

Language and modality:
Effects of the use of space in the
agreement system of *lengua de signos
española* (Spanish Sign Language)

LANGUAGE AND MODALITY:
EFFECTS OF THE USE OF SPACE IN THE AGREEMENT
SYSTEM OF *LENGUA DE SIGNOS ESPAÑOLA*
(SPANISH SIGN LANGUAGE)

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Do m'athair,
do mo mháthair,
do mo dheirfiúr.

I have been to hell and back. And let me tell you, it was wonderful.

Louise Borgeois

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Abbreviations of sign language names

ABSL	Al-Sayyid Bedouin Sign Language (Negev Desert, Israel)
ASL	American Sign Language
Auslan	Australian Sign Language
BSL	British Sign Language
CSL	Chinese Sign Language
DGS	<i>Deutsche Gebärdensprache</i> (German Sign Language)
DSGS	<i>Deutschschweizerische Gebärdensprache</i> (Swiss German Sign Language)
DTS	<i>Dansk Tegnsprok</i> (Danish Sign Language)
ESL	Estonian Sign Language
GSL	Greek Sign Language
ISL	Israeli Sign Language
IPSL	Indo-Pakistani Sign Language
KK	<i>Kata Kolok</i> (Bali, Indonesia)
KSL	Korean Sign Language
LIU	<i>Lughat al-Ishāra al-Urdunia</i> (Jordanian Sign Language)
Libras	<i>Lingua Brasileria de Sinais</i> (Brazilian Sign Language)
LIS	<i>Lingua italiana dei segni</i> (Italian Sign Language)
LSA	<i>Lengua de señas argentina</i> (Argentine Sign Language)
LSC	<i>Llengua de signes catalana</i> (Catalan Sign Language)
LSCol	<i>Lengua de señas colombiana</i> (Colombian Sign Language)
LSF	<i>Langue de signes française</i> (French Sign Language)
LSFB	<i>Langue de signes française de Belgique</i> (Belgian French Sign Language)
LSE	<i>Lengua de signos española</i> (Spanish Sign Language)
LSM	<i>Lengua de señas mexicana</i> (Mexican Sign Language)
LSQ	<i>Langue des signes québécoise</i> (Quebec Sign Language)
NGT	<i>Nederlandse Gebarentaal</i> (Sign Language of the Netherlands)
NS	<i>Nihon Shuwa</i> (Japanese Sign Language)
NZSL	New Zealand Sign Language
RSL	Russian Sign Language
SSL	Swedish Sign Language
TİD	<i>Türk İşaret Dili</i> (Turkish Sign Language)
TSL	Taiwan Sign Language
VGT	<i>Vlaamse Gebarentaal</i> (Flemish Sign Language)

Notation conventions

The examples in different signed and spoken languages follow the (February 2008 version of the) Leipzig Glossing Rules (LGR), developed jointly by the Department of Linguistics of the Max Planck Institute for Evolutionary Anthropology and by the Department of Linguistics of the University of Leipzig.¹ Where examples are cited from other works, the transcription has been adapted to conform to the LGR as closely as possible. For ease of reference, the list of common abbreviations specified in the LGR is reproduced at the end of this section. Any abbreviations not included in the common LGR list are explained below the example in which they appear, and have been added to the list included here.

The sign language examples include illustrative stills whenever possible and are transcribed using glosses in SMALL CAPS. While I have tried to maintain the conventions and abbreviations of the LGR, certain established glossing practices in the sign language literature have been maintained as standard, and are explained below:

- Hyphens are used when more than one word is required to gloss a single sign:

LOOK-AFTER

Note that this differs from the LGR usage, for which a hyphen separates distinct morphemes.

- Spatial modification of a sign is marked with a subscript. The subscript may indicate a location in the signing space (denoted by *x*, *y*, *z* or *neut* for the neutral location at the unmarked centre of the signing space) or on the signer's body (denoted by 1):

GROUP_x

Pointing or index signs (glossed as *IX*) invariably include a subscript to indicate the direction of the pointing.

Subscripts are also used for referential indices, marking coreferentiality, but are distinguished from spatial modification by the index used: *i*, *j* and *k* (as opposed to *x*, *y* or *z* for locations in the signing space).

For spatial modification involving movement between two points, as is the case for agreeing verbs, a subscript at the beginning of the gloss

¹ Available on-line: www.eva.mpg.de/lingua/resources/glossing-rules.php

denotes the initial location and a subscript at the end of the gloss denotes the final location:

¹LOOK-AFTER_x

Note that this differs from LGR usage, which would use the “>” symbol for an affix that simultaneously expresses two arguments of a verb.

- Fingerspelling is shown by individual, lowercase letters joined by hyphens:

o-a-k

- Classifier constructions are indicated by CL followed by a description of the form/meaning in parentheses:

CL(group)_y

(Note that classifier constructions are invariably located in the signing space, so a subscript is included to show this.)

- Relevant non-manual features are shown above the glosses of the signs, with horizontal lines indicating the scope or duration of the non-manual feature in question. The abbreviations used to categorize the non-manual features are in lower case and may describe function (e.g. “q” for a question marker) or form (e.g. “eyebrow raise”).
- In most circumstances only a single gloss is given for the sign stream, but where the activity on each hand is relevant, the transcription includes a line for each hand, the upper line glossing the dominant hand and the lower line the non-dominant hand. When a given hand performs a hold (maintaining a given sign while the other hand continues to produce signs), a dashed line shows the duration of the hold:

D hand	ESTI	BOYFRIEND	COME	IX _{middle-finger}
ND hand	BUOY _{index}	BOYFRIEND	BUOY _{index+middle} -----	

- List buoys are shown by means of the gloss BUOY and include a subscript to indicate which fingers (of the non-dominant hand) are extended. When the dominant hand points at a buoy, the IX gloss is used with a subscript showing which finger (on the non-dominant hand) is being pointed at. (See examples above.)

For examples with multiple signs, the relevant items are highlighted by bold face for the glosses, and a shaded background for the relevant images. Examples taken from recordings made for this study include the name of the recording followed by the time point at which the example occurs.

Common abbreviations of the Leipzig Glossing Rules

This list includes the common abbreviations published in the February 2008 version of the Leipzig Glossing Rules that are used in this thesis, plus any further abbreviations that were required for the examples included (distinguished in boldface).

1	first person	INS	instrumental
2	second person	INV	inverse
3	third person	IX	index
A	agent-like argument of canonical transitive verb	LOC	locative
ABL	ablative	M	masculine
ABS	absolutive	N	neuter
ACC	accusative	N-	non- (e.g. NSG nonsingular, NPST nonpast)
ADJ	adjective	NEG	negation, negative
AGR	agreement	NEUT	neutral location in signing space
AOR	eorist	NOM	nominative
ART	article	OBV	obviative
ASP	aspect	P	patient-like argument of canonical transitive verb
AUX	auxiliary	PL	plural
BEN	benefactive	PM	phrase marker
CL	classifier	POSS	possessive
COMP	complementizer	PRF	perfect
COMPL	completive	PRS	present
D hand	dominant signing hand	PRO	pronoun/pronominal
DAT	dative	PROG	progressive
DEF	definite	PRV	preverbal
DEM	demonstrative	PST	past
DEP	dependent	PU	palms up
DIR	directional	Q	question particle/marker
DISTR	distributive	REL	relative
DTS	direct theme sign	RES	resultative
DU	dual	S	single argument of canonical intransitive verb
ERG	ergative	SBJ	subject
F	feminine	SBJV	subjunctive
FUT	future	SG	singular
G	gender class	TOP	topic
GEN	genitive	TR	transitive
HON	honorific		
IIND	independent indicative		
IMPF	imperfect		
INAN	inanimate		
INF	infinitive		

1. Introduction

This thesis examines the nature of the agreement system in *lengua de signos española* (LSE – Spanish Sign Language). Within sign language linguistics, verbal agreement strategies are one of the most studied aspects of these languages. There are several reasons for such intense interest in the topic, and these have also motivated this study in the context of a specific sign language. Firstly, verbal agreement in sign language displays several unusual characteristics, such as restrictions on the number of verbs that show agreement, a typologically uncommon state of affairs. Secondly, verbal agreement in sign language makes use of strategies that are anchored to the visual-gestural nature of sign languages, and thus unavailable to spoken languages. Furthermore, the basic agreement mechanism is very similar (if not identical) across many unrelated sign languages, bringing into question the influence that the language modality may exert on a language's structure and organization.

The interaction of modality and language is the overarching theme for this thesis, and the research has been guided by far-reaching questions about the role sign language data can play in redefining our understanding of human language in general. These guiding principles are introduced in section 1.1 of this chapter. Section 1.2 concentrates on an aspect of sign languages that is a strong candidate for turning up modality effects since it is a mechanism that is unavailable to spoken languages: the use of space. Sign languages use space in different ways, and these are briefly described before limiting the discussion to one particular spatial device in section 1.3, namely verbal agreement. Section 1.4 gives a basic introduction to the specific language under investigation, LSE, and its most relevant characteristics, such as general sociolinguistic information and its relation to other sign languages. This section also includes an overview of previous research into the language. Section 1.5 articulates the specific research questions that provided the starting point for this study, and section 1.6 concludes this chapter by giving an outline of the remaining chapters.

1.1. Language and modality

This study focuses on a specific aspect of a specific sign language, but is couched in a much broader perspective. Firstly, the LSE data will be compared with data from other sign languages and also spoken languages to provide a typological context for agreement in LSE. Furthermore, the wider consequences of the findings for linguistic theory in general will be examined by taking a step back to see the bigger picture.

Sign languages offer the unique opportunity to look at the effect of modality on language:

Why should we be interested in whether specific aspects of linguistic structure might be attributable to the particular properties of the transmission channel? Exploration of modality differences holds out the hope that we may achieve a kind of explanation that is rare in linguistics. Specifically, we may be able to explore hypotheses that this or that property of signed or spoken language is attributable to the particular constraints that affect that modality. (Meier 2002: 5)

If linguistic research limits itself to spoken languages and the proposals for the fundamental nature of language are based solely on spoken language data, it will be impossible to know whether recurrent properties reflect general design characteristics of human languages or are merely due to the vocal/auditory medium. By including sign languages in the linguistic program, the variable of modality is introduced and we may hope to distinguish core language properties from modality effects.

