

Indexicals under role shift in Sign Language of the Netherlands: experimental insights

David Blunier (University of Geneva)

Evgeniia Khristoforova (University of Amsterdam)

Introduction. In order to report speech and other attitudes, sign languages (SLs) make use of a dedicated construction known as role shift (RS), in which the signer embodies the matrix attitude holder to report the content of the original utterance by using a complex of non-manual markers (RS-NMMs) such as eye gaze shifts, body leans, and head turns. These constructions famously exhibit total or partial shifting of indexicals, where the meaning of expressions such as *I* and *you* is ‘shifted’ from the context of utterance to the reported context [1, 2]. This is exemplified in (1) for the SL of the Netherlands (NGT), where RS-NMMs are noted above the glosses, with underscore marking scope:

- (1) IX₃ SAY QUICK ^{gaze, head and body left} IX₁ DISABLE [NGT corpus, [3]]
‘He_i said straight away: “I_i am disabled”.’

A popular analysis in the formal semantics literature treats RS-NMMs as realizing a context-shifting operator, analogous to the one proposed for the indexical shift in spoken languages [4, 5]. However, previous studies suggest that this might be too strong a conclusion. First, indexicals can fail to shift even when under the scope of RS-NMMs, as demonstrated in (2) for German SL (DGS), where the second person indexical IX₂ denotes the actual addressee:

- (2) a. Felicia: IX₁ DREAM ANNA IX₃ LOTTO WIN [DGS, [6]: (28)]
‘I have dreamed that Anna won the lottery.’
b. Tim reports to Anna: FELICIA ₃INFORM₁ ^{rs}IX₁ DREAM IX₂ LOTTO WIN
‘Felicia_i told me_T, she_i dreamed that you_A won the lottery.’

Second, while the presence of RS-NMMs seems not to force a shifted interpretation upon indexicals, the reverse seems also true: RS-NMMs might not be required for indexicals to shift, as data from Russian SL (RSL, [7]) and Hong-Kong SL (HKSL, [8]) suggests. Such results are hard to accommodate under current context-shifting theories, and suggest that RS-NMMs are neither necessary nor sufficient for the interpretation of indexicals. This raises the following questions: i) what is the semantic status of RS-NMMs? and ii) are there any constraints on the way indexical expressions in structures such as (2) are interpreted and if yes, what are they? The present study aims at answering these questions, focusing on NGT.

Methodology. An experiment combining interpretation tasks and felicity judgments (5-point Likert scale) was carried out to investigate the interaction between RS-NMMs and indexical shift. 13 native NGT signers (26-58 y.o.; 2 males) participated, each being presented with multiple sets of video-recorded pairs of signed dialogues. In each pair, the first video consisted of a dialogue between two signers, T. and C. (3a, 4a), and the second one, involving two different signers M. and J., consisted in M. reporting T’s utterance (3b, 4b). They were three different conditions: (i) the type of indexical involved (IX₁ in (3), IX₂ in (4)), (ii) presence vs absence of RS-NMMs, and (iii) the original quote (3a, 4a) being presented or left out.

- (3) a. IX₁ LOVE CYCLING (4) a. IX₂ SIGN VERY.WELL T. to C.
‘I love cycling.’ ‘You sign very well!’
b. T. SAY IX₁ LOVE CYCLING b. T. SAY IX₂ SIGN VERY.WELL M. to J.
‘T. said I love cycling.’ ‘T. said you sign very well!’

Each participant saw each combination of conditions (i-iii) in three different lexical variants, hence 24 stimuli + fillers. For each stimulus, participants first assessed the felicity of the report, then had to provide an interpretation for the indexical by choosing among the list of potential signers T., M., C. or J. Multiple choices were allowed.

Results. There was considerable variation across participants, whose responses formed three different clusters. Cluster 1 (5 participants) always interpreted IX₁ as being shifted, i.e., referring to the original author, T. For these, RS-NMMs did not influence the reference for IX₁. However, RS-NMMs did play a role in interpreting IX₂: if present, RS-NMMs elicited a shifted interpretation of IX₂, i.e., referring to the original addressee, C. Otherwise, IX₂ was interpreted

as non-shifted., referring to the reported addressee, J. Cluster 2 (3 participants) exhibited a different response pattern, interpreting both indexicals as shifted in all of the conditions. Last, cluster 3 (5 participants) interpreted IX_1 as being unshifted or ambiguous irrespective of RS-NMMs. When asked to produce sentences with a shifted meaning, cluster 3 produced sentences involving a null form \emptyset or a reflexive SELF. For all clusters, the presence of the context never influenced interpretation of indexicals, but did affect felicity scores: if interpretation clashed with the original utterance context, the respective mean score was significantly lower.

