Indefiniteness and specificity marking in Catalan Sign Language (LSC)

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Bringing together the areas of sign language semantics-pragmatics interface and discourse reference, this article offers a description of how indefiniteness and (non-)specificity is encoded in Catalan Sign Language (LSC). By using a combined methodology of corpus data and grammatical tests, the present study shows that the encoding of indefiniteness and specificity in LSC is achieved by three main means, namely lexical signs, the use of nonmanuals, and the use of signing space. The basic primitives required to analyze specificity in LSC comprise wide scope, epistemicity, and partitivity. This article proposes an analysis of the use of signing space in contributing meaning and provides insights into the characterization of the abstract import of signing space.

Keywords: Catalan Sign Language (LSC), definiteness, discourse, indefiniteness, pronouns, reference, signing space, specificity

1. Introduction

As natural languages, sign languages are endowed with a wide range of referring terms to denote discourse referents. During a conversation, signers may use indefinite or definite descriptions, proper nouns, or pronominal forms for that purpose. The choice of referring terms depends on the degree of knowledge of the discourse referent that the conversation participants have, as well as the degree of prominence of the discourse referent at a particular point in discourse. The degree of knowledge and prominence comprise the so-called *referential status*, which represents an absolute property reflected through the formal marking of Noun Phrases (NPs). The referential status is dependent on the introduction and retrieval of the referent at a contextual scale. Unlike information packaging, which functions at the sentential level, the referential status is articulated in a larger context (i.e. discourse structure).

To date, only few studies have dealt with the formal marking of definiteness and indefiniteness in sign languages (cf. Section 2.3). What has been extensively confirmed from the beginning of sign language research is that discourse referents are identified with a location in signing space, that is, the three dimensional extent in front of the signer's body. A discourse referent is assigned a certain spatial location on the horizontal plane and may be referred back to later in the discourse (Klima & Bellugi 1979). Such a spatial location associated with an entity is called "referential locus" or "R-locus" (Lillo-Martin & Klima 1990). The horizontal plane, which lies perpendicular to the body of the signer, is the default plane where the majority of R-loci are established (Figure 1).
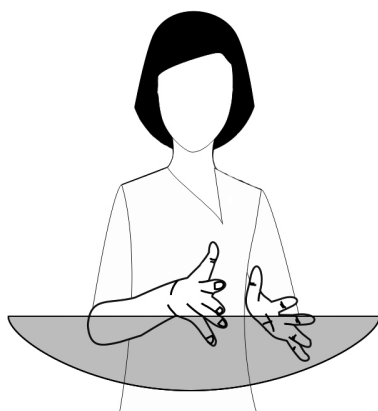

Figure 1. Extension of horizontal plane

Interestingly, in Catalan Sign Language (LSC) discourse referents are not only localized on the horizontal plane, but they may also be localized on different areas on the frontal plane (Figure 2), which extends parallel to the signer's body (Brentari 1998).
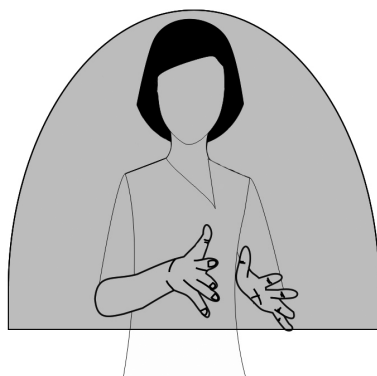

Figure 2. Extension of frontal plane

As shown in the LSC utterances below, discourse referents may be associated with an R-locus established on a low area, as well as on a high area of the frontal plane. In (1) the NP 'GROUP FRIEND SOME' is associated with a low R-locus as the noun GROUP and the determiner SOME are articulated at a lower location (Figure 3).[1]

(1)　GROUP$_{\text{ip-lo}}$ FRIEND **SOME**$_{\text{ip-lo}}$ INSIDE IX3$_c$ HIDE DURING YEAR-TWO.
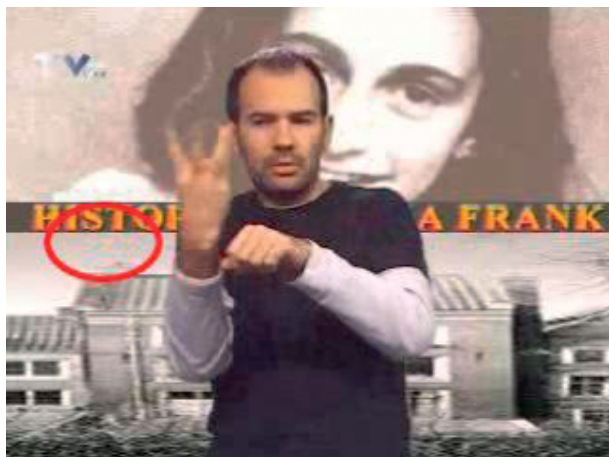　　　'Some of the friends were hidden there for two years.'

Figure 3. Low R-locus (signer articulating the sign SOME$_{\text{ip-lo}}$ in example (1))

However, another excerpt from the same discourse shows a high localization of the NP 'IX3pl SOME' (2), with a higher articulation of both the index sign IX3pl and the determiner SOME. The corresponding R-locus is established in a high area on the frontal plane (Figure 4).

(2)　**IX3pl**$_{\text{ip-up}}$ **SOME**$_{\text{ip-up}}$ 1-DENOUNCE-3$_{\text{ip-up}}$ IX3$_c$ THERE-IS.
　　　'Someone denounced they were there.'

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1. This article follows the usual glossing conventions in the sign language literature, according to which manual signs are represented by the capitalized word corresponding to the translation of the sign. The relevant abbreviations for the present purposes are the following: IX# (index pointing sign; the numbers refer to the grammatical person); #-VERB-# (verb agreeing with subject and object); subscripts mark direction towards sign space: lo (low), up (up), ip (ipsilateral), cl (contralateral), c (centre); subscript 'i' indicates binding relations; CL represents a classifier construction, with the rough meaning description given between inverted commas. A line above the glosses indicates the scope of nonmanuals: br (brow raise); sq (squinted eyes), rs (role shift). Reduplication of signs is indicated by +++.

Figure 4. High R-locus (signer articulating the sign SOME$_{ip\text{-}up}$ in example (2))

R-loci established in high locations of the frontal plane have already been described as an iconic feature used to denote social hierarchical relations, and more specifically superiority. The contrast between high and low R-loci on the frontal plane is associated with asymmetrical relations such as parents-children, boss-worker, professor-student, etc. In such contexts, an R-locus established in a high location denotes the individual who is higher in the social hierarchy. This use has been previously described for LSC (Barberà 2012, 2014; Morales-López et al. 2005), for Indo-Pakistani Sign Language (Zeshan 2000), and for ASL (Liddell 1990; Schlenker & Lamberton 2012; Schlenker, Lamberton & Santoro 2013). However, (1) and (2) show other instances of the use of signing space, which are not related to hierarchical relations. As will be proven in this article, the contrast of low vs. high loci is also in charge of encoding the referential status of the discourse referents, and more concretely (non-)specificity. In LSC, discourse referents, which are not identifiable by the signer and the addressee and which do not belong to a restricted set, are represented in signing space with an R-locus in a high location of the frontal plane.

The goal of this article is two-fold. On the one hand, it offers a thorough description of how reference is encoded in LSC. By using a combined methodology of corpus data and grammatical tests, it shows that the encoding of indefiniteness and specificity is achieved by three main means: (i) lexical signs, (ii) the use of nonmanuals, and (iii) the use of signing space. While the kinds of signs used parallel strategies attested in spoken languages (i.e. interrogative signs, generic ontological-category nouns, etc.), LSC also makes use of the natural means offered by the visual-spatial modality. Therefore, particular nonmanual markings aligned with the NP, together with manual modulations of signs using the frontal plane of signing space are also used when conveying different referential statuses of the entities introduced in the discourse. On the other hand, this article offers a

theoretical analysis of specificity and locates the discussion within the wider literature on this topic. It proposes that the overt encoding of specificity in LSC needs to be analyzed considering three types of specificity, namely wide scope, epistemicity, and partitivity. The articulation of these three main properties define a more global property based on dependence on the domain of discourse, which is also formally encoded in the shape of LSC discourse. The present account contributes to the young field of sign language semantics-pragmatics interface by focusing on how the referential status is encoded in the grammar of LSC.