Can we hope to find modality effects by comparing signed and spoken languages, or are they essentially the same? Although the field has been marked by a tendency to highlight the similarities between spoken and signed languages – due in large part to a need to socially dignify sign languages and to justify their inclusion within the discipline of linguistics (Woll 2003) – recent research has started to look for possible differences between signed and spoken languages (Meier, Cormier & Quinto-Pozos 2002; Vermeerbergen 2006). This “sign differential” view is an attempt to study sign languages in their own terms without applying inappropriate concepts or imposing models developed in the context of spoken languages. This approach to sign language research is closely linked to the idea that sign languages are qualitatively different to spoken languages and have different organization and structure. These dissimilarities are due to the distinct modalities of signed and spoken languages and the specific sociolinguistic context of sign languages, especially their relative youth (Aronoff, Meir & Sandler 2005). The modality differences may be due to the contrasting nature of the articulators used for language

production and the perceptual systems used for language comprehension, and the resulting potential for iconicity that arises from the use of space (Meier 2002, 2012). The articulators employed by sign languages give rise to possibilities of simultaneity (section 1.1.1) and, together with the use of space, to a greater exploitation of iconicity (section 1.1.2); the use of space itself, the main focus of this thesis, will be looked at in section 1.2.

The notion that modality shapes language coupled with the observation that many different (and unrelated) sign languages have similar structures and make use of analogous mechanisms (such as classifier constructions and non-concatenative morphology) leads to the suggestion that sign languages are not only different to spoken languages because of their different modality, but also that they are similar to one another because of their shared modality. However, it is important to bear in mind that sign languages show greater variation between themselves than was once realised and growing research on a wider range of sign languages confirms that (superficial) universal properties are hard to come across (Perniss, Pfau & Steinbach 2007). Furthermore, work on non-western sign languages and particularly “shared sign languages”, which exist in sociolinguistic contexts quite unlike that of most western sign languages studied to date, have revealed greater variability across languages in the visual gestural modality. (For an overview see Nyst 2012 and de Vos & Pfau 2015.) These differences between sign languages may be accounted for in terms of diverse factors such as modality, typology and parametric variation within the framework of Universal Grammar, in the same way that linguistic diversity is explained for spoken languages (Hohenberger 2007).

This brings us to the alternative to the “sign differential” view: the “sign same” position holds that sign languages are essentially the same as spoken languages, both being expressions of the underlying language faculty that has fixed core properties (Pinker & Jackendoff 1995). Of significance is the nuance of *underlying* similarity: signed and spoken languages have undeniable differences, but there are enough similarities to claim that a common computational component serves both (Lillo-Martin 2001, 2002, 2006). The concept of a specific language component is closely associated with generativist linguistics and the Chomskian tradition which claims that language is an innate human faculty that exists as a specific cognitive module in the brain (Chomsky 1965; Fodor 1983; see section 2.3 of the next chapter for a brief overview of generativist linguistics).

We now turn to specific aspects of modality differences between signed and spoken languages (simultaneity and iconicity) before moving on to the issue of space in sign languages.

1.1.1. *Simultaneity in sign languages*

The articulators used to produce sign language are radically different to those employed by spoken language. The most salient difference is a question of scale: the hands, arms, upper body and head are much larger and occupy a greater volume than the vocal apparatus. This gives them much greater visibility and allows them to make use of space in a way that the larynx, epiglottis, tongue and lips do not, as we shall see in section 1.2. Furthermore, together with this macro-scale visibility, the articulators are relatively independent of one another and can perform different movements at the same time. This opens up the possibility for simultaneity in sign languages.

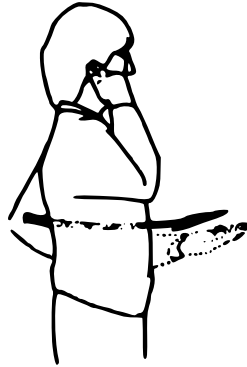
Sign language production may be divided into two main channels: the manual and the non-manual. The manual component is articulated by the hands, and the non-manual component is expressed by the head (tilts, nods, shakes), the eyebrows (raised, frowning), the eyes (gaze direction, blinks, aperture), the nose (wrinkling), the mouth (mouthing), the shoulders (raised) and upper body (tilts, turns). I will look first at simultaneity within the manual component, and then at the non-manual component.

The fact that sign language is articulated by the hands, of which there are two, makes it possible to be doing two different (linguistic) things at the same time. However, it is not true to say that signers have two independent articulators equivalent to having multiple voices, like those of Willie from the cartoon *The whale who wanted to sing at the Met*, who could sing duos with himself. On the whole, for most signing production, the hands work in coordination: one (non-dominant) hand is subjugated to the other (dominant) hand, and there are restrictions on what the non-dominant hand can be doing according to the activity of the dominant hand (Battison 1978). This holds true for most lexical signs (those with a fixed form whose meaning is not entirely subject to context), but under certain circumstances the hands may act with a greater degree of autonomy. A taxonomy of different types of simultaneous construction is proposed by Miller (1994) and here we shall look at two broad groups of simultaneous bimanual constructions: co-occurring lexical signs and classifier constructions.

The first type of simultaneity occurs with one-handed signs. Some signs do not make use of the non-dominant hand, and in the case of some two-handed signs the non-dominant hand may be suppressed (Battison 1974; Padden & Perlmutter 1987; Brentari 1998). With this type of sign, it is possible for each hand to articulate a different sign at the same time, which may be compared to uttering two words simultaneously, as can be seen in the British Sign Language (BSL) examples in (1).

BSL (Kyle & Woll 1985: 30. Images reproduced with kind permission from Cambridge University Press.)

(1) a.



D hand DEAF
 ND hand BORN
 '(I was) born deaf.'

b.



LITTLE
 BOY
 'A small boy.'

It is also common for the non-dominant hand to maintain a sign (or part of a sign) while the dominant hand continues to produce a string of signs. In these cases the non-dominant hand is frequently a pointing sign or an enumeration marker (known as buoys, Liddell 2003).¹ This mechanism is exploited for discourse effects, such as foregrounding the topic, or to mark temporal relations between events, as illustrated for Quebec Sign Language (LSQ) in (2), which makes use of the non-dominant hand to indicate the times at which the successive events articulated on the dominant hand occur.

LSQ (Miller 1994: 134)

(2)

D hand ENGLISH CLASS GO HOME STUDY EAT
 ND hand TWO FOUR SIX SEVEN

'At two (o'clock) I go to English class; from four to six I go home and study; at seven I eat.'

For these lexical signs, the various components or parameters, such as the handshape, the place of articulation and the movement, represent phonological features of the sign. However, for a different set of signs, known

¹ The classification of a pointing sign as a lexical sign is somewhat questionable, but I include simultaneous constructions which involve pointing signs under the broad label of lexical signs for the sake of expository simplicity. As will become clear, the nature of pointing and points in space generally is critical for an analysis of verbal agreement in sign languages. The general idea – that the hands are doing two different things at the same time – is left intact by this qualification.

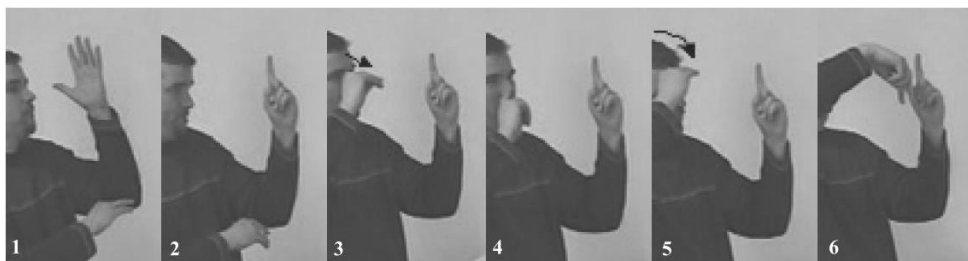
as classifier constructions, the parameters are morphological in nature, each adding to the meaning of the sign (Emmorey 2003). In these constructions, the hands represent an object according to its size and shape or the way in which it is handled (Supalla 1982, 1986). (As such, classifier constructions depend on the discursive context for their meaning and so contrast with lexical signs.) For example, a car may be represented by a flat, horizontal handshape in a classifier construction, or a motorbike by the gripping of imaginary handlebars. Thus, it is possible for each hand to stand for distinct objects: generally the non-dominant hand represents a secondary object or ground that the dominant hand (the primary object or figure) acts on or relative to (Sandler & Lillo-Martin 2006: 78). In the German Sign Language (DGS) example shown in (3), an extended index finger is the handshape used as a classifier for a tree (the ground), relative to which another classifier handshape is positioned to represent the location (and orientation) of a person with respect to the tree.

DGS (Perniss 2007: 78. Images reproduced with kind permission from the author.)

(3)



(Scene described.)



D hand							
ND hand	TREE	CL(tree) _{left}	hold				
				MAN	BROWN	HAT	CL(man) _{right}

'The man in the brown hat is to the right of (and facing) the tree on the left.'

In addition to the simultaneity provided by the use of both hands, there is a high degree of simultaneity within the use of a single hand in these classifier constructions. As noted above, each parameter of the sign is an individual morpheme that is articulated at the same time as the others. For example, a flat horizontal handshape that is slightly inclined and advances upward and curving to the left while bumping up and down and moving in stop-start fashion could be used to describe a faulty car ascending an uneven winding mountain road. The semantic density of these constructions has led to the

proposal that sign languages tend to favour non-concatenative morphology due to the heightened iconic motivation afforded by the visual medium (Aronoff, Meir & Sandler 2005). This prevalence of simultaneity is reflected in Brentari's (1998, 2002) claim that sign languages are limited to a typological class of their own in terms of morphemicity and syllabicity: the canonical wordshape in sign languages is monosyllabic and polymorphemic. This trait may be connected to the relative slowness of the gross-motor articulators of the hands, arm and body compared to spoken language articulators: "in spoken languages, little information may be conveyed in many small chunks, whereas in sign languages, a lot of information is conveyed in a few big chunks" (Hohenberger 2007: 350).

The multiple layering of meaning is also made possible by the use of non-manual features during signing. As well as the hands, various parts of the upper body come into play during sign production, especially facial elements such as the eyes and mouth. These non-manuals may have different values according to the context in which they appear. At the phonological level, a sign may include a specific non-manual feature in its lexical entry as shown in example (4): the sign SINGER includes movement of the mouth (imitating the movement of the mouth during singing); the non-manual component of the sign LOVE-IT involves inserting the lower lip beneath the upper teeth, raising eyebrows and opening the eyes wide.

LSE (TZ²)

(4) a.



SINGER

b.



