participant over time, or by a homesigning group at a given time point. Meir et al. took a higher value as evidence of less consistency, but this number by itself can be misleading. Consider two participants, one who always expresses ‘cow’ using a gesture depicting HORNS, and another who always expresses ‘cow’ by gesturing MILKING + HOOVES. NoV would make the latter participant look more consistent than the former (1 NoV vs 2 NoV), even though each participant *always* used their respective form. Dividing Number of Variants by the number of *tokens* across responses corrects for this (in corpus linguistics, such a measure is of course called Type/Token ratio – we use this term here). Now, if these two participants both participated 4 times, they would have equal Type/Token ratios ($1/4 = 2/8$). See Figure 1 for sample calculations of these measures of consistency.

‘cow’	Homesigner	Mother
2002	MILKING + HORNS	MILKING + HOOVES
2004	HOOVES	MILKING + HORNS
2006	No data	HORNS
2011	HORNS + ANIMAL	MILKING

Table 3. Example responses to ‘cow’ for two participants at the four time points. The homesigner’s Modal CC (*HORNS*) proportion is 2/3 (66%), and their Type/Token ratio is .80 (4/5). In 2002, the Modal CC (**MILKING**) proportion among the homesigner’s and mother’s gestures is 2/2 (100%), and their Type/Token ratio is .75 (3/4).

2.6 Measuring ease/clarity

Recall that lexicons that contain more clarity/less ease differentiate forms for different meanings more than lexicons that contain less clarity/more ease (the intended meaning is clearer when its corresponding form is not similar to other meanings’ forms). By measuring the degree to which they used different CC’s for different objects and concepts, we assessed the ease/clarity of participant’s lexicons at a particular time point. In other words, we measured the average ‘distance’ between each pair of responses given by a participant in a particular year [there are $\binom{21}{2}$, or 210 possible pairs of responses⁶]. By treating each CC observed in the entire dataset as a dimension in a conceptual space, each response constituted a point in this space, taking a 1 on a dimension if it contained that CC, and a 0 if it did not. Ease/clarity was thus the average Euclidean distance between each possible pair of responses for a given participant and year. Table 4 illustrates such responses and calculations in a simplified conceptual space.

3 Results

We present results supporting our third prediction (regarding clarity/ease) first, as this was the novel aspect of our study and turned out to be the only measure on which homesigners differed significantly from their communication partners. Recall that a lexicon with greater average distance among pairs of responses means forms are more

⁶ $\binom{21}{2} = \frac{21!}{2!(21-2)!} = 210$.

differentiated for different meanings, which in turn reflects greater clarity and less ease (in learning, storage, and retrieval). Because no clear patterns emerged for change of lexicon distance over time, we averaged individuals' measures of lexicon distance across their years of participation. Doing so, we found that all nine communication partners had lower distances within their lexicons than their corresponding homesigner (Exact Binomial Test, $p < .001$), reflecting more clarity and less ease, in homesigners' lexicons.

	Conceptual Component Dimensions (subset)						
Item	CUT	EAT	SMALL-OBJECT	UPROOT	MIX	HORNS	MILKING
'orange'	1	1	1	0	0	0	0
'potato'	1	1	0	1	1	0	0
'cow'	0	0	0	0	0	1	1

Table 4. A simplified conceptual space for a single participant and year. A response receives a 1 on a dimension if it contained that Conceptual Component, and a 0 if it did not. The distance between two responses is the sum of the differences between their values on each Conceptual Component dimension. For example, 'orange' and 'potato' don't differ on four of the seven dimensions here (CUT, EAT, HORNS, AND MILKING), but they do differ on SMALL-OBJECT, UPROOT, and MIX, each of which contributes 1 to the distance measure, for a total distance of $\sqrt{3}$. The same formula is applied to each of the other pairs across the dataset. In the simplified example given here, ease would be the average of the distance between 'orange' and 'potato', 'orange' and 'cow', and 'potato' and 'cow', or $(\sqrt{3} + \sqrt{5} + \sqrt{6})/3 = 2.14$.