Analysis: IX_1 . The fact that signers from clusters 1 and 2 systematically interpreted IX_1 as shifted suggests that it might in fact be a logophoric pronoun similar to those found in some African languages, as first suggested by [9]: we therefore propose that IX_1 is the morphological spellout of a feature LOG (5), with the corresponding presuppositional semantics in (6) [10]:

$$(5) /IX_1/ \leftrightarrow [\text{LOG}, \text{SG}] \quad (6) \llbracket \text{LOG} \rrbracket^{g,c,i} = \lambda x : s(c) \vee s(i) \sqsubseteq x.x$$

Since the LOG feature presuppositionally restricts its referent to the author of any context (not just the utterance context), the entry in (6) also captures impersonal uses of IX_1 found in some SLs, as well as bound readings under universal quantifiers in other SLs [11]. However, data from cluster 3 poses a challenge for such an analysis. Following what has been proposed for American SL [12], we suggest to capture variation by assuming that NGT makes use of a scale of competing anaphoric expressions, where an efficiency algorithm analogous to Grice’s brevity maxim [13] enforces the use of the lowest element in the scale allowing for the identification of a unique referent in discourse compatible with its denotation, (7):

$$(7) \emptyset < \text{SELF} < IX_1$$

In speech reports environments, (7) predicts that signers will prefer using the null form to refer to the reported speaker, capturing pre-theoretical insights from Cluster 3, in line with similar HKSL data [8]. The data from clusters 1 and 2 is explained by positing that they considered both the presented stimuli and their alternatives when computing examples such as (3) (cf. [14] for analogous conclusions about the processing of focus particles).

Analysis: IX_2 . The interpretation of IX_2 in speech reports, contrary to IX_1 , seems highly sensitive to RS-NMMs, as well as to contextual information; RS-marked sentences were perceived as odd when the referents of indexicals did not match those of the original context. We propose that RS-NMMs realize a presuppositional version of the context-shifting operator *RS-OP* ([5]) that presuppose shifting the kaplanian parameters of the utterance context to the reported context, including the addressee parameter:

$$(8) \llbracket \text{RS-}\delta \phi \rrbracket^{g,c,i} = 1 \text{ iff } \llbracket \phi \rrbracket^{g,i,i}, \# \text{ otherwise.}$$

The operator does not affect reference for IX_1 , since per (6) it is compatible with any context; however, the referent of IX_2 in its scope is presupposed to refer to the original addressee; the sentence is therefore predicted to be perceived as infelicitous when addressees do not match, as in (4b). When no RS-NMMs are realized, signers can accommodate a silent version of RS- δ in order to interpret contexts as homogeneous, i.e., where both signer and addressee indexicals are shifted. Further data, elicited from 3 participants, seems to confirm this: signers tend to interpret IX_2 as shifted when the a discourse referent corresponding to the shifted addressee is realized as an argument of the matrix sentence, even in the absence of RS-NMMs:

$$(9) \text{ T. SAY C. } IX_2 \text{ SIGN VERY.WELL} \quad \text{M. to J.} \\ \text{'T. said to C.}_i \text{ you}_i/*_J \text{ sign very well!}'$$

1. L. A. Friedman, “Space, time, and person reference in american sign language,” *Language*, pp. 940–961, 1975. 2. R. P. Meier, “Person deixis in american sign language,” in *Theoretical Issues in Sign Language Research, Volume 1: Linguistics* (P. S. Susan D. Fischer, ed.), vol. 1, pp. 175–190, The University of Chicago Press, 1990. 3. O. A. Crasborn and I. Zwitserlood, “The corpus ngt: an online corpus for professionals and laymen,” in *Proceedings of the 3rd Workshop on the Representation and Processing of Sign Languages*, Paris: ELRA, 2008. 4. J. Quer, “Context shift and indexical variables in sign languages,” in *Semantics and linguistic theory*, vol. 15, pp. 152–168, 2005. 5. P. Schlenker, “Super monsters I: Attitude and action role shift in sign language,” *Semantics and Pragmatics*, vol. 10, 2017. 6. A. Hübl, E. Maier, and M. Steinbach, “To shift or not to shift: Quotation and attraction in dgs,” *Sign Language & Linguistics*, vol. 22, no. 2, pp. 171–209, 2019. 7. V. Kimmelman and E. Khristoforova, “Quotation in russian sign language: insights from corpus and elicitation,” in *Proceedings of FEAST*, pp. 93–102, 2018. 8. L. E. Gan, “Shifted indexicals in hong kong sign language with (-out) role shift,” *Proceedings of FEAST*, vol. 4, pp. 74–86, 2021. 9. D. Lillo-Martin, “The point of view predicate in american sign language,” in *Language, Gesture, and Space* (K. Emmorey and J. Reilly, eds.), pp. 155–170, Lawrence Erlbaum Associates, Inc., 1995. 10. R. Cooper, *Quantification and syntactic theory*, vol. 21. Springer Science & Business Media, 1983. 11. G. Barberà and J. Quer, “Impersonal reference in catalan sign language (lsc),” *Sign language research, uses and practices: Crossing views on theoretical and applied sign language linguistics*, pp. 237–258, 2013. 12. D. Ahn, *THAT thesis: A*

competition mechanism for anaphoric expressions. PhD thesis, Harvard University, 2019. 13. M.-C. Meyer, *Ignorance and grammar*. PhD thesis, Massachusetts Institute of Technology, 2013. 14. C. S. Kim, C. Gunlogson, M. K. Tanenhaus, and J. T. Runner, "Context-driven expectations about focus alternatives," *Cognition*, vol. 139, pp. 28–49, 2015.