LOVE-IT

At the morphological level, the inclusion of a non-manual may add meaning to a sign, such as intensity, as in example (5). The sign RAIN is normally articulated with neutral facial expression, as shown in (5a). By reducing eye aperture and pursing the lips, as in (5b), the sign has the meaning of "light

² TZ refers to the Tecno Zeinu CD-ROM (Asociación de Personas Sordas de Bilbao y Bizkaia 2004). See fn. 7 in chapter 4.

rain.” Alternatively, “heavy rain” may be expressed by adding deeply furrowed brows and puffed out cheeks to the sign, as in (5c). (There is also some change in the manual component of this sign, mainly in the size and tension of the movement.)

LSE (TZ)

(5) a.



RAIN

b.



LIGHT-RAIN

c.



HEAVY-RAIN

At the syntactic level, a non-manual may mark negation or interrogatives, as shown in (6).³ The final sign in the sentence includes furrowed eyebrows and a slight backwards head tilt, typical wh-question marking in LSE.

LSE (TZ)

(6)



D hand	HOUSE	CL(area)
ND hand	HOUSE----hold-----	

‘What’s your house like inside?’



At the prosodic level non-manuals, especially blinks, may serve as indicators of rhythm, especially blinks (Wilbur 1994; Sze 2008); and at the pragmatic

³ In examples of this type with various signs, the relevant part of the example is highlighted by shading behind the still(s) of interest and using bold typeface for the corresponding gloss(es).

level non-manuals – such as body tilts and turns – may serve to control turn taking and to create coherence within a stretch of discourse.

Non-manuals are frequently compared to prosody in speech, and to a certain extent there are strong parallels between both types of signal (Nespor & Sandler 1999).⁴ In spoken languages, pitch alternation may be used to fulfil pragmatic functions, and stress patterns mark rhythm. In some languages, intonation contours are the only means of distinguishing between declarative and interrogative structures. In the case of Spanish, a declarative sentence is marked by a falling intonational curve, as illustrated in (7a), whereas a question is signalled by rising intonation at the end, shown in (7b). Furthermore, in tonal languages, tone is phonemic in nature and distinguishes between different lexical elements, as attested by the contrived Thai question ใหม่ไหมไหมไหมไหม pronounced /mǎi mài mài mái/ with the meaning ‘Does new silk burn?’ (Brown 1986: 27).

Spanish

- (7) a.  (falling final intonation)
 El espacio es interesante.
 DEF.M.SG space(M) be.3SG interesting. M.
 ‘Space is interesting.’
- b.  (rising final intonation)
 ¿El espacio es interesante?
 DEF.M.SG space(M) be.3SG interesting. M.
 ‘Is space interesting?’

This consideration brings us to the issue of simultaneity in spoken languages. Generally considered to be sequentially organized, spoken languages do indeed have simultaneous structure. Prosody and tone are the most striking examples, as demonstrated in the previous paragraph, but other elements are also simultaneous, such as distinctive features of phonemes: the phoneme /p/ is [unvoiced], [bilabial] and [plosive] all at the same time, in much the same way that the phonological features of a sign occur simultaneously. By the same token, just as (spoken language) phonemes are ordered linearly, the locations and movements of a sign are organized in a sequence (Liddell 1984). However, it would be missing the point to simply state that signed and spoken languages are both simultaneous and sequential in nature: clearly the

⁴ More precisely, certain superarticulatory arrays, made up of eyebrow movement or eye aperture, are compared to suprasegmental intonation in spoken languages. Other types of non-manual activity, such as headshakes or body tilts, do not have such intonational behaviour (Sandler & Lillo-Martin 2006: 490).

question is a matter of degree, and signed languages show a marked preference for simultaneous structure. Furthermore, the simultaneity is deeply rooted: although spoken languages may manifest a certain degree of simultaneity in the shape of non-concatenative morphology (such as Semitic template morphology) or tonality, the superimposed material is organized and applied sequentially; in sign languages, in contrast, the simultaneous material may itself be multilayered (Sandler & Lillo-Martin 2006: 490).

Simultaneity is prevalent throughout the organization of sign languages. It may be explained by appealing directly to modality effects since the visual-gestural channel allows greater use of simultaneous organization, or in terms of a compensatory mechanism due to the slowness of the articulators and the need to maintain the processing density of the signal (Sandler & Lillo-Martin 2006: 491), or a combination of both. The possibilities for simultaneity are multiplied by the use of space. One could imagine a sign language that merely articulated signs one after the other and made some use of the non-manual channel (in much the same way that many manually coded versions of spoken languages do), with the result that there would be a much greater degree of sequentiality. Yet this is not what we find in naturally occurring signed languages and simultaneity abounds: for an overview of simultaneity in sign languages, see Vermeerbergen, Leeson & Crasborn (2007).⁵ This is not to say that sign languages do not have sequential organization and the interaction between the use of space and linearization in language is examined in chapter 7.

1.1.2. *Iconicity in sign languages*

The question of iconicity is a recurrent theme in work on sign languages. Unfortunately, the notion is often appealed to with little rigour, and the term not clearly defined. This section gives a brief overview of the issues relating to iconicity in sign languages in the context of modality effects. For a more thorough treatment of the topic, the reader is referred to Taub (2001) and Perniss (2007: ch. 2).

Iconicity is a correspondence between form and meaning. *Imagistic* iconicity refers to a similarity between the form of a sign (in the semiotic

⁵ An important exception that has been documented is Adamorobe Sign Language (Nyst 2007a,b), one of a group of the so-called “shared sign languages” mentioned above in section 1.1. Adamorobe Sign Language shows a certain amount of simultaneous manual/non-manual behaviour but very few simultaneous bimanual constructions. This may be explained by the lack of classifier constructions in the language, the main source of simultaneity in most sign languages, but highlights the need to take into account the unusual properties of these languages when making generalizations about sign languages.

sense) and its referent. An example is the sun symbol used on a weather forecast map; both sign and referent are round and bright yellow. *Diagrammatic* iconicity is a correspondence between parts of a representation and parts of the thing it represents. An example is the number of lines on a symbol to represent the strength of the wind; the relation between the wind barbs corresponds to the relation between different types of wind, such that the more bars there are, the stronger the wind (as exemplified in figure 1.1). In the linguistic realm, diagrammatic iconicity is present in the correspondence between the temporal order of orations and that of the events described, captured by Jakobson's (1965: 26) classic example '*veni, vidi, vici*'.⁶ These definitions of iconicity are based on Peirce's (1932) seminal work on semiotics.⁷

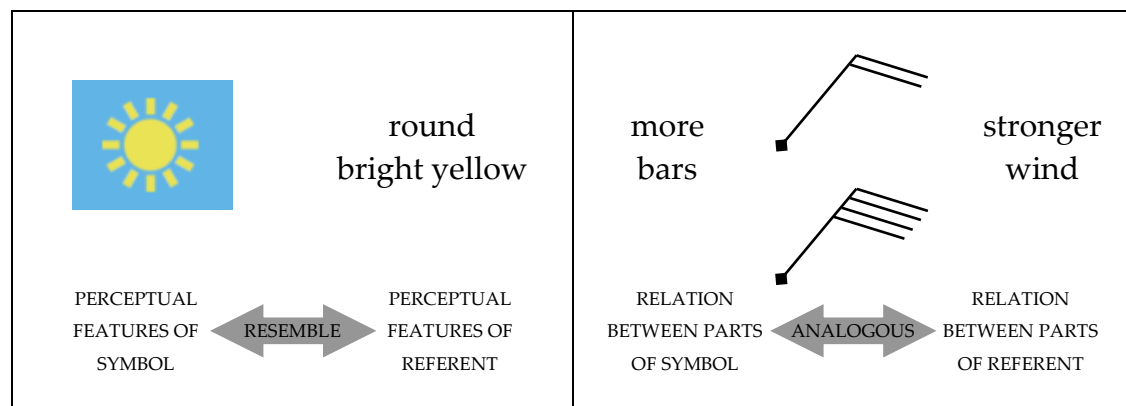


Figure 1.1. The relationship between form and meaning in imagistic (left) and diagrammatic (right) iconicity.

Iconicity is closely related to the notion of motivation, and this is perhaps one of the reasons why sign languages were excluded from linguistic study for so long.⁸ The Saussurean dogma of the arbitrariness of the linguistic sign as a defining feature of language led to signed languages being dismissed as mere pantomime. And indeed, the forms of signs do tend to show greater motivation than those of words. Considering that much of what language is used to talk about refers to the visual world, it is not surprising that a visual language shows a great deal of motivation in the form of its signs. Conversely, if we focus on the domain of sound related concepts, spoken languages show a much greater degree of motivation by means of onomatopoeia and sound symbolism (Hinton, Nichols & Ohala 1994).

⁶ For the development of the concept of diagrammatic iconicity in spoken languages, see the papers in Haiman (1985).

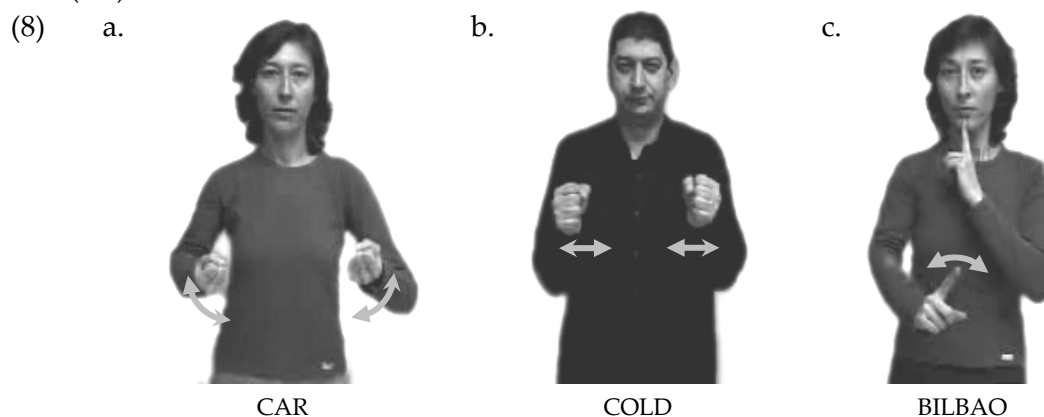
⁷ Peirce also included a third type of iconicity: *metaphors*.

⁸ For an overview of the history of sign linguistics, see McBurney (2001).

Equally, we seem to have a natural bias for considering iconicity in visual terms and tend not to pick up on correspondences between form and meaning in other dimensions, such as temporal organization (in this respect, for sign languages see Wilbur 2008).