The rest of the article is organized as follows. Section 2 offers an overview of the semantic-pragmatic categories on which this article is based, namely definiteness and specificity, both from a grammatical and a theoretical point of view. It also reviews previous research concerning this topic in the sign language literature. Section 3 describes the data set used for the current piece of research and examines the grammatical tests used to identify the NPs that belong to each category. Section 4 presents how definite NPs are marked in LSC, both manually and nonmanually. Although this article does not primarily focus on definiteness, this section offers a descriptive approach to it, which contributes to a better understanding of the main distinction between definite and indefinite NPs. In Section 5, the proposal is extended to the main topic of the present research, which is indefiniteness and (non-)specificity marking. Finally, Section 6 summarizes the main findings and provides new proposals for future work.

2.   Background

The traditional classification of referring terms is based on the notion of definiteness. This section presents the background of the two semantic-pragmatic categories on which this article is based. While the focus of this article is based on indefiniteness, a primary description of definiteness, as currently defined in the literature, is also offered. As for specificity, the three types of specificity that are considered in the present account are also described. Finally, an overview of previous works on other sign languages dealing with these phenomena is offered.

2.1 Definiteness

Formally, NPs are divided into definite and indefinite. It is commonly assumed that while definite NPs encode that both sender and addressee may identify the discourse referent, indefinite NPs mark that the addressee may not identify the entity being talked about (but see the end of Section 2.2 for a further refinement). The definite article in (3a) marks that both sender and addressee identify the

discourse referent. In this case, both interlocutors know the article that the sender mentions. The indefinite article in (3b) marks that the addressee does not know the entity being talked about.

(3)   a.   **The article** that we read last week was about definiteness.
      b.   Next week, we will read **an article** about definiteness.

The range of NP types that have definiteness as part of their meaning include determiners (the English definite article *the*), demonstratives (*this*, *that*, *those*), proper nouns (*Joana*, *Martí*), possessives (*my*, *your*, *her*), and personal pronouns (*you*, *she*, *they*). Indefiniteness is encoded with the indefinite determiner in languages that have one (for instance, English *a*), generic ontological-category nouns (such as *someone*, *something*, *somewhere* in English), interrogative pronouns (such as *neaq-naa* 'somebody/who' and *qway* 'something/what' in Khmer (Haspelmath 1997: 27)), one-based definite particles (e.g. English *one*, French *on*), cardinals and quantifiers (such as *most*, *many*…).

From a theoretical point of view, definiteness is usually associated with uniqueness and familiarity. On the one hand, uniqueness approaches are built on the insight that a definite description is used to refer to entities that have a role or a property which is unique (Abbott 1999; Kadmon 1990). Uniqueness means that there is one and no more than one entity that has a particular property, as exemplified in (4).

(4)   **The sun** is shining.

On the other hand, pragmatic theories tend to treat familiarity and anaphoricity as the central notion for definiteness (Heim 1982; Kamp 1981; Roberts 2003). They are based on the idea that definite descriptions serve to pick out discourse referents that are in some sense familiar (i.e. identifiable) to the discourse participants, because they are co-present (5a), culturally shared and therefore part of the common ground (5b), or already mentioned in the discourse (5c).

(5)   a.   Just give **the shelf** a quick wipe, will you?, before I put this vase on it.
      b.   **The president** is visiting the school tomorrow.
      c.   An elegant dark-haired woman, a man with dark glasses, and two children entered the compartment. I immediately recognized **the woman**.

Some approaches argue for a theory of definiteness that combines the two notions, i.e. uniqueness and familiarity. Based on corpus work, Fraurud (1990), Birner & Ward (1998), and Poesio & Vieira (1998) claim that in order to account for all definite NPs occurrences found in corpora, both uniqueness and familiarity together must be taken into account.

2.2 Specificity

Indefinite NPs may be further categorized into specific and non-specific. It is generally assumed that while specific indefinite NPs exhibit a sender-addressee asymmetry since only the sender may identify the discourse referent, non-specific indefinite NPs are symmetric since they mark that neither the sender nor the addressee can identify them (however, see the end of this section for a further refinement). In English, for instance, the indefinite determiner *a* is used both for specific and non-specific NPs, as shown in (6). Although specificity is not overtly marked in the English determiner system, specificity has observable effects on co-reference. In English, the kind of co-referential pronoun disambiguates the two possible readings (Partee 1970). Under the specific reading, the indefinite NP "a book" refers to an identifiable book (6a). Under the non-specific reading, Joana is looking for an element of the kind "syntax book", but there is not any concrete book that the sender has in mind when uttering (6b).

(6)   Joana wants to read **a book** about syntax …
    a.   but she cannot find **it**.
    b.   but she cannot find **one**.

Specificity is encoded differently in each language. Some languages encode it in the article system, others encode it with affixes, and others lack encoding of this semantic-pragmatic notion. Samoan and Maori are two Polynesian languages with an article system that distinguishes specificity rather than definiteness (Lyons 1999). Samoan uses the article *le* with specific NPs, which indicates that the discourse referent refers to one particular entity regardless of whether it is definite or indefinite. The other article (*se*) is used with non-specific discourse referents, which do not refer to a particular, specified item (Mosel & Hovdhaugen 1992, cited in Lyons 1999:57). In Maori, the article *he* (which does not distinguish number) is used when the kind of entity is prominent, and *teetahi/eetahi* when the number is significant (Bauer 1993, cited in Lyons 1999:59; Chung & Ladusaw 2004). The meanings and patterns of use of Maori articles are not yet established, but it seems that its article system relates partly to the distinction between specific and non-specific, rather than definite and indefinite.

 Another way of marking specificity is by means of affixes. According to Enç (1991), Turkish encodes specificity with an accusative affix. The following minimal pair taken from Enç (1991:6) shows that when the NP has overt case morphology, it refers to a specific discourse referent (7). The indefinite NP with accusative case has a covert partitive reading, and it introduces into the domain of discourse individuals from a previously given set. This contrasts with (8), where the NP without case morphology refers to a non-specific entity.

(7) **Iki kiz-i**   taniyordum.
two girl-ACC knew.1SG
'I knew two of the girls.'

(8) **Iki kiz** taniyordum.
two girl knew.1SG
'I knew two girls.'

Leaving aside the overt marking, from a theoretical point of view, the different kinds of specific indefinites have been extensively discussed in the literature (see the overview in von Heusinger 2002, 2011). From among the various types of specific indefinites, for the purpose of the present article, three types of specificity are considered. These three types are distinguished according to two dimensions, related to scope and referentiality. The first dimension comprises the properties of wide scope, which is associated with a specific interpretation, and narrow scope, which is associated with a non-specific interpretation. The second dimension, referentiality, comprises epistemicity (that is, the knowledge the sender has about a particular entity) and partitivity (the entity in question belongs to a restricted set). Although specificity may be defined according to other related properties, the above-mentioned properties are the basic primitives required to analyze specificity in LSC.

Scopal specificity is considered to distinguish indefinite NPs that are bound to an operator (like a verb of propositional attitude, negation, or a quantifier) from those which aren't (Farkas 2002; Ionin 2006). Under the reading in (9a) for the English example (9), there is a particular Norwegian woman and Frank wants to marry her. Therefore, a specific reading arises. Under the reading in (9b), Frank's desire is to marry a woman who has Norwegian nationality, but he still has not found anyone. In the non-specific reading in (9b), the indefinite is interpreted inside the modal verb 'want'. This is why the only felicitous continuation to get a non-specific reading requires the modal operator 'will'.