We now turn to our two predictions regarding consistency within individuals and within groups. Table 5 summarizes consistency within individuals, across time. Table 6 summarizes consistency within a group, at a time point. It is clear from the Mode data that users and groups are not at ceiling levels of consistency, as would be expected in a completely conventionalized natural language lexicon.

Group Participant		Group 1				Group 2				Group 3		Group 4		
		Hser	CP1	CP2	CP3	Hser	CP1	CP2	CP3	Hser	CP1	Hser	CP1	CP2
Modal CC	Mean	0.78	0.85	0.81	0.89	0.93	0.81	0.91	0.73	0.92	0.86	0.95	0.95	0.86
	SD	0.18	0.17	0.22	0.21	0.15	0.21	0.15	0.23	0.14	0.22	0.15	0.15	0.23
Type/ Token	Mean	0.59	0.55	0.52	0.75	0.57	0.64	0.57	0.66	0.59	0.64	0.75	0.69	0.75
	SD	0.13	0.18	0.19	0.19	0.16	0.21	0.18	0.23	0.10	0.19	0.16	0.18	0.22

Table 5. Within-participant, across time consistency. **Bolded** participants are homesigners; others are communication partners. Homesigners are not reliably more consistent than their partners.

To assess our first prediction – that individuals within homesigning groups would become more consistent with each other over time – we conducted eight repeated measures ANOVA's (two measures of consistency x four homesigning groups). No

significant linear or quadratic trends were obtained for either Type-Token ratio (p 's $>.05$) or for Mode (p 's $>.05$), thus providing no support for this prediction.

Group Year		Group 1				Group 2			Group 3			Group 4	
		2002	2004	2006	2011	2002	2004	2011	2002	2004	2011	2004	2011
Modal CC	Mean	0.71	0.70	0.74	0.64	0.81	0.81	0.89	0.93	0.80	0.88	0.89	0.86
	SD	0.19	0.22	0.23	0.17	0.20	0.20	0.15	0.18	0.22	0.16	0.17	0.15
Type/ Token	Mean	0.56	0.54	0.68	0.55	0.53	0.57	0.50	0.74	0.80	0.65	0.53	0.50
	SD	0.15	0.20	0.20	0.12	0.11	0.16	0.14	0.16	0.18	0.16	0.12	0.10

Table 6. Within-group consistency at each time point. Data were not available for each time point for all families. Consistency is generally low, and no significant trends were obtained.

To assess our second prediction – that homesigners would be more consistent than their partners – we conducted two kinds of analyses. In the first, we conducted paired samples t -tests between each homesigner and each of their partners. For Type-Token, 8 of 9 paired samples t -tests were not significant (p 's $>.05$). The only significant result revealed a partner (a friend of HS1) who had a lower Type-Token ratio than Homesigner 1, ($p < .005$), indicating the friend's greater consistency, which is the opposite direction than expected. Similarly, on Mode, 6 of 9 paired samples t -tests were not significant ($p > .05$). Two of the three significant t -tests revealed that HS2 had higher Mode's than his brother and sister (reflecting greater consistency in HS2, $p < .05$ and $p < .005$, respectively), while the third revealed that HS1 had a lower Mode than his friend (reflecting lower consistency in HS1, $p < .05$). In our second analysis, we tested whether more partners were less consistent than their corresponding homesigners than would be expected by chance. Only 4 of 9 partners had higher Type-Token ratios than their corresponding homesigner (Exact Binomial Test, $p >.75$), and only 6 of 9 partners had lower Modes than their corresponding homesigner ($p > .25$). Thus, almost entirely across the board, results failed to support the prediction that homesigners would be more self-consistent than their partners.

