2 Reference tracking

Summary

2.1 Pronouns. – 2.2 Other means.

In the following sections, anaphoric pronouns will be described in relation to their properties [PRAGMATICS 2.1]. Anaphoric pronouns are linguistic elements which express co-reference with a previously mentioned item. However, co-referentiality can also be expressed by means of verbal agreement [PRAGMATICS 2.2.1], classifiers handshapes [PRAGMATICS 2.2.2], and buoys [PRAGMATICS 2.2.3].

2.1 Pronouns

Pronouns are linguistic elements which can express co-reference [LEXICON 3.7]. Co-reference occurs when two or more expressions refer to the same entity. Co-referential elements are usually composed of a full form, namely the antecedent, such as a noun, and an abbreviated form, which is the anaphoric element, for example a pronoun. Indeed, pronominal expressions are the main means of expressing co-reference in LIS. Referents are associated with certain areas in signing space, called referential loci. Pointing to a specific area in space activates the referents associated with this area. For instance, in the sentence below the referent bear is associated with locus a. Several sentences later, the signer can use the same locus a in order to refer back to the bear.
LIS seems to distinguish between different types of pronouns: reflexive pronouns, personal pronouns, possessive pronoun, the anaphoric pronoun pe and logophoric pronouns \([\text{LEXICON 3.7}]\). In LIS, the differences between the types of pronouns can decide which kind of co-referentiality they bear. Specifically, reflexive pronouns appear to express co-reference between discourse referents within one clause. Other types of pronouns, like personal pronouns and possessive pronouns, behave differently and can express co-reference with discourse referents also outside the boundaries of the clause where they are placed, or in a non-local domain.

As for reflexive pronouns, in the example below the two co-referential elements are the noun phrase \(\text{maria}\) and the reflexive pronoun \(\text{self}\). Since the meaning of \(\text{self}\) depends on the meaning of \(\text{maria}\), we will say that \(\text{self}\) is bound by \(\text{maria}\).

\[
\begin{align*}
\text{MARIA} & \text{ LOVE SELF} \\
& \text{‘Maria loves himself.’}
\end{align*}
\]

The sign \(\text{self}\) can also be used in other contexts as an emphatic form of intensification, as shown in the example below. In cases like this, \(\text{self}\) is not really used to refer back to the personal pronoun ‘I’ (ix,), but to communicate the idea of performing the action in an independent way.

\[
\begin{align*}
\text{IX,} & \text{ PAY SELF} \\
& \text{‘I have paid by myself.’}
\end{align*}
\]

As said before, reflexive pronouns must take their antecedent in their clause, a local context. Another example of a reflexive pronoun locally bound by its antecedent is presented below, where the reflexive pronoun \(\text{self}\) can only refer to the proper name \(\text{maria}\).

\[
\begin{align*}
\text{GIANNI REPORT MARIA} & \text{ IX, LOVE ONLY SELF} \\
& \text{‘Gianni said that Maria loves only herself.’}
\end{align*}
\]

There are situations when co-reference can also occur between a quantifier \([\text{LEXICON 3.10.2}]\) and an anaphoric pronoun, such as in the examples below. In this case, since the reflexive pronoun \(\text{self}\) refers to the quantifier expression \(\text{young each}\), the reflexive pronoun is semantically bound by the quantifier, and not simply co-referential with it. This special relation is defined ‘semantically bound’. Indeed, since the expression \(\text{young each}\) is a quantifier, it is not possible to say that \(\text{young each}\) has a specific referential pronoun.
As anticipated before, other types of pronouns are personal pronouns and possessive pronouns. Unlike reflexive pronouns, personal and possessive pronouns behave differently. They seem to express co-reference with discourse referents which are not contained into the boundaries of the clause or into their local domain. As for personal pronouns, they are usually expressed by pointing signs, or by other means which will be discussed in the following paragraphs. An example of personal pronoun is shown below, where the third person pronoun \textit{ix$_{3b}$} refers to an entity which is not locally expressed. This is the reason why \textit{marco} and \textit{ix$_{3b}$} are not co-indexed. Different entities which are not co-referential are indicated in the glosses with different indices, in this case with \textit{a} and \textit{b} respectively. In LIS, non-coreferential items are realised in different loci of the signing space.