(9) Frank wants to marry **a Norwegian**.
a.   He met her last year.
b.   He will move to Norway to try to achieve this goal.

Epistemic specificity, also known as identifiability, is related to the identification of the discourse referent (Fodor & Sag 1982; Kamp & Bende-Farkas 2006). It is defined as the property of those indefinite NPs that are identifiable by the sender, i.e. those entities that are known and/or inherently identifiable. The example in (10) shows an ambiguous sentence. The reading in (10a) corresponds to an epistemically specific discourse referent, which is thus identifiable by the sender. The reading in (10b) corresponds to an epistemically non-specific and unidentifiable discourse referent.

(10)   **A student** cheated on the syntax exam.
    a.   It is the blond lady that always seats on the back row.
    b.   I wonder who it was.

Finally, partitive specificity refers to indefinite NPs that have a restricted set as a possible value. That is, they receive a partitive interpretation when the denotation of the NP is included within a given set (as shown by Enç (1991) for Turkish and exemplified in (7) and (8)). In English, for instance, sentences like (11) are examples of overt partitives. The partitive and non-partitive pairs in (11) and (12), respectively, are quite similar in interpretation. The main difference is that in the case of overt partitives (11), the quantification necessarily ranges over some specific, non-empty, contextually fixed set.

(11)   a.   three **of the books**
    b.   one **of the books**
    c.   some **of the books**

(12)   a.   three books
    b.   one book
    c.   some books

The notion of specificity is composed by three primitives: scope, identifiability, and partitivity (although cf. von Heusinger (2011) for a broad definition of specificity). These three properties are the basic primitives required to analyze specificity in LSC. Moreover, as presented in the discussion the articulation of the three types of specificity considered here defines a more global property based on dependence on a domain of discourse for the interpretation of the discourse referent. Wide scope, identifiability, and partitivity lead to a global property related to dependence on the domain of discourse, which in LSC is overtly encoded in the shape of LSC discourse.

    Now that the background description and the theoretical notions have been presented, let us move to the literature review of previous works in signed languages dealing with these topics.

2.3 Definiteness and specificity in sign languages

As already mentioned in the introduction of this article, since the beginnings of sign language linguistics research, it has been repeatedly noted in the literature that spatial locations have referential properties. Discourse referents are associated with spatial locations, which may further be referred back to in co-referential contexts (Klima & Bellugi 1979). Such spatial locations are called "referential locus" or "R-locus" (Lillo-Martin & Klima 1990), and they may be established across

sentence boundaries. However, whether definiteness is grammatically encoded in signed languages is still a matter of debate among linguists. Typological studies on the marking of definiteness across sign languages are very scarce; in fact, to date, only descriptions of how definiteness is expressed in American Sign Language (ASL) and Hong Kong Sign Language (HKSL) are available. While the studies on ASL focus on the encoding of definiteness and specificity through the use of signing space, lexical signs, and nonmanual marking, the study on HKSL concentrates mainly on the nonmanual component. Their main claims are summarized in what follows.

According to some works, in ASL an index sign directed to signing space and occupying a pre-nominal position is considered to be the formal marking of definiteness (Bahan et al. 1995; Bahan 1996; MacLaughlin 1997; Wilbur 2008). ASL marks indefiniteness by means of an upward direction of manual and nonmanual mechanisms, thus establishing a region that is spatially bigger than within definiteness (MacLaughlin 1997). Indefinite NPs are established at a high R-locus with the determiner SOMETHING/ONE, which is an index finger pointing upwards, very similar to the numeral ONE. The difference with the numeral is that SOMETHING/ONE involves a slight circular movement of the forearm and the hand. While definiteness in ASL is marked with an index pointing towards a low area on the frontal plane, indefiniteness is marked with an index sign directed towards a high area on the frontal plane, which co-occurs with a darting eye gaze. The slight circular movement of the manual component correlates with the degree of identifiability of the discourse referent: when the referent is identifiable, and hence specific, the slight circular motion of the manual sign is minimized. When the discourse referent is not identifiable, and hence non-specific, the movement is bigger and intensified, and the hand moves through a larger area in space (MacLaughlin 1997). Moreover, another distinction is that while definite determiners in ASL access a point in space, indefinite determiners involve an articulatory movement within a spatial region rather than towards a point. Definiteness and specificity distinctions in ASL are not only marked in the manual component, but also nonmanually. As described in Bahan (1996), eye gaze to mark agreement also differs according to the (non-)specificity of the referent. While the expression of specific referents involves a direct eye gaze to the locus, non-specific referents involve a darting gaze generally in an upward direction. This is important, and we will see that LSC shares this upward darting eye gaze for non-specific reference.

For the case of HKSL, Tang & Sze (2002) describe a similar indefinite determiner as the one described for ASL. The sign ONE is articulated with the same handshape used for the definite determiner, but the index finger points upwards. Unlike the indefinite determiner in ASL, in HKSL it does not involve a tremoring motion. When this sign is articulated, eye gaze is never directed to space but

instead towards the path of the hand, suggesting that there is no locus established for the discourse referent. In fact, the (in)definiteness distinction is marked by eye gaze behavior: while definite determiners co-occur with an eye gaze directed to the locus, for indefinite specific ones, eye gaze is directed towards the addressee (Tang & Sze 2002).

To summarize, the aforementioned works on ASL and HKSL describe a dual spatial distinction for definiteness marking: the upper part of the frontal plane is an extended area where indefinites are localized, while the lower frontal plane is a more reduced area where definites are established. Table 1 provides a summary of previous work on (in)definiteness marking in the two sign languages with respect to the use of signing space.

Table 1. Summary of (in)definiteness marking in ASL and HKSL

		Index signs	Spatial location	Eye gaze
ASL	**Definiteness**	prenominal	point established	
	Indefiniteness	- SOMETHING/ONE - upwards direction - tremoring motion	bigger region established	- upwards direction - darting eye gaze
HKSL	**Definiteness**			directed to the location
	Indefiniteness	- SOMETHING/ONE - upwards direction		directed to the addressee

Nevertheless, other authors have questioned whether index signs mark definiteness. In fact, various authors claim that definiteness is not encoded in sign languages (Engberg-Pedersen (1993, 2003) for Danish Sign Language (DSL); Winston (1995) for ASL; and Rinfret (2009) for Quebec Sign Language (LSQ)). Engberg-Pedersen (1993, 2003) argues that in DSL, discourse referents with high discourse value are more likely to be represented by a spatial locus than the ones with a low discourse value. On this view, discourse value is measured according to the number of times the referent has been mentioned. Winston (1995) also ascribes to spatial loci in ASL the potential of marking discourse value. According to this work, loci mark topic continuation as a consequence of the discourse-status marking of the discourse referent. If the discourse referent is not established in space, it means that it is an unimportant entity and the discourse will not be centered on it.[2]

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2. This does not imply that all discourse referents that are not localized in signing space are not topical entities. Weak definites in LSC, for instance, are not established in signing space, but rather articulated in neutral space without having a corresponding R-locus established (cf. Barberà (2012) and also Machado de Sá et al. (2012) for a study on weak and strong definites in

On a different view, Zimmer & Patschke (1990) for ASL and Bertone (2007, 2009) for Italian Sign Language (LIS) explicitly claim that an index sign directed to signing space specifies the noun it co-occurs with. However, no further comments on what is meant by specificity nor which properties it encompasses are given. To further refine the notion of specificity in relation to the use of signing space and other markings is precisely one of the aims of this article.