4 Discussion

In this study, we investigated the emergence of lexicons among four deaf Nicaraguan homesigners and their hearing family members and friends. We first focused on consistency of form-meaning mappings, both within users across time, and across users at a time point. First, for all groups and time points, consistency among individuals was never close to ceiling (1.0) on the Mode measure of consistency (there is no ceiling on Type-Token). Further, for all groups, we found no reliable trends over time towards increasing consistency of form-meaning mappings among users, by either measure of consistency (Type/Token ratio and Mode). Similarly, neither homesigners nor their partners were at ceiling on Mode. In addition, we found that homesigners and their partners did not differ reliably in consistency, by either of these measures. In contrast, we found that homesigners' lexicons very reliably contain more clarity/less ease than their partners'. Below we discuss these findings and their limitations, as well as our current directions.

As stated above, ceiling levels of consistency were not found within individuals or groups, nor did groups increase in their consistency over time. We thus have not found positive evidence that these Nicaraguan homesigning systems have or are in the process of constructing lexicons like those of natural languages. If this null result is not a false negative (and we are circumspect in interpreting a null result), this lack of a feature of natural languages in homesign systems would contrast with the many natural language properties found by previous studies (Goldin-Meadow, 2003; Coppola & Newport, 2005; Coppola & Senghas, 2010). Why might homesign systems have this gap in their linguistic richness? Besides the possibility that our measures and/or materials are insensitive (an issue we return to later in this section), we have a more theoretical two-part answer. The first part of the answer is simple: while features of language found in homesign (e.g. grammatical subject; Coppola & Newport, 2005) might be resilient to variations in linguistic input, form-meaning mappings obviously must be learned from the language input, or created *de novo*. Why might homesigners and their partners *not* conventionalize such mappings, then? Our best answer lies in the highly asymmetric communicative pressures facing homesigners and their partners alluded to in the introduction. While the homesigner is under great pressure to invent a system (they have no other way to communicate their needs), hearing communication partners are not—they can use their spoken language to communicate with almost everyone. This contrasts with the situation and findings on Amami island, where many Deaf people interact with each other, leading to high and symmetric communicative pressure to communicate via signing, which in turn leads to consistency in form-meaning mappings (Osugi et al., 1999).

We have less certainty of what might account for our lack of a difference between homesigners and their communication partners in measures of consistency. We expected that, if homesigners are driving creation of the lexicon of the homesign system, homesigners' form-meaning mappings should be more consistent than that of their partners. We did not find this result. This contrasts with suggestive positive evidence that homesigners drive other innovations of homesign structure (e.g. argument structure, Carrigan & Coppola, 2012). But why do our results contrast with those of Goldin-Meadow et al. (1994), who found that the child homesigner David was more internally consistent than his mother? One explanation is that, in accordance with the above, the homesign system(s) simply do not have and are not creating lexicons, and thus there is no “leading the innovation” for homesigners (or partners) to do. A second possibility concerns cultural differences. In general, Nicaragua is a “gesture-friendly” culture, and specifically, hearing parents of deaf children in Nicaragua gesture more with their deaf children than do hearing parents in America (Coppola, Mylander & Goldin-Meadow, 2006). David's mother thus may have made less of an effort to form a self-consistent lexicon (or a lexicon consistent with David, for that matter). A third possibility is that, assuming the Nicaraguan homesigning systems *do* have a lexicon (and that we failed to detect ceiling or increasing consistency effects), the homesigners *did* drive their formation, but that communication partners have *caught up* to them. The Nicaraguan communication partners have had many years (decades, even) to do so, in contrast to David's mother, who had only observed David's signing for two years during and prior to testing.

