A closer look at anaphoric expressions in ASL

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As in many sign languages, in American Sign Language (ASL), an indexical handshape (IX) can be used to point to an abstract locus in the signing space to anaphorically refer to an antecedent (cf. Neidle et al. 2000, Koulidobrova & Lillo-Martin 2016), leading some researchers to analyzing IX as a pronoun (Lillo-Martin et al. 1990; MacLaughlin 1997), a definite determiner (MacLaughlin 1997; Neidle et al. 2000), or a demonstrative (Koulidobrova & Lillo-Martin 2016). While previous accounts have focused on syntactic and semantic analyses of IX, often overlooked in formal studies is that there are other expressions possible in ASL anaphora. Corpus studies show that null arguments are also common in ASL (Czubek 2017; Frederiksen & Mayberry 2016).

In this paper, we present data on different anaphoric expressions possible in ASL, and present a semantic account of null arguments and two different kinds of IX. While previous accounts have treated IX as one lexical category, we propose that IX must be semantically distinguished between its neutral use ($IX_{neutral}$) and the locus use (IX_{locus}): $IX_{neutral}$ is analyzed similar to a pronoun returning a uniquely salient entity, while IX_{locus} requires a contrast with other entities, similar to a demonstrative in spoken languages. This finer distinction allows us to resolve conflicting overlaps in previous analyses of IX and bridge the gap between formal semantic accounts and corpus-based studies.

Methodology: The sentences/short discourses we report were presented to consultants by a deaf, signing member of our research team, one sentence/discourse at a time. Consultants provided acceptability judgments immediately after each one, and then later signed the set of acceptable sentences. This approach allowed us to control factors of interest. The three consultants were all deaf, native signers of ASL.

Anaphoric expressions in ASL. IX to a locus is not always necessary or felicitous in anaphoric contexts. In line with corpus studies, we show that when there is only one uniquely salient entity, null arguments are actually preferred over IX_{locus}. We confirmed this with sentences containing null anaphora as in (1).

(1)   a.   BOY ENTER CLUB. MUSIC ON. DANCE.
            'A boy$_i$ entered a club. Music came on. He$_i$ danced.'
        b.   GIRL BUY BOOK. HAPPY.
            'A girl$_i$ bought a book. She$_i$ was happy.'

IX_{locus} only appeared in the consultation when a clear contrast is created with multiple referents, as in (2). However, a different IX form, IX to a neutral position ($IX_{neutral}$), was produced in contexts without contrast. $IX_{neutral}$ points in the neutral signing position, without a specific locus established and associated with a referent (see Koulidobrova & Lillo-Martin 2016). We further observed that $IX_{neutral}$ distinguishes between forward and downward pointing, marking animacy: $IX_{neutral}$ points forward ($IX_{forward}$) for animate referents as shown in (3) and downward (IX_{down}) for inanimate referents, as shown in (4).

(2)   BOY IX_A ENTER CLUB. SEE GIRL IX_B READ. IX_A HELP IX_B.
    'A boy$_i$ entered a club. He$_i$ saw a girl$_j$ read. He$_i$ helped her$_j$.'

(3)   GIRL BUY BOOK. $IX_{forward}$ HAPPY.
    'A girl$_i$ bought a book$_j$. She$_i$/*it$_j$ was happy.'

(4)   GIRL BUY BOOK. IX$_{\text{down}}$ ABOUT PIRATES.
       'A girl$_i$ bought a book$_j$. It$_j$/*she$_i$ was about pirates.'

Thus, what we see is that IX$_{\text{neutral}}$ and IX$_{\text{locus}}$ have different distributions: IX$_{\text{neutral}}$ is felicitous when there is a unique salient entity, while IX$_{\text{locus}}$ requires contrast. This difference in distribution that tracks with the saliency of the referent is not predicted by previous accounts of neutral IX which focus on the grammatical aspects of the expression (Kuhn 2015; Steinbach & Onea 2015), or detectable from corpus-based studies which did not focus on different kinds of IX or consider the presence of competing referents as a measure (Czubek 2017). We propose a semantic account in which anaphoric expressions differ in the amount of information they carry, and the choice of an expression depends on a general economy principle that chooses the least redundant form that can successfully resolve the referent in a given context.

   We propose that anaphoric expressions in ASL are organized as in (5). The null argument carries no restriction and thus returns the maximal entity in a given context (6a). IX$_{\text{neutral}}$ adds an additional restriction on animacy (represented as $\phi(x)$, animate for IX$_{\text{forward}}$ and inanimate for IX$_{\text{down}}$ (6b)). Finally, IX$_{\text{locus}}$ returns the unique entity that also meets the restriction of the locus information 'at-A' (6c). This 'at-A' modifier has a similar role as the relative clause that demonstratives combine with in phrases like 'those who read'. Just like the relative clause 'who read' defines the referent of that expression, IX to locus A defines the referent as that entity that the signer assigned at A. Once this assignment has been made, further pointing to this locus resolves that referent unambiguously.

(5)   { ∅, IX$_{\text{neutral}}$, IX$_{\text{locus}}$ }

(6)   a. $[\![∅]\!] = \iota x$: entity(x)
       b. $[\![\text{IX}_{\text{neutral}}]\!] = \iota x$: entity(x) $\wedge$ $\phi(x)$
       c. $[\![\text{IX}_A]\!] = \iota x$: entity(x) $\wedge$ at-A(x)

   With a general economy principle that chooses the least redundant form that can resolve the referent in a given context, we can derive the requirement of contrast for IX$_{\text{locus}}$. In contexts with a unique salient referent like (1), the null argument is sufficient in resolving the anaphora. The use of IX with loci would suggest that the the null argument or the IX$_{\text{neutral}}$ would not successfully resolve the referent, which in turn implies that there is more than one salient entity in the narrative.

   Thus in this paper, we propose a finer distinction in the semantic analysis of ASL anaphoric expressions. Including the null argument into the picture, as well as the distinction between IX$_{\text{neutral}}$ and IX$_{\text{locus}}$ allows us to derive the patterns we see in corpus-based studies semantically. This analysis has implications on previous analyses of loci in formal semantics, which focused on whether loci are more similar to *phi*-features (Neidle et al. 2000, Kuhn 2015) or variables in a dynamic semantic system (Lillo-Martin et al. 1990, Schlenker 2011, Steinbach & Onea 2015). That loci are not obligatory in all contexts of ASL and trigger contrast suggests that the primary role of loci might be in distinguishing the intended referent from a set of other competing referents, rather than in anaphorically referring to that referent which is possible with other anaphoric expressions as well.

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