Leaving aside the use of signing space, sign languages also employ lexical signs expressing indefiniteness. In some spoken languages, indefinite pronouns appear to have been grammaticalized from generic nouns such as 'person' or 'thing', from the numeral 'one', and also from interrogative elements, like 'who', 'what' and 'where' (Bhat 2004; Haspelmath 1997). This pattern is also attested in some sign languages (Cormier 2012; Zeshan 2004). As previously described, in ASL and HKSL, the indefinite animate pronoun translated as 'someone' has the same handshape and orientation as the numeral ONE and the classifier for a person or animate entity, with an additional slight tremoring movement. This happens to be also the case in British Sign Language (BSL, Cormier 2012) and in LIS, among other signed languages. Pfau & Steinbach (2006) describe the indefinite pronoun in German Sign Language (DGS) and Sign Language of the Netherlands (NGT) as a grammaticalized combination of the numeral ONE and the sign PER-SON. This indefinite pronoun does not necessarily refer to only one person as it may also be understood as plural. Moreover, in ASL a sign with a similar articulation, but distinguishable from, the WH-sign glossed as WHAT has been considered to have the same function as an indefinite pronoun (Conlin, Hagstrom & Neidle 2003). As for the articulation, these authors agree that there is a tendency for this particle to cliticize phonologically (that is, to contract) with the sign it follows. The nonmanuals that correlate with this sign correspond to those associated with uncertainty, namely tensed nose, lowered brows, and sometimes also raising the shoulders (MacLaughlin 1997). As for the semantics, the particle seems to extend the domain of reference to beyond the typical, and it mainly occurs in uncertainty contexts. As shown in Section 5 in detail, LSC shares most of the characteristics described so far.

3.   Methodology: Data set and grammatical tests

The methodology used to analyze the data for the present purposes combines annotated data from a small-scale LSC corpus with grammatical tests. The grammatical

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Brazilian Sign Language). The lack of localization of weak definites in signing space supports the hypothesis that loci stand for referential features.

tests presented below (cf. Sections 3.2 and 3.3) determine the referential status of the discourse referent and therefore allow establishing an association between a referential status and the kind of indefinite and (non-)specific NP marking. This association recognizes the formal marking of NPs according to each semantic-pragmatic category.

3.1 Data set and annotation

The data set used for the present study comprises data taken from a small-scale LSC corpus, which includes discourses from seven native deaf signers (three women and four men), aged between 41 and 62 years old and living in the area of Barcelona. The small-scale LSC corpus comprises 5,108 signs and consists of two types of data, namely semi-spontaneous discourse and elicited data. The first type of data was used at a preliminary stage in order to get a general idea of how reference and more specifically indefiniteness is used in LSC in different discourse situations. This analysis provided a picture within which specific data questions and judgements were framed. However, corpus work based only on the observation of spontaneous data entails a drawback: it is not sufficient when the aim is to describe and analyze a natural language thoroughly, because it is very likely that not all of the relevant patterns and strategies attested in the language will be contained within the corpus. Also, the observation of the restricted set of data can be a limitation once we want to obtain, for instance, negative evidence. Elicited data was thus also incorporated for this piece of research in order to test the structures under study that could confirm or falsify our preliminary hypotheses.

For elicitation, drawings were used with the main goal to establish the distinction between a known entity and an unknown one. Following standard practices in the semantics-pragmatics area (Matthewson 2004), when eliciting data to obtain specificity distinctions, contexts were always presented to the native signers. The use of contexts allowed us to control the interpretative range of forms and to obtain a controlled elicitation. These contexts are included in this article and will be presented in italics before each elicited example (when examples are presented without context, it means that they are extracted from the semi-spontaneous data, which are signed discourses previously recorded for other purposes). At a later stage, felicity judgements were added to the qualitative analysis. They consisted in presenting a context to the signers, immediately followed by a signed video. After watching the video, signers were asked to rate whether the signed form was adequate for that particular context. These judgments were based on the intuitions of two native deaf signers. Table 2 summarizes the distribution between the types of data and the signers who contributed them (for the interest of privacy, each signer is identified with a number).

Table 2. Distribution of types of data and signers

Types of data	Signers
Semi-spontaneous	1, 2, 3, 4, 6, 7
Elicited data	1, 3, 5, 6, 7
Felicity judgments	6, 7

The software used for the annotation is the multimodal program ELAN. When elicited data was recorded, two cameras (i.e. a general view and a detailed view) were used and the recordings were synchronized in the ELAN annotation file. The ten time-aligned and self-designed linguistic tiers that the annotation of the present corpus comprises are detailed below (see also Figure 5). Tiers 1–6 are relevant for the present study.

1. Gloss RH: Gloss of the sign articulated with the dominant hand.
2. Dir&Loc RH: Direction and location of the sign articulated with the dominant hand.
3. Gloss LH: Gloss of the sign articulated with the non-dominant hand.
4. Dir&Loc LH: Direction and location of the sign articulated with the non-dominant hand.
5. Co-reference: Number assigned to each discourse referent introduced and referred back to. First mention is distinctively marked.
6. Referring term: Grammatical expression used to refer to discourse referents.
7. Utterance: Segmentation of utterances according to prosodic boundaries (we follow the criteria for identifying intonational phrases established in Nespor & Sandler (1999): change in head or body position, change in all aspects of facial expression, and eyeblinks).
8. Role shift: scope of role shift and number assigned to the corresponding discourse referent.
9. Brows: position of eyebrows (raised or furrowed).
10. Eye gaze: direction in signing space.
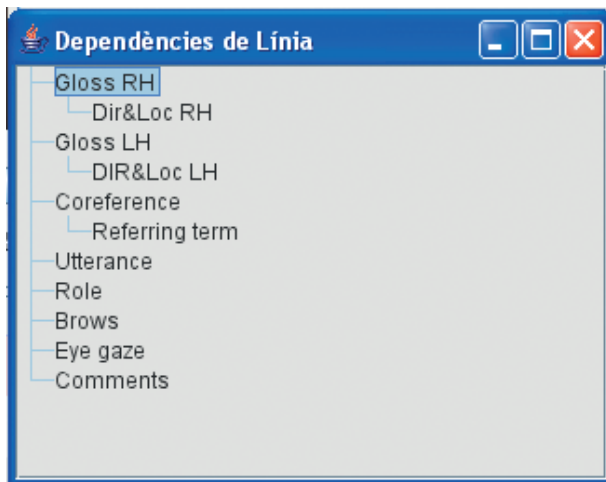11. Comments: doubts and comments arisen during the annotation procedure.

Figure 5. Linguistic tiers in the annotation

3.2 Grammatical tests for (in)definiteness

In order to determine the degree of knowledge of the sender and the addressee and thus whether the NP includes a marker of (in)definiteness, some tests previously used for the study of the Salish language St'át'imcets (Matthewson 1998) have been adapted for the present purposes and applied to potentially (in)definite NPs in the LSC data set. In what follows, the tests are described and exemplified.

(i) *Novelty condition*
According to this condition, indefinite NPs cannot refer back to an already introduced discourse referent. That is, indefinite NPs may only refer to unfamiliar (i.e. not known) entities, while definite NPs only refer to familiar ones. In an utterance like (13), the discourse referent "student" is first introduced with the indefinite determiner. In the second clause, the same discourse referent is referred back to by a definite NP or a pronoun. In contrast, the indefinite NP in the second clause in (14) is only understood through disjoint reference. This means that indefinite NPs only pick up new and unfamiliar discourse referents.

(13) **A student$_j$** came. **The student$_j$/He$_j$** brought me a book.

(14) **A student$_i$** came. **A student$_{j/*i}$** brought me a book.

(ii) *Non-uniqueness*
The referents of indefinite NPs are non-unique. This means that indefinite NPs point to an entity that belongs to a set of entities sharing a particular property (15). The use of an indefinite NP triggers the presupposition that many similar entities

exist. As shown in (16a), since there is only one sun in our Solar System, it is not felicitous to refer to it with an indefinite NP.