Much of the literature on iconicity in sign languages deals with imagistic iconicity at the word/sign level (e.g. Klima & Bellugi 1979; Pizzutto & Volterra 2000; Pietrandrea 2002; Wilcox 2004; Ormel, Hermans, Knoor & Verhoeven 2009; Perniss, Thompson & Vigliocco 2010; Baus, Carreiras & Emmorey 2013).⁹ The fact that the sign for a given concept may bear a visual connection to its referent is unquestionable, as can be seen from the LSE examples in (8). The examples in (8a) and (b) are transparent enough that they would appear in pantomimic gestures for the same meanings; in (8c) BILBAO depicts the traditional musical instruments (the *txistu*, a one-handed flute, and the *danbolin*, a drum) typical to the region where the city is located

LSE (TZ)



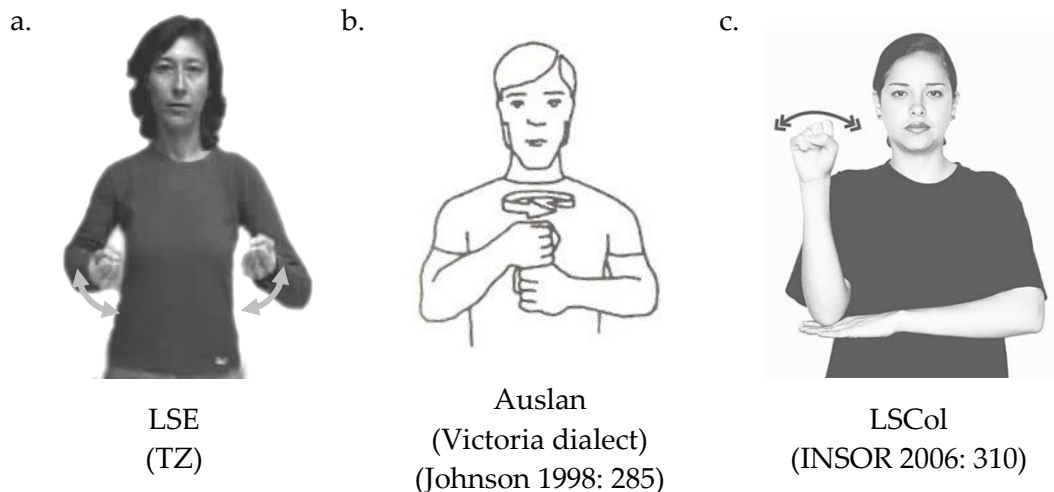
However, there are two important observations to be made. Firstly, although signs may show a certain degree of visual motivation, this does not exclude some level of abstraction. In (8a), the sign CAR uses metonymy to associate (the action of handling) a part of the referent with the whole; (8b) COLD associates an action typically used to counteract the effects of a physical sensation with the concept, in what may be described as a type of indirect synaesthesia; (8c) BILBAO depicts cultural artefacts associated with the referent. The process for the creation of an iconic sign may be broken down into various stages: conceptualizing, image selection, schematizing and encoding (Taub 2001). This relates to the second point concerning iconic signs: even though a given sign may have a (high) degree of visual motivation, this does

⁹ Work which looks at the role of (imagistic) iconicity at the discourse level in sign languages includes Sallandre & Cuxac (2002) and Russo (2004).

not make its meaning transparent and does not rob it of all arbitrariness. The fact that sign-naïve subjects fail to guess the meaning of signs above chance confirms the relative opacity of the forms (Klima & Bellugi 1979), and (8c) demonstrates that specific cultural knowledge may be required to decipher the visual motivation behind the form of a sign. Furthermore, the variation in lexical form across sign languages, as illustrated in (9) by the different signs used by three different sign languages – LSE, Australian Sign Language (Auslan) and Colombian Sign Language (LSCol) – for the same meaning, confirms that signs do have an element of the arbitrary.

More recently, sign researchers have begun to examine the role of diagrammatic iconicity. Recall that in the case of diagrammatic iconicity there is no need for the sign to resemble the referent, but rather the parts of the sign reflect a relationship between the parts of the referent (see figure 1.1). For spatial descriptions, sign languages may make use of space to describe location and motion. The placement and movement of the signs relative to each other corresponds to the location and motion of the referents to each other; the signing space acts as a map and is exploited topographically (Emmorey, Corina & Bellugi 1995).

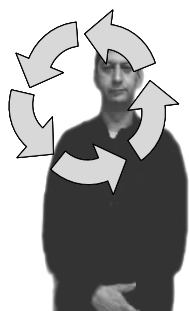
(9) The sign CAR in three different sign languages. (Image in (b) reproduced with kind permission from the author.)



This topographic use of space normally occurs in conjunction with classifier constructions – see (4) for such a structure in DGS – but may also occur with lexical signs, as demonstrated by the LSE description of the water cycle in (10), which mixes classifiers with lexical signs such as SUN and RAIN within a diagrammatic spatial framework. The direct isomorphic mapping that topographic space establishes between the spatial relations of the signs and

those of the referents creates a perceptual similarity that is reminiscent of imagistic iconicity. However, note that the space is not the sign itself but forms part of the relationship between the signs, and that it is this (spatial) relationship that is analogous to a (spatial) relationship between the referents.

LSE (TZ)
(10)



(Use of space throughout the discourse.)



D hand	CL(liquid)	SUN	CL(evaporate)	CLOUD	RAIN
ND hand	CL(liquid)-----hold-----		CL(evaporate)	CLOUD	RAIN



D hand	CL(solid)	SUN	CL(flow)	CL(liquid)
ND hand	CL(solid)-----hold-----		CL(surface)—hold-----	

‘The water is evaporated by the sun and rises into the air as vapour, where it forms clouds. These clouds then move over the landmass and become denser, eventually leading to precipitation. The water freezes on the mountains but is then melted by the sun and flows down the mountain back into the sea.’

Apart from the topographic use of space, a further instance of diagrammatic iconicity in sign languages is identified by Wilbur (2008), whose Event Visibility Hypothesis states that the path movement of a predicate sign maps onto the duration of the event being described. In this case, the correspondence is between spatial relationships and temporal relationships. Such instances of diagrammatic iconicity highlight the motivated nature of

certain mappings employed by the language system and recent work suggests that this motivation may be driven by universal perceptual mechanisms (Strickland, Geraci, Chemla, Schlenker, Kelepir & Pfau 2015). Nevertheless, this is not the end of the story: although iconicity may be present in a language, its role may be to feed possible forms into the system, which then conventionalizes and grammaticalizes these forms so that they fit into the linguistic system (Wilbur 2008). Work on the grammaticalization paths of sign languages suggests that some linguistic forms may derive from iconically motivated gestures (Pfau & Steinbach 2006a).

That sign language forms are abstract, conventionalized symbols is confirmed by evidence from acquisition studies of sign languages: imagistic iconicity does not affect the acquisition of signs in the early stages of language development (Orlansky & Bonvillian 1984) and the acquisition of the verbal agreement system is guided by the morphology rather than the iconicity of the forms (Meier 1987). Furthermore, the classifier system, with its diagrammatically iconic use of topographic space is rule-governed and operates on systematic linguistic principles (Supalla 1982, 1986; Zwitserlood 2003). Iconicity is present but this does not necessarily alter the workings of the linguistic system.

When considering the role of iconicity in spoken languages, we have already seen that phenomena such as onomatopoeia are instances of imagistic iconicity; as far as diagrammatic iconicity is concerned, there is a growing body of work that teases out the diagrammatic relations in language structure at the levels of morphology (Bybee 1985), syntax (Haiman 1985) and discourse structure (Karrabæk 2003). Just as the notion of iconicity rests on the intuition that the structure of language reflects the structure of experience (Croft 2003: 102), it could be argued that the generativist stance that syntactic structure maps onto formal semantic structure resembles an iconic relation in its isomorphism. However, the status of iconicity in language structure is disputed, and it has been suggested that principles based on iconic considerations may be due to other factors such as frequency of use, or that the concept of iconicity is better expressed in terms of notions of economy and distinctiveness (Haspelmath 2008). This calls to mind Wilbur's suggestion that iconicity may make motivated forms available, but the language system then grammaticalizes these forms.

Before closing this section on iconicity, I wish to return briefly to the notion of arbitrariness. Aside from the debate over the role of iconicity in language structure, the need for an arbitrary relation between form and referent has lost its foothold. Firstly, we have seen that sign languages show a relatively high degree of motivation in the forms of signs. Furthermore, studies in

synaesthesia show that the naming of objects is not a completely arbitrary matter: the so-called bouba/kiki effect (see figure 1.2) demonstrates that there is some sort of underlying correspondence between the visual appearance of the referent and the form of the linguistic sign even in spoken languages (Ramachandran & Hubbard 2001). The authors claim that this effect may go towards explaining the occurrence of sound symbolism, but in the context of sign languages the effect may account for the high degree of motivation. Spoken languages have a long history and have undergone thousands of years of evolution; the changes in the linguistic system have led to an arbitrary relationship between sign and referent. Conversely, (as we shall see below in section 1.4.2) sign languages are relatively young languages and their evolution is stunted by the particular sociolinguistic circumstances in which they exist. As a result, the naming processes have occurred much more recently¹⁰ and so the motivational link between referent and form is still present. As such, arbitrariness may be a property of old languages, but not of younger languages; the factor common to both types of language is the fact that linguistic sign is symbolic (Sandler & Lillo-Martin 2006: 499).

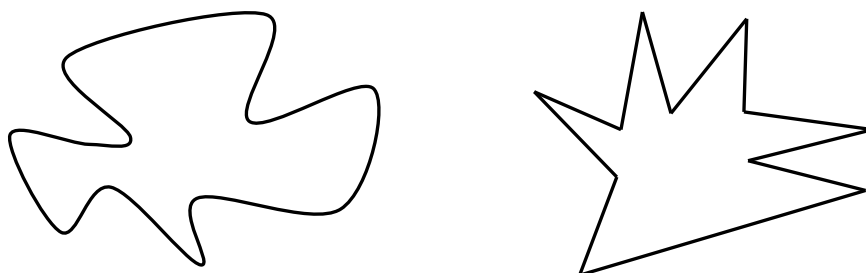


Figure 1.2. The bouba/kiki effect. When asked to choose between two names for these two different shapes, 95% of subjects choose “bouba” for the rounder shape and “kiki” for the jagged shape. (Adapted from Ramachandran & Hubbard 2001: 19.)

In this section we have looked at the role of iconicity in sign languages. Although sign languages show a high degree of both imagistic and diagrammatic iconicity, both types of motivated form-meaning relationship also exist in spoken languages. Furthermore, the non-arbitrary character of a form does not necessarily detract from its linguistic status, and the important question is whether the forms are subject to the rules of the language system.

¹⁰ Naming processes may even reoccur with each generation. See section 1.4.2 of this chapter for the suggestion that sign languages undergo a constant process of creolization.