We believe asymmetry in communicative pressures also explains our main finding, that homesigners' lexicons contain less ease but greater clarity than do their partners' lexicons. Recall that lexicons face competing pressures for clarity and ease (in learning,

storage, and retrieval). Thus, while communication partners can almost always communicate with (and convey their needs with) their spoken language, they are not under such pressure to be clear with the homesign system. This contrasts with the situation facing homesigners, who can only communicate with their homesign system, and thus understandably will try to be clearer using their gestures, despite the increased costs in ease. As suggestive as this finding regarding lexicon ease/clarity is, these data only speak to how clear the systems are in principle. That is, we do not know whether these increases in clarity-in-principle translate to actual increases in real-life comprehension. To assess this, we recently collected data on homesigners' and communication partners' comprehension of each other's lexical productions. These data will enable us to *i*) determine whether clarity-in-principle is related to actual comprehension, and *ii*) determine whether homesigners' systems are, overall, more efficient (by combining comprehension scores with our measure of clarity/ease).

As rich as our dataset and analyses are compared to other investigations of homesign lexicons, the current study's methodology was nevertheless limited. First, it is possible that the gestures we collected do not reflect participants' standard gestures for the objects/concepts we showed them (i.e., participants might be making up signs on the spot). The current data do not allow us to test this, but running our task on people not familiar with the homesigners or their families would: if homesigners and their families were more consistent with each other than with strangers, then that would be evidence for true conventions among the families themselves. Second, we assessed consistency across entire family groups, rather than within pairs of individuals. Perhaps there is no convergence among the entire group, but rather between homesigners and particular individuals; we are currently investigating this possibility. Third, while we used two measures of consistency that each captured different aspects of the consistency present in multi-gesture responses, it was not clear how they could be combined for a single, comprehensive measure of consistency. We are currently developing such a comprehensive measure. Fourth, as is readily apparent from the stimuli in the appendix, the images are not well-controlled. Some are simply not clear representations of the target object/concept (e.g. 'cold'). Others contain additional objects besides the target object/concept (e.g. the image for 'boy' has a very salient but irrelevant cummerbund). In addition, there is nothing in the stimulus set or in the procedure to constrain participants' responses to the desired level of category hierarchy. For example, when responding to the image for 'dog', there is nothing to prevent participants from providing their form for superordinate ('animal') or subordinate (e.g. 'beagle') level categories, rather than the intended basic level category ('dog'). Similarly, there is nothing in the stimuli or procedure to prevent participants from simply *describing* the image, rather than giving their (compound) *word/sign* for the image, nor can we apply the typical tests to participants' productions to differentiate descriptive phrases from compounds (Meir et al., 2010). We recently piloted new stimuli that addressed all these issues. In these stimuli, all images are photographs of *objects* (no concepts or properties). In addition, each object type is represented in the stimulus item by three *tokens* of that object. This helps constrain participants' responses to the desired level of category structure (Tenenbaum & Xu, 2007), and makes participants less apt to describe individual objects.

5 Conclusion

In sum, we found that homesigners and their families did not possess maximally consistent form-meaning mappings—within individuals or across groups—nor did we

detect increasing consistency in form-meaning mappings among groups. We tentatively interpret this null result as evidence that lexicon creation requires a community, or at least multiple individuals, who face high and equal pressure to use an emerging communication system. Similarly, we found no evidence that homesigners were more consistent than their partners in their form-meaning mappings. There are many possible reasons for this null result, so we are more circumspect in interpreting it. Last, we found that homesigners' lexicons contained greater clarity/less ease (at least in principle; we are currently investigating whether this translates to greater comprehension in practice). We interpret this finding as evidence that communicative pressure plays another role in shaping the lexicon—greater communicative pressure tilts the clarity/ease balance toward greater clarity at the cost of ease.

These findings are thus a step toward filling the gap in what we know about the emergence of language in general, and about the emergence of lexicons in particular. We built on prior investigations of homesign lexicons (Osugi et al., 1999; Goldin-Meadow et al., 1994), in terms of richness of research questions—in particular, the previously uninvestigated issue of lexicon efficiency—data, and analyses. Future work will refine and expand upon these findings using improved materials and analytic techniques.