(15)   **A pencil** is on the table.

(16)   a.   #**A sun** rises in the East and sets in the West.
       b.   **The sun** rises in the East and sets in the West.

(iii) *Discourse-addressee familiarity*
Two properties characterize definite NPs. On the one hand, discourse referents that have been previously introduced in the discourse, which are thus discourse familiar, are marked with a definite NP (Heim 1982; Prince 1992). This is shown in (17), where the definiteness in the NP is marked through a demonstrative. On the other hand, first-mention discourse referents that are part of the general knowledge and thus implicit in the common ground are also considered to be definite. Since it is generally considered that there is only one Pope, it is felicitous to mark it with a definite article even when being first-mentioned (18).

(17)   **A woman** entered the room. After giving my speech and going down the scenario, I realized that I knew **that woman**. We had met at a summer school ten years ago.

(18)   **The Pope** gave his speech in Latin in front of an empty Piazza San Pietro.

Non-uniqueness (i) and novelty condition (ii) positively identify an indefinite NP, while discourse-addressee familiarity (iii) positively identifies a definite NP.

3.3   Grammatical tests for (non-)specificity

In order to determine the difference of knowledge of the sender with respect to the discourse referent being talked about and thus whether the NP includes a marker of (non-)specificity, the tests suggested by Haspelmath (1997) for spoken languages have been adapted for the present purposes and applied to the LSC data. For the distinction, co-referential anaphoric pronouns, determiners, and sluicing contexts are the three main criteria taken into account.

(i)   *Anaphoric pronouns*
Generally, only specific NPs establish a discourse referent. This means that once the referent has been established, it can be referred back to by an anaphoric pronoun, as in the following context.

(19)   *Context: You explain to your colleague that there is a particular book you have already seen at a bookstore.*

I want to buy **a book** I saw in the store last week. **It** is written by a Greek author.

In contrast, when talking about a non-specific discourse referent (that is, not a particular entity but rather a kind reference), a co-referential anaphoric pronoun is not felicitous because a particular discourse referent has not been established (20a). Intensional contexts in which the sender is referring to a non-specific discourse referent allow a co-referential pronoun as long as they are embedded under an operator, like a modal verb (20b).[3]

(20) *Context: You explain to your colleague that you would like to read some book, but do not have any particular book in mind.*
    a.   I want to buy **a book** in the store. [#]**It** is written by a Greek author.
    b.   I want to buy **a book** in the store. **It** has to be written by a Greek author.

(ii) *Determiners*

In some languages, there are determiner-like expressions that force a specific reading. This is the case of English *certain*, which can only refer to an identifiable entity. In a sentence like (21a), the NP has a specific reference. A continuation denoting not being able to identify such a female is not felicitous (21b).

(21) Frank wants to marry **a *certain* Norwegian**.
    a.   She is very tall.
    b.   [#]But I still don't know who this woman is.

(iii) *Sluicing contexts*

Sluicing contexts force a non-specific reading. In a specific context, the sender is referring to a particular discourse referent. Therefore, a continuation with a sluicing context is not felicitous (22). But when the sender is referring to a non-specific referent, the sluicing context is felicitous (23).

(22) Frank wants to marry **a Norwegian**$_{spec}$. [#]But I don't know who.

(23) Frank wants to marry **a Norwegian**$_{non-spec}$. But I don't know who.

The tests related to anaphoric pronouns (i) and determiners (ii) positively identify a specific NP, whereas sluicing contexts (iii) identify a non-specific one. These properties were tested against our data set and used as criteria to identify (in)definiteness and (non-)specificity distinctions. This testing allowed us to establish the relationship between each semantic-pragmatic category and the corresponding

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3. These are cases of modal subordination (Roberts 1989). Due to space limitations, I leave aside this issue here, but see Barberà (2012) for a thorough discussion of this aspect.

formal marking. In what follows, a description of the main markings for referential encoding in LSC with respect to manual and nonmanual marking is presented.

4. Encoding of definiteness in LSC

Having presented the properties used for the qualitative analysis combining detailed annotation data and grammatical tests, this section offers a description of the strategies used to mark definite NPs in LSC. The strategies used to encode discourse referents that are discourse-addressee familiar, unique, and not novel are presented below, and they are divided into manual and nonmanual marking.

As for the manual marking, our description focuses on a particular particle, rather than the co-occurrence of an index within the NP. Unlike other sign languages mentioned in Section 2.3, whether the NP includes an index sign or not turned out to be irrelevant for definiteness marking in LSC. Both NPs with an index sign directed to the horizontal plane (24a) or without it (24b) are ambiguous between a definite and an indefinite reading.

(24) a. TODAY IX1 INTERVIEW **IX3 WOMAN**.
           'Today I have an interview with a/the woman.'
       b. TODAY IX1 INTERVIEW **WOMAN**.
           'Today I have an interview with a/the woman.'

According to the novelty condition, indefinite NPs may only refer to unfamiliar (i.e. not known) entities. As the minimal pair in (24) shows, in LSC a noun co-occurring with an index sign may trigger a definite interpretation, although this is not a necessary condition. Moreover, many examples included in Section 5 show that first mention unfamiliar entities are marked with an index sign in LSC. This fact proves that the index sign *per se* is not a marker of definiteness. Instead, LSC includes particular manual and nonmanual elements that trigger a definite reading.

4.1 Manual marking: Definiteness particle

LSC has a definite particle, which is glossed as MATEIX because of the mouthing that it is co-articulated with (the corresponding Catalan word can be roughly translated as 'same/itself'). MATEIX is a mono-manual sign articulated with a Q-handshape and with body contact on the ipsilateral shoulder, with a downward movement (Figure 6).

Figure 6. MATEIX sign

The sign MATEIX is related to a nominal element, in such a way that it either co-occurs with it or anaphorically substitutes it.[4] The relation between the two elements is established through signing space. Because the sign is body-anchored, and thus cannot be localized in space, body lean and eye gaze are used to localize the co-occurring nominal sign. According to the familiarity approach to definiteness (Section 2.1), some particular contexts trigger a definite reading, and these are precisely the ones where MATEIX is found. Therefore, MATEIX always occurs in an NP denoting a familiar discourse referent. It may be used in contexts where the object referred to is present (25), with entities belonging to the common ground (26), and with previously mentioned entities (27).

(25) a. $\underline{\text{br}}$
          MATEIX TABLE IX IX1 CLEAN.
          'I will clean that table there.'
     b. IX3$_c$ FOUND ORGANIZE **MATEIX** PERSON-3$_{ip}$ HITLER.
          'This (organization) was founded by Hitler himself.'
     c. IX BOOK ADAPT SIGN. IX1 FEEL HAPPY. **MATEIX** BOOK SELL+++.
          'This book has been adapted into sign language and I feel very happy. This (same) book has been sold a lot.'

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4. Mosella (2012) claims that the nominal nature of relative clauses in LSC is due to the co-occurrence of the sign MATEIX, which may precede or follow the noun. Whether MATEIX is a pronoun or a demonstrative that functions both as a pronoun and as a determiner is a question that deserves further research.

These examples show the different grammatical properties attributed to definite NPs. Examples (25a) and (25c) are instances of not novel and discourse-addressee familiar discourse referents. Example (25b) is an instance of both a unique and an addressee familiar discourse referent. More evidence indicating that MATEIX is a marker of definiteness comes from the fact that in sentences in which the NP is ambiguous between a definite and an indefinite interpretation, the introduction of MATEIX forces a definite reading. In LSC, a first-mention bare noun is ambiguous between an indefinite (26a) and a definite reading (26b). However, the insertion of MATEIX forces a familiar, and thus definite, interpretation (27).

(26) CLASS STUDENT COME.
    a.   'A student came to class.'
    b.   'The student came to class.'