As languages in the visual-gestural modality, sign languages are more susceptible to creating and using visually motivated forms (and this may be reinforced by the relative youth of the languages) as well as mechanisms such as topographic space and event visibility (Wilbur 2008). Notice that both of these iconically driven devices involve the use of space and that, once again, the assessment of modality effects has led us to considerations of the use of space in sign languages. The next section examines this topic in detail.

1.2. The use of space in sign languages

Sign languages are expressed in the visual modality and, as we have seen, make use of articulators very different to those of spoken languages: the hands and upper body, including shoulders, head and face. Signs are either produced on the body or near the body in the signing space, which, in most sign languages, is approximately the quarter-spherical volume just in front of the signer (see figure 1.3).



Figure 1.3. The signing space occupies approximately a quarter-spherical volume in front of the signer.

This means that sign languages can make use of space in a way that spoken languages cannot, and this use of space is pervasive throughout the language:

In speech, the acoustic signal derives from, but is different from, the motion of the articulators (visible information on the lips is extremely limited with respect to the whole phonological inventory). In signing, the visual signal – the hands moving – is the motion of the articulators, that is, what is seen is the temporal dynamics and spatial location of hand movement. The linguistic system depends on the visual perceptual system to process the necessary distinctions. (Wilbur 2008: 218)

At the phonological level, space forms one of the basic building blocks used to make up an individual sign: current phonological models for sign language

include some sort of location feature that refers to the point or points in the signing space where the sign is produced (Sandler 1989; Brentari 1998; van der Kooij 2002). (11) shows an example of a minimal pair of signs in LSE that differ only in the location of each sign while the handshape, movement and orientation of both signs are identical: both BROWN and AMAZED involve flicking the middle finger off the thumb with the palm facing away from the body, but the former is articulated in neutral space while the latter is produced in front of the face (normally in front of the forehead).

LSE (TZ)

(11) a.



BROWN

(Basque dialect)

b.



AMAZED

Also at the phonological level, many signs may include a (path) movement feature in their lexical specification: movement which, of course, occurs through space.¹¹ Examples of signs with a path movement are given in (12). The sign THEN describes a circle in the neutral space on the signer's ipsilateral side; the sign BASQUE-POLICE involves a short arc movement of the hand while it is in contact with the contralateral side of the signer's chest.

A sign may also be moved through the signing space in order to add information to the sign, making the movement component morphemic in nature. This strategy is exemplified by classifier constructions, which employ a movement morpheme to express predicates of existence or motion (Supalla 1982; Emmorey 2003), as illustrated in the examples in (13): (13a) describes the relative positions of three chairs, and (13b) gives information about the movement of the cat relative to the signer.

¹¹ Phonological movement may also be internal – in Sandler's (1989: 92) terms – or local – in Brentari's (1998: 130) terms – involving a change in the handshape or the orientation of the hand but not a path movement through space. Such movement may be seen in the signs in (11) above.

LSE (TZ)
(12) a.



THEN

b.



BASQUE-POLICE

LSE (TZ)
(13) a.



CHAIR

THREE



CL(chair)_{left}

CL(chair)_{middle}

CL(chair)_{right}

'There are three chairs: one on the left, one in the middle and one on the right.'

b.



YESTERDAY

CAT

MOUSE

CL(bite)

CL(walk)



CL_x(walk)₁

'Yesterday my cat brought me a mouse it had hunted.'

As we saw in section 1.1.2 when looking at the issue of iconicity in sign language, the signing space may be exploited topographically in order to provide spatial descriptions. (For example, the spatial positioning of the signs in (3), (10) and (13) is analogous to the spatial positioning of the referents.) The expression of spatial information in sign languages and the use of space that this involves provide insight into the mechanisms and constraints at work in the visual-gestural modality (see Perniss 2007 for DGS). However, the

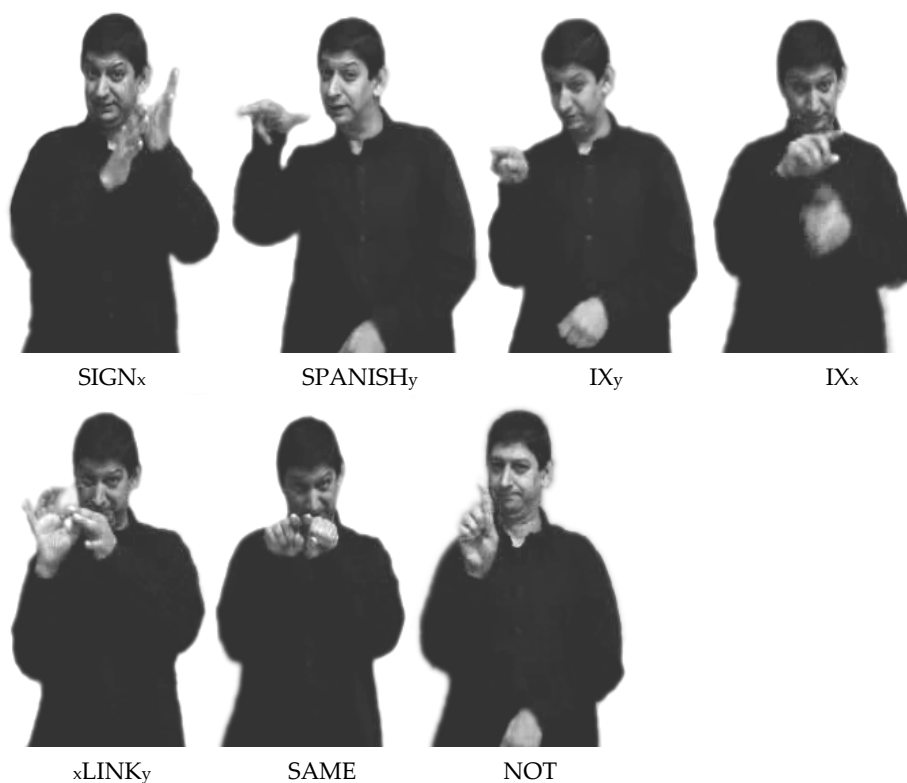
focus of this thesis is the notion of agreement and the use of space in the expression of agreement relations; as such, spatial descriptions (and the associated use of topographic space) will be referred to only where relevant.

LSE (TZ)

(14)



(Use of space throughout the discourse.)

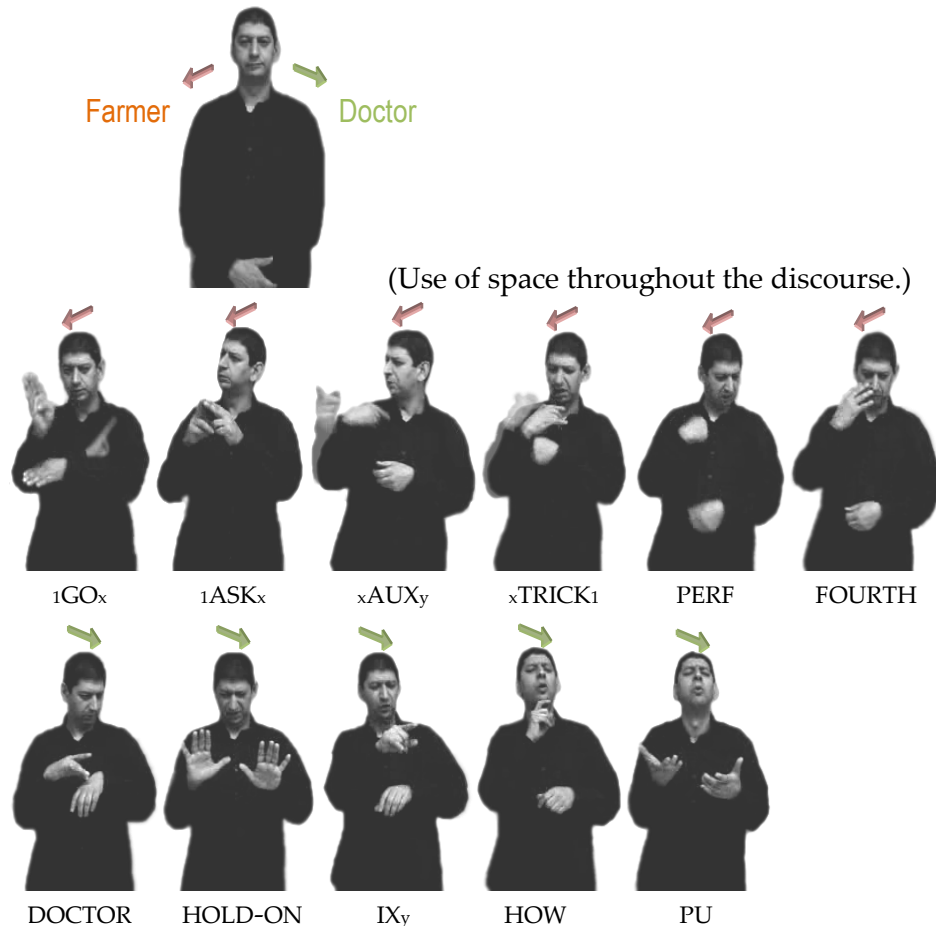


'LSE and Spanish are separate languages that are not the same as each other.'

Space may also be used at the discursive level, with different discourse topics or themes being associated with different areas of the signing space (Emmorey, Corina & Bellugi 1995). In (14), the signer contrasts two languages (Spanish and LSE) by associating each with either side of the signing space. Since neither of these signs is body-anchored, they are articulated directly at the different locations in the signing space.

A related strategy is that of role shift, in which the signer expresses the speech, thoughts, or actions of somebody else (Lillo-Martin 1995, 2012; Quer 2005). There are various means of marking the shift from one role to another, many of which exploit space. The most common strategy is shown in (15): during a story about a farmer and a doctor, the signer systematically shifts to his left and faces his right when assuming the role of the farmer, and shifts to his right (facing his left) for the doctor. This example is taken from a much longer stretch of discourse throughout which the distinction is consistently upheld. For more on role shift see sections 3.1.2 and 5.1.2.

LSE (TZ)
(15)



‘[The farmer] went to ask the doctor and accused the doctor of tricking him because he’d had a fourth [child]. The doctor asked the farmer just what he had been doing.’

PU=palms up

Space is exploited in many different ways by sign languages, and the use of space could take up several doctoral research projects. This thesis concentrates on one specific – but very common – use of space: the association

of a referent with a point in the signing space. This mechanism, which underlies the pronominal system and is used for anaphoric reference, forms the basis for verbal agreement in sign language, to be dealt with in the next section. A full description of this process is given later in this thesis (see sections 3.1.1 and 5.1.1), but to set the scene, a brief outline is given here.