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Appendix

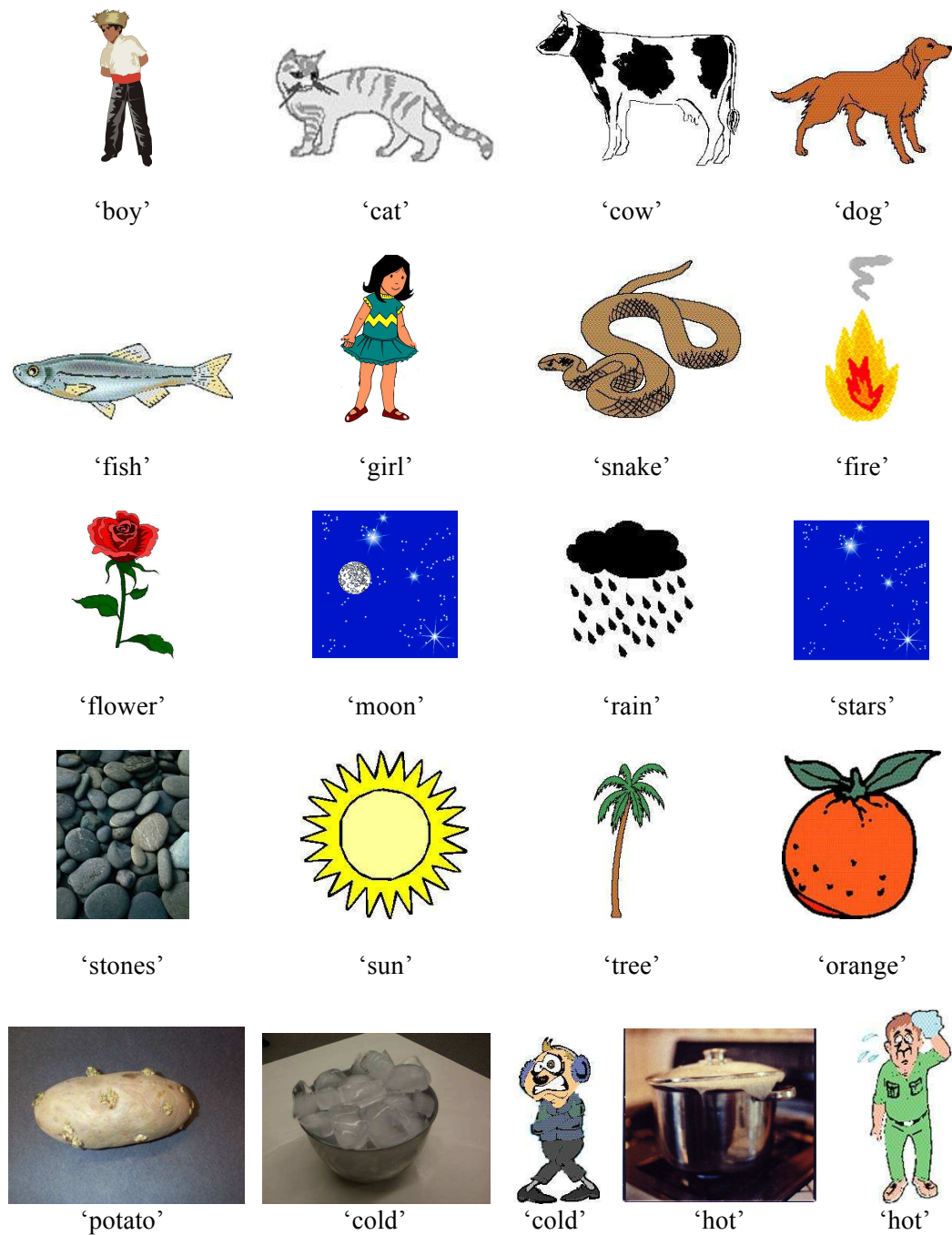


Figure. Stimulus items in order of presentation. Items were presented individually.