\textit{marco}$_{a}$ \textit{ix$_{3b}$} \textit{help}$_{3b}$

‘Marco helps her.’

As shown above, in LIS co-referentiality is spatially expressed. Co-referential elements are localised in the same area (as \textit{gianni} and the personal pronoun \textit{ix$_{3}$} in the example below). Furthermore, the anaphoric element (which in the example below is the pronouns \textit{ix$_{3}$}) can be expressed through pointing in the same area of the antecedent (in this case \textit{gianni}), as in the example below. Unlike spoken languages, sign languages can resort to this spatial strategy of co-referentiality to avoid any ambiguous interpretation.

\textit{gianni}$_{a}$ \textit{piero}$_{b}$ \textit{see}$_{b}$, \textit{ix$_{3a}$} \textit{house go away}$

‘Gianni saw Piero. Then he went home.’

The personal pronoun \textit{ix$_{3}$} clearly refers back to Gianni and not to Piero, because it is realised in the same locus of the signing space of Gianni, indicated with \textit{a} in the example above.

However, this explicit co-reference can be avoided, if there is overt verbal agreement, as in the example below. Here, the co-reference with \textit{lucia} is yielded by the agreement of the verb \textit{hate}, which is a directional verb. These cases will be further discussed in the next section.

\textit{lucia}$_{a}$ \textit{marco}$_{b}$ \textit{ix$_{b}$} \textit{love}$_{b}$, \textit{ix$_{3b}$} \textit{hate}$_{a}$

‘Lucia loves Marco. He hates her.’
Possessive pronouns, like personal pronouns, in LIS also refer to entities which are not expressed in their local domain or within the boundaries of the clause. This case is shown in the example below, where the possessive pronoun $\text{poss}_3$ (realised with the handshape unspread 5) refers to the proper noun $\text{gianni}$, because both (the antecedent $\text{gianni}$ and the possessive pronoun $\text{poss}_3$) are articulated in the same referential locus, namely the signing space $a$.

\[
\text{gianni}_a \text{ know } \text{mario}_b \text{ ix}_b \text{ like love } \text{cat } \text{poss(5)}_3a
\]

‘Gianni knows that Mario loves his (Gianni’s) cat.’

Variant forms of the possessive pronoun above are the forms realised with handshape G and wrist pivoting from radial to ulnar, as in (a), or without wrist rotation, as in (b).

a. \[
\text{gianni}_a \text{ know } \text{ix}_b \text{ mario}_b \text{ love like cat } \text{poss(g)}\text{[pivoting]}_3a
\]

‘Gianni knows that Mario loves his (Gianni’s) cat.’

b. \[
\text{gianni}_a \text{ know } \text{ix}_b \text{ mario}_b \text{ love like cat } \text{poss(g)}\text{[non-pivoting]}_3a
\]

‘Gianni knows that Mario loves his (Gianni’s) cat.’

Other tests exist to illustrate the difference between possessive and reflexive pronouns, one of these tests is the ellipsis of the verbal phrase [SYNTAX 2.5], as shown in the sentences below. In the example below, the unpronounced reflexive pronoun in the clause with ellipsis ($\text{self}$) can only refer to the nearest antecedent ($\text{gianni}$). The sentence means: ‘Maria loves herself and Gianni loves himself’.

\[
\text{maria}_a \text{ love self. gianni}_b \text{ identical}
\]

‘Maria loves herself, Gianni does so too.’