During a stretch of discourse, a given referent may be associated with a particular point, or locus, in the signing space. Once the association has been made, the referent may be referred to by means of the locus. The association between the referent and the locus is normally established by the articulation of a lexical sign immediately followed by some means to signal the locus (a manual point, a head nod or eye gaze) or by articulating the sign directly at the locus. After this initial location assignment has been done, for the remaining discourse the referent assigned to a locus may be referred back to by signalling the locus (manual point, head nod, etc.). In this way, there is no need to repeat the lexical sign for the referent, and anaphoric reference is achieved. The locus (or more specifically the action of signalling the locus) serves as some sort of proform for the referent. Generally, it is non-present referents that are associated with loci but the process admits a wide range of possibilities: concrete or abstract entities, as well as propositions or discourse topics.

The use of loci in the signing space makes it possible to create associations between various referents and corresponding loci, each of which is distinguished from the next by having a unique location, as can be seen in above in examples (14) and (15). This means that unambiguous reference to various entities is possible, and the pointing mechanism can clearly differentiate between various second and third person referents in a way that the English proforms “you” or “her” cannot.¹²

Following from this property of the locus/pointing mechanism, beyond acting as a proform for the referent, this exploitation of space provides an indexing device. The use of manual pointing towards a locus for anaphoric reference has been characterized as pronominal (Berenz & Ferreira Brito 1990; Lillo-Martin & Klima 1990; Russell & Janzen 2006) but there is ongoing debate as to the exact nature of pointing in sign language (Pfau 2011; Cormier, Schembri & Woll 2013), and the extent of the pronominal system in sign

¹² Notice that the most intuitive means of distinguishing between referents in a spoken language with categorical proforms would be to add a parallel gestural component: ‘I want to play with him_i [points at person_i], but not with him_j [points at person_j].’ Conversely, spoken language pronouns distinguish person (second ‘you’ versus third ‘her’), while it is not so clear that points in sign languages make such a distinction. These issues will be taken up in chapter 6 when examining the features that play a role in spatial agreement in LSE.

languages (Ahlgren 1990; Todd 2009; Fernández Landaluze 2015). As will become apparent when we examine the characteristics of verbal agreement in chapter 2, these issues are especially pertinent to the topic of verbal agreement and they will be pursued in the discussion of the LSE data in chapters 5 and 6.

1.3. The study of verbal agreement in sign languages

Verbal agreement in sign language makes use of spatial devices: a verbal element may modify its spatial parameters in order to mark its arguments.

LSE (TZ)

(16) a.



1GIVE_x
'I give you.'

b.



$y\text{GIVE}_1$
'You give me.'

LSE (Ai_lion 0:36; 1:16)¹³

(17) a.



1HELP_x
'I help you.'

b.



$y\text{HELP}_1$
'You help me.'

To give a straightforward example, the citation form of the LSE sign GIVE includes a short outward movement away from the signer: to sign 'I give you'

¹³ When examples are taken from recordings made for this study, the name of the recording is given followed by the time point at which the example occurs.

the movement of the sign goes from the signer towards the addressee, illustrated in (16a); conversely, 'You give me' involves reversing the direction of the sign so that it moves from the addressee towards the signer, shown in (16b). The verb *HELP* behaves similarly and the corresponding forms are shown in (17).

This systematic variation of verbal signs was noticed early on in the field of sign language research, and considered to be inflection for verbal agreement. The first work was conducted on American Sign Language (Friedman 1976; Fischer & Gough 1978; Padden 1983/1988) and subsequently many other sign languages were found to display similar behaviour in the verbal domain. For British Sign Language see Kyle & Woll (1985) and Sutton-Spence & Woll (1999); for Swedish Sign Language see Bergman & Wallin (1985); for Sign Language of the Netherlands see Bos (1990, 1993); for Italian Sign Language see Pizzuto, Giuranna & Gambino (1990); for Danish Sign Language see Engberg-Pedersen (1993); for Quebec Sign Language see Bouchard & Dubuisson (1995); for Japanese Sign Language see Fischer (1996); for Flemish Sign Language see Vermeerbergen (1996); for Israeli Sign Language see Meir (1998ab, 2002); for German Sign Language, see Keller (1998) and Rathmann (2003); for Brazilian Sign Language see Quadros (1999); for Catalan Sign Language see Fourestier (1999) and Quer, Rondoni & GRIN (2005); for Colombian Sign Language see Gómez (1999); for Hausa Sign Language see Schmaling (2000); for Indo-Pakistani Sign Language see Zeshan (2000a) and Sinha (2013); for Turkish Sign Language see Zeshan (2003b); for Argentine Sign Language see Massone & Curiel (2004); for Jordanian Sign Language see Hendriks (2008); for Mexican Sign Language see Cruz Aldrete (2009); for Russian Sign Language see Kimmelman (2012); for Egyptian Sign Language see Fan (2014). The verbal agreement system in sign languages has attracted much attention: what at first sight looks like an intuitive mime-like portrayal of an action (or some sort of metaphorical extension of this) can be given a linguistic analysis in terms of argument structure and morphological inflection, thus bringing sign language data in line with spoken language models.

However, the analysis is not so straightforward, and the real interest lies in ironing out the stubborn wrinkles that remain. Firstly, not all verbs in sign languages show agreement, but only a small set, whereas typological evidence from spoken languages shows that if a language has verbal agreement, it is marked across the board on all verbs (Corbett 2003b). Another issue to be dealt with is the nature of the agreement morphemes: agreeing verbs can make use of a great number of different loci in signing space whereas spoken language morphemes tend to belong to a closed set of

phonological forms. Furthermore, verbal agreement shows startling uniformity across unrelated sign languages, in both similarities of form and common groupings of verbs according to their semantic class, which suggests that there is a strong modality effect at play. Yet not all sign languages conform to this intra-modality regularity, and some sign languages (notably Al-Sayyid Bedouin Sign Language (ABSL) and Kata Kolok, both “shared” sign languages) fail to make use of verbal agreement mechanisms (Aronoff, Meir, Padden & Sandler 2004; Zeshan 2006).¹⁴

As well as trying to explain the anomalies with respect to spoken language models, a decent account of sign language agreement must also explain the bare facts, and there are certain features of agreement, such as backward agreement or semantic constraints (both of which are described in detail in chapters 3 and 5), which make this no straightforward task. Verbal agreement in sign language is one of the many challenges that these languages offer us as linguists. What makes the challenge so enticing are the possible rewards on offer: the chance to compare languages across modalities and broaden our notion of human language so as to encompass a greater variety of its manifestations. In order to do that, we need to add more data from sign languages to the pool of linguistic knowledge. The next section introduces the sign language studied for this research work.

1.4. Lengua de signos española (LSE)

*Lengua de signos española*¹⁵, LSE, is the language used by Deaf¹⁶ individuals throughout most of the state of Spain, except the region of Catalonia, in the east, where LSC, *llengua de signes catalana*, is used (for information on LSC see Quer, Rondoni & GRIN 2005). The approximate extensions of LSE and LSC

¹⁴ In this respect, other signing systems, such as home sign, created by deaf children with inadequate linguistic input, or secondary sign languages, such as Monastic Sign Language, offer evidence that provides an alternative insight into the use of the visual gestural modality. For an overview of such systems see Goldin-Meadow (2003, 2012) and Pfau (2012), respectively.

¹⁵ There has been a certain amount of debate in the Spanish-speaking sign language research community concerning the name of the sign language to do with the use of the term *signos* or *señas* (cf. Oviedo 2006). I have nothing to add to this debate nor a specific partiality for either of the terms. I use the name *lengua de signos española* merely because it is the more commonly used and accepted term among the LSE community of signers.

¹⁶ I adopt the convention standard in sign language literature of referring to people who self-identify as member of a sociocultural and linguistic group that uses sign language as “Deaf” (capitalized); this contrasts with (lowercase) “deaf” to denote the physiological condition of having (some degree of) hearing loss. See Padden & Humphries (1988) and Ladd (2003) for more on the sociocultural nature of the Deaf community.

are shown in figure 1.4. The number of signers is hard to estimate as reliable statistics are not available and figures vary wildly. It is impossible to come by reliable estimates for the number of LSE signers in Spain. A recent survey of disabilities and dependencies by the National Office for Statistics (INE - *Instituto Nacional de Estadísticas*) maintains that there are a mere 13,300 sign language users in Spain, although the sign language in question is not specified and the figures involved fall below or close to the lower limit for reliability given the sample size (INE 2009).¹⁷ At the other end of the scale, the National Association of Deaf People (CNSE – *Confederación Estatal de Personas Sordas*) has made claims that there are around 100,000 deaf signers and up to 400,000 sign language users (including hearing professionals and family members) (Amate García 2001; CNSE 2008). For an interpolation of these estimates to the situation in the Basque Country and further analysis, see Costello, Fernández & Landa (2008).

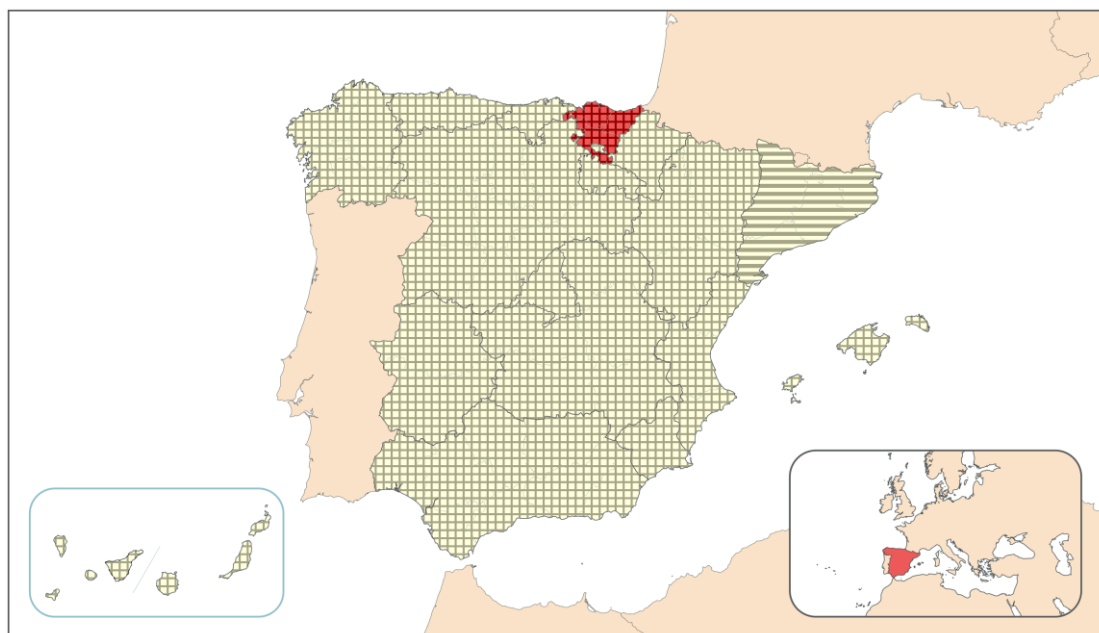


Figure 1.4. Map of Spain with the Basque Country shaded solid. The approximate area of usage of LSE is shown by cross-hatching. The areas where LSC is used are shown by horizontal hatching. Image based on an original image taken from Wikipedia (<http://commons.wikimedia.org/wiki/File:EspañaLoc.svg>).