(27) CLASS **MATEIX** STUDENT COME.
    'The student came to class.'

MATEIX may co-occur with both common and proper nouns not previously mentioned. In (28), an instance of associative anaphora associated with definite NPs (Consten 2003) is shown. In this context, an implicit link or anchor between two elements is established during the process of interpretation. Cases of associative anaphora are formed by pairs like school-teacher/nun, car-wheel, library-book, among others, in which the second element of the pair inherits the familiarity condition from the first element, and is therefore marked with a first mention definite marker. When MATEIX co-occurs with a proper noun (29), an emphatic meaning arises.[5]

(28) *Context: The signer is explaining how was the first day she went to school.*
    SCHOOL CL:"door-opens" CL:"person-walks" NUN IX3 **MATEIX** OF TUTOR
    IX1pl.
    'The door of the school opened and the nun, who was our teacher, entered.'

(29) *Context: Two work colleagues (A and B) are waiting outside the office, because the third one (C), named David, still hasn't arrived. A doesn't know who is in charge of the keys. Without a previous question, B utters:*
    MATEIX DAVID KEYS BRING.
    'David will bring the keys (not someone else)!'

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5. The sign MATEIX shares many semantic-pragmatic features with the ASL sign SELF, which has also been considered to be a definiteness marker (Fischer & Johnson 1982 [2012]), a specificity marker (Wilbur 1996), and a presuppositionality marker (Mathur 1996). In many contexts, the sign MATEIX triggers an emphatic meaning, and this is precisely another function attributed to SELF in recent research (Koulidobrova 2009; Wilbur 2011; Wilkinson 2013).

4.2 Nonmanual marking for definiteness

Definiteness and familiarity may also be expressed nonmanually. This particular nonmanual consists of squinted eyes and has already been described for other sign languages as a marker of shared information (see Dachkovsky & Sandler (2009) for Israeli Sign Language (ISL); Engberg-Pedersen (1990) for Danish Sign Language (DSL), and Herrmann (2013) for German Sign Language (DGS)). Importantly, and in line with what has been mentioned in Section 2.1, for the case of LSC, the shared information does not need to be explicitly mentioned in previous discourse, but it can perfectly be accommodated or be part of the general knowledge from the common ground. It is also worth mentioning that the nonmanual marker squinted eyes indicates that the addressee may retrieve the discourse referent from memory in a long run and serves as a signal to indicate the low accessibility status of the linguistic material that it is aligned with (Dachkovsky & Sandler 2009).
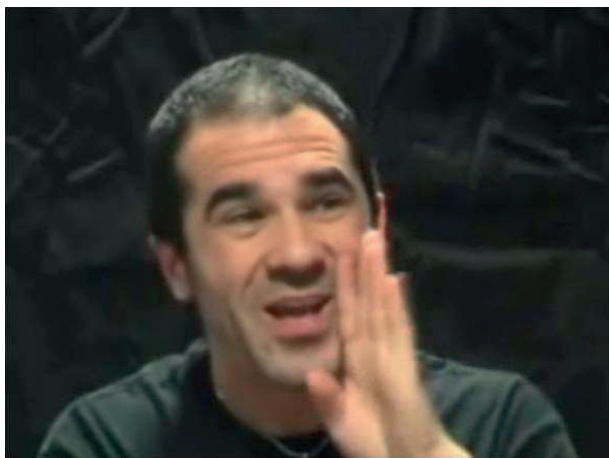

Figure 7. Squinted eyes

Referring to a particular student that the conversation participants may identify, both (30) and (31) are instances of non-novel, unique, and addressee-familiar discourse referents. In a sentence where the sign MATEIX is not overt, squinted eyes having scope over the NP suffice to refer to a familiar discourse referent (31).

> *Context for (30) and (31): You tell your work colleague that today you have an interview with the LSC student you both met yesterday.*

(30)   <u>   sq</u>
TODAY IX1 INTERVIEW **MATEIX** STUDENT LSC.
'Today I have an interview with the LSC student.'

_____sq
(31)   TODAY IX1 INTERVIEW STUDENT LSC.
        'Today I have an interview with the LSC student.'

Moreover, when a determinerless NP is not accompanied by squinted eyes (32), the familiarity condition is blocked and only the indefinite reading is available (in a context where the discourse referent has not been previously mentioned).

(32)   TODAY IX1 INTERVIEW STUDENT LSC.
        'Today I have an interview with an LSC student.'

This section has showed that, according to our data, the main strategies to mark definiteness in LSC involve the lexical sign MATEIX and/or a particular nonmanual marker consisting of squinted eyes. In both cases, the kind of definiteness encoded is related to familiarity rather than uniqueness. An in-depth analysis of potential differences between uniqueness marking and familiarity marking awaits further research. At this point, the description presented so far has been useful to distinguish between definite and indefinite NPs. The following section shows that LSC has a rich inventory of pronouns and strategies to codify indefiniteness and specificity.

5.   Indefiniteness and (non-)specificity in LSC

Indefiniteness is encoded by different means in LSC. The first goal of this section is to show that not only indefinite particles expressed by lexical signs form a rich paradigm, but that morphosyntactic modulations of manual signs with respect to their direction in signing space are also used to encode the semantic distinction between specificity and non-specificity. Moreover, the alignment of particular nonmanual components is also relevant in the expression of indefiniteness. The second goal of the section is to propose that three specificity primitives need to be considered in the analysis of the overt encoding of specificity in LSC, namely scope, epistemicity, and partitivity.

5.1 Inventory of indefinite particles

LSC has a rich array of lexical signs that encode an indefinite reading. One of the most frequent strategies to express an indefinite NP is the use of determiners (33) and pronouns (34), which may be associated with either a high or a low R-locus, depending on the specificity reading (cf. Section 5.3). The examples shown below are articulated with an index handshape performing an arc-shaped movement,

but for the indefinite reading to arise this is not obligatory: the singular form of a pointing sign is also possible.[6] The examples in (33) and (34) are associated with a low R-locus and trigger a specific interpretation. They are instances of the three types of specificity introduced in Section 2.2. They denote a particular group of individuals (wide scope), which are identifiable by the signer (epistemicity), and that belong to a restricted set (partitivity).

> *Context for (33) and (34): You are telling a friend of yours that you went to a kennel because you want to buy a cat. You describe the behavior of the cats there.*

(33)   CAT **IX3pl$_{lo}$** OBEDIENT.
       'Some of the cats are obedient.'

(34)   **IX3pl$_{lo}$** OBEDIENT.
       'Some of them are obedient.'

Another strategy is the determiner PERSON, used as an indefinite pronoun, which derives from the lexical noun PERSON. This sign may be used in some contexts as a co-referential pronoun and in others as an impersonal pronoun with an indefinite reading (35). For the indefinite reading to arise, the pronoun is articulated towards a high R-locus. It may also have a reduplicated form resulting in a plural interpretation (36). Both (35) and (36) are instances of generic uses of the pronouns, where the individual denoted is not tied to any particular spatiotemporal context. The discourse referents are not identifiable by the signer.

```
                    rs
```
(35)   **PERSON$_{up}$**++ OWN ERROR RECOGNIZE NEVER. MATEIX IX3pl$_{lo}$ FRIEND
```
                                    rs
```
       3-WARN-3 LOOK COUNT-1-2-3.
       'One never realizes his own faults. It is his friends who have to warn him.'

(36)   IX BALEAR **PERSON$_{up}$**+++ SPEAK CATALAN.
       'In the Balearic islands, they speak Catalan.'