By contrast, the possessive pronoun, shown below, is more flexible in its interpretation since the unpronounced possessive pronoun ($\text{poss}_3$) in the clause with ellipsis (IDENTICAL) can refer either to $\text{maria}$, or to $\text{gianni}$, even if $\text{gianni}$ is the closest antecedent. Thus, the sentence can have two meanings reported below.

\[
\text{maria}_a \text{ cat } \text{poss}_3a \text{ love }_a \text{ ix}_b \text{ gianni}_b \text{ identical}
\]

‘Maria loves her cat, Gianni does too (love her cat).’

‘Maria loves her cat, Gianni does too (love his cat).’

A specific case of anaphoric pronoun in LIS is represented by $\text{pe}$ [LEXICON 3.7] and [SYNTAX 3.4.2.1]. $\text{pe}$ is a pointer to the noun which is modified by a relative clause, as in the example below.
Finally, an interesting case of co-referentiality in LIS concerns the logophoricity of first personal and possessive pronouns under role shift [LEXICON 3.7.2.7]; [PRAGMATICS 6]. In LIS, after a character has been introduced, the signer can assume the point of view of this character, for example by moving his/her body towards the position in space associated to that character. In these cases, even though the signer points to himself, curiously, the pronoun co-refers with the previously introduced character, and it does not refer to the real signer anymore. The use of first personal pronoun i_out, which is signed in combination with the use of role shift is shown in the example below.

\[ \text{IX}_1 \text{Maria know intelligent} \]

‘Maria knows that she is smart.’

In the example above, the point of view of the referent Maria is assumed by the signer, through role shift. Therefore, the first personal pronoun i_out does not refer to the signer anymore, but it refers to Maria. The crucial element in the case of role shift is that the signer loses eye contact with the addressee.

### 2.2 Other means

Although pronouns are the most frequent co-referential element in LIS, they are not the only ones. In fact, other morphosyntactic strategies exist in order to track back referents, such as spatial agreement, classifier handshapes and buoys.

#### 2.2.1 Agreement

The signing space can be used arbitrarily in order to place referents within the discourse. Some verbs, changing direction or movement, agree with the loci associated with their arguments. Indeed, spatial verbal agreement [MORPHOLOGY 3.1] is used as a co-referential mean. Often, the antecedent is previously realised in a specific point of the signing space, therefore overt co-referential elements can be omitted in the following sentences without giving rise to ambiguity. The
example below shows a case of spatial verbal agreement used without explicit anaphoric forms.

\[ \text{LUCA}_a \text{ CL(flat closed 5): ‘be\_at\_a’ GIOVANNI}_b \text{ CL(flat closed 5): ‘be\_at\_b’;} \]
\[ \text{BOOK RED}_b \text{ CL(flat open 5): ‘give\_book’;} \]
\[ ‘\text{He (Giovanni) gives him (Luca) a red book.’} \]

Sometimes, spatial verbs [LEXICON 3.2.3] agree with topographic locations instead of arguments. The topographic use of space iconically expresses the spatial relation among referents like in the example below, where the classifier predicate CL(closed 5): ‘open\_door’ is directed towards the door.

\[ \text{CL(closed 5): ‘open\_door’ PALM\_UP} \]
\[ ‘\text{Open it (the door)!’} \]

In the sentence above, the verb is signed in the direction of the door, but neither the linguistic expression \text{DOOR}, nor an overt linguistic realisation of the referent has ever been mentioned by the signer. As in verbal agreement, spatial verbs are still cases of reference tracking where the co-reference of topographic locations is realised through spatial agreement.

### 2.2.2 Classifier handshapes

In classifier predicates [MORPHOLOGY 5.1] the handshape classifier can help in retrieving the antecedent. In fact, these classifiers can identify a class of objects by representing iconically the properties of the entity they describe, such as shape, size or the way in which they are handled. Frequently, the use of classifiers is enough and no other referential means, such as pronouns, are needed in order to disambiguate their referents.