¹⁷ The accuracy of the INE figures is also brought into doubt by other statistics it has published relating to the Deaf Community that are gross underestimates of the real situation, such as the number of people affiliated to deaf associations, for which the National Association of Deaf People has definite figures (Emilio Ferreiro, CNSE – Spanish National Association of Deaf People, pc).

This section offers a brief introduction to various aspects of the language. Section 1.4.1 provides information on the historical background of LSE, which is relatively well historically documented compared to other sign languages. The current sociolinguistic situation of LSE, essential to understanding many of the factors that condition the language, is described in section 1.4.2. An overview of previous linguistic work on LSE is provided in section 1.4.3, and the last section, 1.4.4, identifies the characteristics of the specific variant of LSE analysed in this thesis.

1.4.1. LSE: historical background

LSE is used in the Deaf community throughout most of Spain, including the offshore territories of the Canary Islands, Ceuta and Melilla, with the exception of Catalonia, where LSC is used (see above). The origins of the language are not known, although some sort of sign language has been in use in Spain for at least four hundred and fifty years; Spanish Sign Language is in the privileged position of having a relatively rich body of historical literature dating from the mid-sixteenth century onwards (cf. Lasso 1550/1919). Many of these documents are freely available as digital facsimiles in the *Biblioteca de Signos*, which forms part of the *Biblioteca Virtual Miguel de Cervantes* hosted by the University of Alicante.¹⁸ Needless to say, the information offered by these texts is somewhat erratic and subject to the authors' prejudices and intent. Many of the writings, such as Bonet's *Reduction de las letras y arte para enseñar a ablar los mudos* (1620), deal with the education of the deaf, and specifically how to "improve" the sign language by making it more similar to the spoken language. Furthermore, what little information these texts offer is in the form of written descriptions and any graphic representations are inevitably of the manual alphabet, which reveals next to nothing about the sign language itself (see figure 1.5). Even so, these historical texts provide unquestionable evidence that there has been a community of sign language users in Spain for several centuries. Another matter is how similar the sign language of the sixteenth or seventeenth century was to present day LSE. The sociolinguistic characteristics of sign languages give rise to a great deal of variation both historically and geographically, and this matter is dealt with in the next section.

Along with the documented history of the sign language used by deaf people in Spain over the last few centuries, there is a rich oral tradition among the Deaf community with historical figures such as Pedro Ponce de León or Juan de Pablo Bonet featuring in story-telling. Although this practice is less

¹⁸ <http://www.cervantesvirtual.com/seccion/signos/>

prevalent among the younger generations of signers, knowledge of the history of the Deaf Community is regarded as a means of forging social identity. Conversely, some authors have criticised the apparent mythification of certain characters and episodes (cf. Gascón Ricao & Storch de Gracia y Asensio 2004).

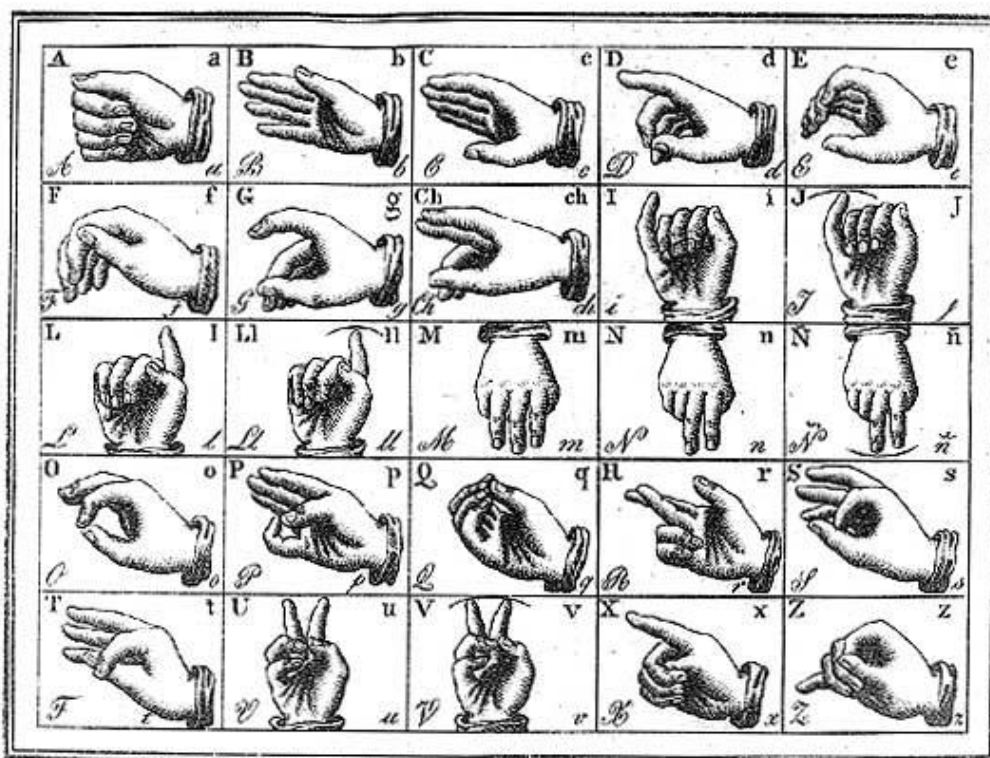


Figure 1.5. The manual alphabet taken from a textbook for teaching deaf students (Ballesteros & Fernández Villabril 1845).

It has been claimed that LSE belongs to the sign language family of South-West Europe (Anderson 1979 cited in Woll, Sutton-Spence & Elton 2001: 26), which includes French Sign Language (LSF) and Sign Language of the Netherlands (NGT). However, as mentioned above, the origins of LSE are unclear. Apart from a current lack of sufficient knowledge on specific sign languages to establish genetic links between them, the discipline of historical linguistics has not been developed for sign languages,¹⁹ thus making it

¹⁹ Exceptions are Frishberg (1975), Woll (1987), Wittmann (1991), Janzen & Shaffer (2002) and Wilcox (2004). For an overview see McBurney (2012).

difficult to go beyond speculation about the relations between the older sign languages or even the existence of some “European Proto Sign Language”.²⁰

1.4.2. *LSE: sociolinguistic setting*

As is the case for most western sign languages, the sociolinguistic setting of LSE is quite complex: the language exists in a permanent state of bi- or multilingualism, has no written form, has been subject to institutionalized oppression and is visual-gestural in form. Leaving aside the difference in modality, many of these characteristics are typical of minority spoken languages.

What really sets sign languages apart is their lack of generational continuity: the vast majority of deaf children are born to hearing families, and as such they will not normally be able to acquire sign language in a natural setting. The figure often cited in the literature is that between 5-10% of deaf children are born into deaf families (Schein & Delk 1974), but recent work suggests that this holds only for the United States, where a particular strain of genetic deafness and a certain degree of endogamy within the deaf population has led to favourable conditions for multigenerational deaf families (Nance, Liu & Pandya 2000). The figure may be much lower for other countries (Johnston 2006), Spain included (Costello, Fernández & Landa 2008). This situation means that there are extremely few native signers in the signing community. Hence, from the point of view of linguistic research, the methodology has to be adapted to these peculiar conditions. The research methods and data collection techniques used in this study are described in chapter 4.

The fact that so few deaf children are born into an environment that is conducive to their acquiring sign language means that many learn a sign language at a late age (either upon starting a formal education or even later, when they have left school) and this has a huge impact on the language itself. As might be expected under such circumstances, each sign language shows a fairly high degree of variation. Furthermore, it has been proposed that the generational discontinuity causes sign languages to undergo a continual process of creolization (Fischer 1978; Meier 1984; Aronoff, Padden, Meir & Sandler 2003). Whether or not the analysis of sign language as some sort of creole is correct (Lupton & Salmons 1996), the low level of native-like

²⁰ This clearly is not the case for sign languages which have developed in the context of more recent historical processes such as colonialism, as is the case for the attested proximity between Auslan – Australian Sign Language – and BSL – British Sign Language (cf. Johnston 2003).

acquisition amongst the users certainly affects the language itself (Costello, Fernández Landaluce, Villameriel & Mosella 2012).

A clear example of this is the role that educational policy can play in the development of the language: since many individuals learn sign language at school rather than at home, the type of language they learn is subject to the whims of educational policy (Bouvet 1990). In most western countries, the policy for Deaf education has been subject to radical changes in the last 150 years and this is no less true of Spain. Teaching practice and philosophy have gone from sign-based methods to a long period of oralism (during which the use of sign language was discouraged or actively punished), to the more recent reintroduction of sign language as part of a bilingual/bicultural pedagogy accompanied by mainstreaming (Plann 1997; Minguet Soto 2001). This tendency to insert deaf pupils in ordinary schools is significant because the residential deaf schools were traditionally the seat for sign language learning and often gave rise to variants that formed the main regional dialects of a national sign language (Kyle & Woll 1986). The disappearance of the residential schools has meant the loss of the foci of different dialects.

The dialectal variation of LSE has been studied by means of lexical comparison using a Swadesh type word list in the glottochronology tradition (Gudshinsky 1956; Swadesh 1972) and mutual intelligibility tests (Parkhurst & Parkhurst 2007). The study looked at sign language use in 18 different parts of Spain and the findings confirmed that certain lexical differences do exist from one region to the next, but the level of mutual intelligibility between signers from different areas is well above the 75% threshold usually applied to distinguish different spoken languages (SIL 1991: 45, cited in Parkhurst & Parkhurst 2007: 46). Furthermore, the findings distinguish between LSE and LSC, each with their own internal dialectal variation. The Parkhurst study also provides a general overview of the situation of sign languages in Spain, including details on the role of Deaf Schools and Associations in the development of language varieties. For further information on the signing communities of Spain, see Vallverdú (2001) and Quer, Mazzoni & Sapountzaki (2010); for more specific sociolinguistic information, see Minguet Soto (2001). For the sociolinguistics of sign languages in general, see Lucas (2001).