Another lexical functional element that expresses indefiniteness is a compound sign. This pronominal sign is formed by the interrogative wh-sign WHO concatenated with either the 3rd person plural pronominal form (Figure 8) or with the

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6. The role of number in the interpretation of indefinite determiners is an interesting question that is outside the scope of this article but that merits further research (cf. the discussion in Etxeberria & Giannakidou (2014) of Spanish 'algún'/'algunos', where it is convincingly argued that the singular pronoun is referentially vague, while the plural component provides the specific reading).

determiner SOME (Figure 9). In both cases, the order of the signs is irrelevant. Interestingly, the mouthing accompanying this compound sign is always the Spanish word *alguien* 'someone', which has scope over the two signs. This pronoun has the semantic feature [+animate], as it only refers to human and animal discourse referents.

Figure 8. Sign 'someone' formed with WHO^IX3pl$_{up}$

Figure 9. Sign 'someone' formed with WHO^SOME$_{up}$

The use of the indefinite pronoun WHO^SOME allows wide scope reading with respect to the adverb TWO TIMES in (37). This means that in this context, there is a particular individual who stole my bike in two different moments.

(37)   **WHO^SOME**$_{up}$ BICYCLE 1-STEAL-3$_{up}$++ TWO TIMES.
       'Someone stole my bicycle two times.'

Another very frequent indefinite lexical sign consists in an index finger pointing upwards and directed towards a high R-locus on the frontal plane. It is very similar to the numeral ONE, but, unlike the numeral, the indefinite determiner ONE$_{up}$ is articulated at an upper location on the frontal plane and combined with characteristic nonmanual marking typical for indefinite contexts, namely sucked-in cheeks, shrug and non-fixed eye gaze towards spatial location (see Section 5.2). This indefinite determiner/pronoun has been shown to be specialized to contexts

of impersonal reference (Barberà & Quer 2013), although it shares the same se-
mantic properties as indefinite pronouns (Barberà & Cabredo Hofherr, in prepa-
ration). The indefinite determiner ONE$_{up}$ may function as a pronoun in a generic
context (38) and as a determiner preceding or following a noun in an episodic
context (39).

(38) **ONE$_{up}$** MOMENT HOSPITAL GO, ALWAYS THINK RESULT WORST.
'When one is admitted to the hospital, always fears the worst results.'

(39) **ONE$_{up}$** PERSON DOOR KNOCK.
'Someone is knocking at the door.'

Finally, there are two additional signs conveying indefiniteness that may also func-
tion as determiners and pronouns: SOME and ANY (the two signs may be articu-
lated in both high and low R-loci, as described in Section 5.3). Similar to the sign
ONE$_{up}$, SOME and ANY are not semantically restricted to a particular type of entity.
When signed in a low R-locus, SOME (40) and ANY (41) provide a partitive inter-
pretation once the restricted set has been uttered. When localized at a high locus,
the interpretation is not restricted to a particular set. When used in an interroga-
tive context, the sign SOME may be translated also as 'how many'. This supports
the relation between indefinites and interrogative pronouns, already mentioned
in Section 2.1.

$$\overline{\hspace{4cm}\text{br}\hspace{2cm}}$$
(40) IX1 BOOK CL:"row of books" **SOME$_{lo}$** OLD.
'Some of the books from my shelf are old.'

$$\overline{\hspace{4cm}\text{br}\hspace{2cm}}$$
(41) IX1 BOOK CL:"row of books" IX2 TAKE **ANY$_{lo}$**.
'Take any book from my shelf.'

The determiners and pronouns just mentioned are syntactically in complementary
distribution and are used in similar contexts. However, semantically they differ
in that the pronoun WHO^IX3pl refers to [+animate] entities, PERSON$_{up}$ refers to
[+human] entities, and ONE$_{up}$ does not have a semantic restriction. The following
table provides an overview of the syntactic function and the referential constraints
of the repertoire of lexical signs marking indefiniteness in LSC. While PERSON$_{up}$
and ONE$_{up}$ need to be associated with a high R-locus for the indefinite reading to
arise, the remaining signs allow for both options (high and low R-loci) and still
trigger an indefinite reading.

Table 3. Properties of lexical signs marking indefiniteness

	Function		Reference	
	Determiner	**Pronoun**	**Animate**	**Inanimate**
ıx3pl	✓	✓	✓	✓
PERSON_up	✓	✓	[+human]	
WHO^ıx3pl		✓	✓	
ONE_up	✓	✓	✓	✓
SOME	✓	✓	✓	✓
ANY	✓	✓	✓	✓

5.2 Nonmanual marking for indefiniteness

Nonmanual marking is also a crucial part of the grammar of sign languages (Pfau & Quer 2010). In LSC, nonmanuals also play a role in the encoding of referential status, with indefiniteness being expressed by a particular nonmanual marker that involves the lower part of the face and consists of sucking in the cheeks and pulling the corners of the mouth down. This is sometimes combined with a shrug. This facial expression, which is shown in Figure 10, is aligned with indefinite NPs that are not novel, non-unique, and not familiar.

Figure 10. Nonmanual associated with indefiniteness

Moreover, when the indefinite NP corresponds to a non-specific discourse referent, which is therefore not identifiable by the signer and does not belong to a restricted set, the articulation of the nonmanual is aligned with a particular eye gaze. A non-fixed eye gaze towards a locus is used (Figure 11), and a corresponding darting eye gaze is aligned with the NP.

Figure 11. Non-fixed eye gaze

The non-fixed eyegaze together with the nonmanual articulated on the lower part of the face provide semantic-pragmatic information. An interesting question that arises, but which is outside the scope of this article, is how this indefinite nonmanual marking is compositionally combined with other nonmanuals. Also, it would be interesting to investigate how the mouth pattern combines with the shrug, and whether the two markers possibly contribute independent specialized meanings. Since the main focus of the present article is on the manual encoding of indefiniteness and (non-)specificity in LSC, the relevant nonmanual markers have only been treated descriptively and will have to be analyzed in depth in future research.

5.3 Manual morphosyntactic modulations

As already introduced in Section 1, in LSC NPs may be associated with an R-locus established on a low area of the frontal plane, as well as with a high R-locus. In this section, we argue that the height of localization of the indefinite NPs corresponds to a different specificity interpretation. Section 2.2 has shown that a specific interpretation corresponds to three properties, namely wide scope, epistemic specificity, and partitivity. As demonstrated below, these three properties of specificity need to be considered to motivate the distinction between high and low R-loci.

The (non-)specificity distinction is overtly expressed in the use of signing space in LSC. Discourse referents that are specific, that is, have a wide scope reading, are identifiable by the sender, and are part of a restricted set, are associated with a low R-locus. In contrast, discourse referents that are non-specific, that is, have a narrow scope reading, are unidentifiable by the sender, and are not part of a restricted set, are associated with a high R-locus. This is shown in the semi-minimal pair found below (this minimal pair comes from the semi-spontaneous, not the elicited data; this is why the minimal pair is not exact). While in (42) the discourse referent corresponds to a particular individual, which is identifiable by the signer, in (43) the discourse referent does not correspond to a particular individual, and it is therefore not identifiable by the signer. Each one is graphically shown in the corresponding figures, where the specific discourse referent in (42) is associated with a low R-locus (Figure 12), while the non-specific discourse referent in (43) is associated with a high R-locus (Figure 13).

<u>eg:cl-lo</u>

(42)   IX1   **CAT IX3**$_{\text{cl-lo}}$ WANT BUY. IX3$_{\text{cl-lo}}$ CHARACTER OBEDIENT.
      'I want to buy a cat. It is very obedient.'

Figure 12. NP associated with a low R-locus (signer articulating the first instance of IX3$_{\text{cl-lo}}$ in example (42))

<u>eg:ipsi-up</u>

(43)   **CAT IX3.pl**$_{\text{ip-up}}$ IX1 WANT BUY. MUST CHARACTER OBEDIENT.
      'I want to buy a cat. It must be obedient.'