The sentence below shows an example of these specific uses of classifiers. First, the sign \text{CAT} and \text{PERSON++} are introduced. Then, the cat walks around, but the repetition of the sign \text{CAT} is not necessary anymore. Indeed, the classifier CL(flat closed 5): ‘cat\_walk’ is enough to track back the reference of the cat.

\[ \text{CAT}\_a \text{ HUNGER STRONG PERSON++ BARE. CL(flat closed 5): ‘cat\_walk’} \]
\[ \text{FOOD LOOK\_FOR} \]
\[ ‘\text{The cat is very hungry. There is nobody around. He walks around looking for some food.’} \]
The most commonly used types of predicative classifiers are entity classifiers [MORPHOLOGY 5.1.1], body part classifiers [MORPHOLOGY 5.1.2] and handle classifiers [MORPHOLOGY 5.1.3]. On the other hand, Size and Shape Specifiers (SASS) [MORPHOLOGY 5.2] are not used for reference tracking.

2.2.3 Buoys

In a discourse, signers can hold the handshape of a sign with the non-dominant hand, while the dominant hand continues to sign independently. This phenomenon is called weak hand holds and it can have two different functions. One concerns the discourse level, where the non-dominant hand simply expresses discourse relations, while in other cases the information held with the non-dominant hand still represents a co-referential meaning: these latter cases are called buoys [LEXICON 1.2.3].

In LIS, several types of buoys can be identified: list buoys, pointer buoys, theme buoys and fragment buoys.

List buoys are the outstretched fingers which function to track a certain number of referents. Each finger ensures a co-referential link to the discourse referents, as in the example below, where the signer refers to his fingers to keep track of his brothers in the discourse.

\[
\text{dom: } \text{IX}_1 \text{ BROTHER THREE EXIST IX} \text{[thumb] LAWYER IX} \text{[index] DOCTOR IX [middle] TEACHER}
\]

\[
\text{n-dom: BROTHER THREE}
\]

\[
\text{I have three brothers, the first is a doctor, the second a lawyer, and the third a teacher.}
\]

The signer may also point to the fingers with the dominant hand in order to retrieve that specific co-referent.

Pointer buoys are pronominal elements realised by the non-dominant hand. These buoys are very similar to pointing pronouns, but they are articulated simultaneously to the other signs. The example below shows this phenomenon.

\[
\text{dom: BEAR IX}_{3b} \text{ MEAN IX}_{3b}
\]

\[
\text{n-dom: SEE IX}_{3b}
\]

\[
\text{The bear sees it and considers it mean.}
\]

Theme buoys are holding signs which represent prominent information at the discourse sentence. They are realised through pointing and their function is to preserve the saliency of these referents along
the signed discourse, unlike the pointer buoys which are just arguments of a single sentence. In the example below, the theme buoy refers to some bad situation happened to the signer.

\[
\begin{align*}
\text{dom:} & \quad \text{SAD IX} \_3^a \text{BE}_{-} \text{OBSESSED} \_a \text{artichoke} \text{IX}_1 \text{UNDERSTAND NOT} \\
\text{n-dom:} & \quad \text{IX}_3^a \text{-------------------------------} \\
\end{align*}
\]

“He is sad and he is obsessed with something I don’t understand.’

Sometimes, these prominent referents can be realised through a full lexical sign, which has been held for the whole duration of the related discourse. In these cases, the referents are called fragment buoys.

\[
\begin{align*}
\text{dom:} & \quad \text{BOOK IX(dem) IX}_1 \text{READ IX}_1 \text{THINK INTERESTING} \\
\text{n-dom:} & \quad \text{BOOK-------------------------------} \\
\end{align*}
\]

‘I read this book and think it is interesting.’

Information on Data and Consultants

The descriptions in this chapter are based on the references below. Please see the data and consultant information in these references. The video clips exemplifying the linguistic data have been produced by a fluent native signer who was born and grown in the northern part of Italy.

Authorship Information

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References