Figure 13. NP associated with a high R-locus (signer articulating the sign IX3.pl$_{\text{ip-up}}$ in example (43))

The articulation of signs directed to signing space also varies depending on the direction and, more specifically, on the interpretation they receive. Signs directed towards low R-loci have a tensed realization and are directed towards a concrete point in space. In such cases, a specific reading arises. Signs directed to high R-loci, which correspond to a non-specific interpretation, are non-tensed, have a vague realization, and are directed towards a more widespread area rather than a particular spatial location (cf. Barberà (2012) for a distinction between strong and weak localization).

As mentioned in Section 5.1, many of the LSC indefinite lexical signs listed in Table 3 may be associated with a low R-locus and also with a high R-locus (except for PERSON$_{up}$ and ONE$_{up}$, which only trigger an indefinite reading when they are associated with a high R-locus). When the particles are associated with a low R-locus, a specific reading arises, which may have a partitive interpretation, where the discourse referents belong to a restricted set. The interpretation of the discourse referents conveyed in (44) is restricted by a particular domain of reference. In contrast, when the indefinite particles are associated with high R-loci and thus establish the NP in a higher and upper area, a non-specific and non-partitive interpretation arises (45).

(44) a. HOUSE **SOME**$_{lo}$
          'some of the houses'
      b. HOUSE **ONE**$_{lo}$
          'one of the houses'
      c. HOUSE **ANY**$_{lo}$
          'any of the houses'

(45) a. HOUSE **SOME**$_{up}$
          'some houses'
      b. HOUSE **ONE**$_{up}$
          'one house'
      c. HOUSE **ANY**$_{up}$
          'any house'

As explained in Section 3.3, one of the grammatical tests to distinguish between specific and non-specific readings is based on the possibility of having a co-referential pronoun (grammatical test (i)). Only specific NPs establish a discourse referent, and once a discourse referent has been established, it can be referred back to by an anaphoric pronoun in subsequent discourse. In contrast, when talking about a non-specific discourse referent, a co-referential anaphoric pronoun is only felicitous when it is embedded under an operator.[7] For the LSC case, NPs associated

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7. Note 3 also applies here.

with a low R-locus may have a co-referential pronoun in further discourse, corresponding to a specific interpretation (46). When the NP is associated with a high R-locus, the co-referential pronoun alone is not felicitous (47a), as it needs to be embedded under a modal verb, like MUST, and expressed as a null pronoun.

(46)   CAT IX3$_{lo}$, IX1 WANT BUY. IX3$_{lo}$ LEG BIG CL:"big-legs".
'I want to buy a certain cat$_{spec}$. It has long legs.'

(47)   a.   CAT IX3$_{up}$, IX1 WANT BUY. #IX3$_{up}$ LEG BIG CL:"big-legs".
'I want to buy a cat$_{non-spec}$. #It has long legs.'
b.   CAT IX3$_{up}$, IX1 WANT BUY. MUST LEG BIG CL:"big-legs".
'I want to buy a cat$_{non-spec}$. It must have long legs.'

The example in (46) involves an instance of a discourse referent with wide scope reading, which is identifiable by the signer. This contrasts with the narrow scope reading obtained in (47b), where the discourse referent cannot be identified.

Section 3.3 has shown that the English determiner *certain* forces a specific reading because it can only refer to an identifiable entity (grammatical test (ii)). Thus, the use of this determiner within an NP positively identifies a specific NP. Conversely, LSC features a sign that can only occur in non-specific contexts, namely the sign glossed as CONCRET (Figure 14). Therefore, the use of the sign CONCRET positively identifies a non-specific discourse referent. The sign restricts the domain of interpretation of the discourse referent referred to but always with a kind interpretation.

Figure 14. Two instances of the sign CONCRET

As (48) shows, an NP with the sign CONCRET is used to refer to a discourse referent that has the property of being a tool, and more concretely the property of being a screwdriver, but the signer does not know the exact identity of this entity. Among all the possible tools available, the one the signer is referring to needs to be of a screwdriver nature, although she does not have a particular one in mind. According to grammatical test (iii) in Section 3.3, non-specific contexts are felicitous with a

sluicing context. This is shown in the felicitous continuation in (48a) below, which indicates that the sender does not know the exact identity of the tool. In contrast, a continuation with a context showing that the identity is known is not felicitous (48b). Therefore, the sign CONCRET as a marker of non-specificity is compatible with sluicing contexts.

<div style="text-align:center">
<u>   </u>eg:up
</div>

(48) CARLOS WANT TAKE ONE$_{up}$ ANY$_{up}$ TOOL CONCRET FOR CL:"screwdriver" OUT.
      'Carlos is looking for a tool, which serves as a screwdriver.'
    a.   IX1 KNOW-NOT WHICH.
        'I don't know which one.'
    b.   #IX COLOR BLUE.
        'It is the blue one.'

6. Conclusions

This article has offered a thorough analysis of how reference, in particular indefiniteness, is encoded in LSC, which contributes to the characterization of the abstract import of signing space. By using a combined methodology of corpus data and grammatical tests, the present study shows that the encoding of indefiniteness and specificity in LSC is achieved by three main means, namely lexical signs, the use of nonmanuals, and the use of signing space. While the kinds of signs used parallel strategies attested in spoken languages (i.e. interrogative signs, generic ontological-category nouns, etc.), LSC also makes use of the natural means offered by the visual-spatial modality. Therefore, particular nonmanual markings aligned with the NP, together with manual modulations of signs in signing space, are also used when conveying different referential statuses of the entities introduced in the discourse. It has been shown that specificity distinctions are mostly achieved through nonmanuals in combination with the use of signing space and, more concretely, by spatial modifications of signs on the frontal plane.

The analysis of specificity in LSC requires (at least) three types of specificity: scopal specificity, epistemic specificity, and partitivity. The distinction in specificity tied to these three properties is overtly expressed by means of the contrast between high and low R-loci. Moreover, the three types of specificity considered here can be subsumed under a more global property, which entails that the interpretation of the discourse referent depends on a domain of discourse. According to this global property, wide scope refers to a particular individual from a domain of discourse, which the sender has in mind. Epistemic specificity refers to an individual the identity of which is identifiable or not by the sender. The dependence

on the domain of discourse refers to the sender's specific use of an indefinite and the specific interpretation by the addressee. At the sender's end, the specific use is represented by an anchor to the object that is the intended referent of the indefinite. At the addressee's end, the specific interpretation is an anchor used in the representation he establishes between a representation of the sender and the discourse referent for the specific indefinite (labelled *internal anchor* by Kamp & Bende-Farkas (2006), and *referential anchor* by von Heusinger (2002)). What is crucial is that in LSC, the specific use of the sender (when conveying a discourse referent with wide scope interpretation, which is identifiable) is overtly encoded and marked through the use of signing space. This is represented with a low R-locus. Finally, partitivity is the third property that also shows dependence on a domain of discourse. The discourse referent intended in a partitive construction always belongs to a restricted domain of entities. In LSC dependence on a domain of interpretation is also overtly encoded in the use of signing space and more concretely by low R-loci.

This article stands as a novel contribution to the young field of sign language semantics-pragmatics interface by focusing on the codification of referential status and, more concretely, on how LSC signers mark the knowledge they have about discourse referents. The study constitutes a first step towards the characterization of the use of indefiniteness marking, which needs to be contrasted with other sign languages in order to expand our cross-linguistic knowledge specifically in the discourse domain. Taking into account that indefinite determiners and pronouns form a rich paradigm, one possible way to further proceed in this area of research is to apply Haspelmath's (1997) implicational map for functions of indefinite pronouns to a sign language and establish the various functions of indefinites, such as quantifiers, epistemic indefinites, and free choice items. Moreover, the domain of quantification of indefinites has recently been studied for ASL (Davidson & Gagne 2014), and a novel proposal incorporating the three properties of indefinites, namely specificity, scope, and domain of interpretation, has been outlined (Kuhn 2014). The combination of these aspects opens up an interesting avenue for future research that needs to be further explored in both language internal and crosslinguistic studies.

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