LSE was granted a certain degree of official recognition by a law passed in late 2007 that set out to regulate the rights and communication options of deaf individuals, though it remains to be seen what impact this law will have on sign language use and the development of the language in the long term.²¹

²¹ The full Spanish text of the law is available on-line:

1.4.3. *Previous research on LSE*

Taking a broad view, the description of LSE appears to conform to many of the findings for other western urban sign languages that have been studied: the language has a classifier system and makes use of non-manual features, to cite just two of the features that typify sign languages. The relative similarity between sign languages leads to the danger of over-generalizing findings from one sign language to others, but scientific method demands that each object of study be examined in its own right. Although the large body of research on ASL (the most studied sign language to date) may inform work on lesser studied languages, it is important for those languages to be investigated in order to find out what their own peculiarities are. So while LSE may look fairly similar to other sign languages, there is still a need to carry out research, if only to confirm first impressions. This section presents an overview of the research work that has already been done on LSE.

There are several dictionaries of LSE, the first published in the mid-nineteenth century (Fernández Villabrille 1851). Since 1957 a dictionary has been published under the auspices of the National Association of Deaf People, CNSE, (Marroquín Cabiedas 1957, cited in Vicente Rodríguez et al. 2008, and Pinedo Peydró 1981) and in recent years specialized thematic dictionaries have been created (Fundación CNSE 2002-2003). Motivated by the 2007 law that provides certain legal recognition for LSE and lays down provision for a standardization process for the language (see previous section), CNSE has published a normative dictionary with over 4,000 entries (Fundación CNSE 2008).²² All these dictionaries are limited to single sign entries and provide no grammatical information about LSE.

There has been very little modern linguistic analysis of LSE, and this thesis forms part of a growing body of work that documents the language. Previous work on the language includes five doctoral theses: Rodríguez González (1990) presents a general linguistic analysis of LSE with respect to the structure of Spanish; Fernández Soneira (2004) on quantification in LSE; Iglesias Lago (2006) on non-manual features to express modality; Gras Ferrer (2006) on the sociolinguistic status of sign languages in Spain; Gutiérrez Sigut (2008) on the role of phonological features in the processing of LSE. Currently there are also several doctoral dissertations on LSE in progress at various Spanish universities.

Published work on LSE is limited to a learners' grammar (Herrero Blanco 2009) and a collection of articles published by the National Association

<http://www.boe.es/boe/dias/2007/10/24/pdfs/A43251-43259.pdf>

²² This dictionary can be accessed on-line: <http://www.fundacioncnse.org/tesorolse>

of Deaf People (CNSE 2000), a study of register in LSE (Chapa Baixauli 2001) and a general textbook dealing with a range of issues that draws on literature of other sign languages (Minguet Soto 2001). There are also several articles (almost exclusively in Spanish²³) published by the various research groups working on LSE: the main groups are to be found at the University of Vigo and the University of Alicante. The Alicante group has also published various materials on-line, including a bilingual (LSE-Spanish) basic grammar of LSE (Herrero et al. 2005).²⁴

1.4.4. *The LSE in this study*

This study looks specifically at the variety of LSE used in the Basque Country, a region in the north of Spain (shaded solid in figure 1.4). As noted above, LSE shows a certain amount of variation but this does not affect intelligibility between users from different areas. In particular, signers from the Basque Country can easily understand and be understood by signers from other parts of Spain. Furthermore, the members of the signing community of the Basque Country consider their language to be LSE. Bilbao, the largest city in the Basque Country, was home to a large residential deaf school (which in the last 20 years had been reduced by mainstreaming to a unit for pupils with mixed special needs within an ordinary school and recently closed down altogether). The LSE variant of the Basque Country is given some uniformity by the fact that many older signers learnt to sign there. Further details of the data collected for this study and the signers who provided the data will be provided in chapter 4.

It should be emphasized that there is no Basque Sign Language, though the Basque Country does have two main spoken languages: *euskera*, or Basque, a language isolate of unknown origin, and *castellano*, or Spanish, a Romance language used throughout all of Spain. This spoken language bilingualism adds to the complex sociolinguistic background of the LSE variant used in the Basque Country, but this issue will barely be touched upon in this work. Most Deaf people in the Basque Country have Spanish as their main spoken language (be it their first or second language), but the promotion of Basque in the compulsory education system has meant that the dominant spoken language for some younger signers is Basque (normally for those whose families are Basque speakers). Given the disparity between

²³ Articles on LSE published in English include Cabeza Pereiro & Fernández Soneira (2004) and Herrero Blanco & Salazar García (2005) in addition to the dialect study mentioned in section 1.4.2: Parkhurst & Parkhurst (2007).

²⁴ Unfortunately the format of the on-line grammar is outdated and it has been difficult to access the contents since 2009.

Spanish and Basque, this situation presents a fascinating opportunity to examine language contact phenomena between a sign language and two very different spoken languages, but I leave this area to future research.

1.5. The goals of this thesis

Having outlined the general topic and introduced the individual language that this thesis deals with, I now turn to the specific objectives of this research work.

What mechanisms does LSE use for agreement, and to what extent are they the same as or different to agreement mechanisms employed by other sign languages?

The first task in hand is largely descriptive as I set out to describe the verbal agreement process in LSE, looking at its phonological manifestation and focusing on any peculiarities it may have when compared with what has already been described for other sign languages. Agreement for sign languages, based on work on a variety of sign languages, is described in chapter 3; the phenomenon in LSE is described in chapter 5. The relevant comparisons are made throughout chapter 5 and in the concluding section of that chapter.

Even though the details need to be provided in the description of the LSE data on agreement, we know that this process involves the use of space and the association between a locus and a referent (see sections 1.2 and 1.3 above). In the sign language literature, (certain cases of) this spatial mechanism are referred to as “agreement” and considered to be analogous to the same phenomenon in spoken language. One of the aims of this thesis is to assess how valid this identification is.

Are the spatial mechanisms employed by LSE comparable to the agreement mechanisms in spoken languages?

This will be done by using two different linguistic traditions as yardsticks for the sign language data. Firstly, a typological approach provides a broad view that defines agreement in terms of the different structural elements that play a role in the process, and, furthermore, offers a rich overview of the different options that exist in typologically diverse languages of the world. Secondly, minimalist syntax, from the generativist tradition, offers a technical and highly specified notion of agreement in terms of structural relations and syntactic operations. These different – but complementary – approaches provide the means to hold up the LSE data against data from other spoken languages, and theories developed based on spoken language data.

Evaluating the spatial agreement process in this way will also offer the opportunity to develop a formal characterization of the phenomenon. In describing and analysing the data, it will become evident whether or not spatial agreement in LSE fits into existing models, and what, if any, adjustments are necessary to accommodate the model to the data.

Can spatial agreement in LSE be given a formal characterization?

These, then, are the three research questions that drive the research laid out in this thesis. They can be summarized as an attempt to compare LSE agreement to what is known about other sign languages and about spoken languages to decide whether the phenomenon can correctly be characterized as agreement using (and, if necessary, adapting) current models.

1.6. The structure of this thesis

This thesis is structured in the following manner. I begin by providing the theoretical background for agreement, from the point of view of general (spoken language) linguistics and sign languages, respectively. After describing the methodology employed, I focus on agreement in LSE based on the data collected for this study and provide a detailed account of how agreement is manifest in this language. I then apply two different approaches (typological and generativist) to analyse the LSE data with a view to evaluating how well agreement in LSE fits into the cross-linguistic landscape. I also provide a formal account of agreement in LSE based on the idea of a basic spatial agreement mechanism. I conclude by taking a step back to consider what this spatial agreement mechanism in LSE can tell us about modality effects and language in general.

Chapter 2 presents an overview of agreement as a linguistic phenomenon from two different frameworks: linguistic typology, which sets out to describe data from as broad a range of languages as possible; and Generative Grammar, which offers a set of concepts and mechanisms that provide a detailed syntactic account of the workings of agreement. Although these two frameworks represent quite different approaches, I justify using both as complementary methods, each of which contributes its own benefits.

Chapter 3 provides an overview of the phenomenon of agreement as it has been described in the sign language literature. This involves looking first at how locations in space are used for reference, including the process of location assignment. The overview takes in phenomena that have previously been analysed as agreement (namely, agreeing verbs, backwards verbs, agreement auxiliaries, and non-manual agreement). Additionally, I also describe and consider similar uses of space as possible candidates of a spatial

agreement process, such as single argument agreement and DP-internal agreement, and argue that these processes also constitute instances of a general spatial agreement mechanism.

Chapter 4 describes the methodology used in this study, which was adapted to the specific sociolinguistic circumstances of LSE as described in section 1.4.2, and gives details of the data. This includes information on the informants, the data collection techniques and how the data were transcribed and analysed.

Chapter 5 offers a description of spatial agreement in LSE. The structure of this chapter broadly follows that of chapter 3 so as to provide a comparison between the facts for LSE and what has been described for other sign languages. Thus, descriptions are given for a range of phenomena related to spatial agreement: agreeing verbs, backwards verbs, agreement auxiliaries, and non-manual agreement, as well as single argument agreement and DP-internal agreement. I provide arguments to the effect that all these phenomena involve a basic process of spatial agreement. The chapter also includes a description of the constraints on person/number combinations in agreeing verbs based on a similar study with other sign languages. The comparison makes evident that agreement forms in LSE do not show the same patterns as in other sign languages, but are subject to the same type of constraints (i.e. phonological).

Chapter 6 examines the LSE data from a cross-modal typological point of view, drawing on the theoretical framework presented in section 2.2. Firstly, this assessment of the spatial agreement mechanism in LSE takes each element of the agreement process and looks at how the LSE facts compare to the generalizations drawn from typological work on spoken languages. Thus, the controllers, targets, means of exponence, domains, features and conditions that appear in spatial agreement in LSE are held up against what has been described for spoken languages. By and large, LSE fits within the limits of the spoken language data, with the important exception of the features used in spatial agreement in LSE. I claim that person is not a relevant feature for LSE (in contrast to its universal presence in spoken languages) and propose an alternative feature, identity, based on referential identity (developed in chapter 7).

The second part of the assessment of the LSE data in chapter 6 involves exploiting the notion of canonicity developed by Corbett (2003b, 2006). Canonicity is defined by a set of criteria that provides a means for evaluating spatial agreement in LSE to see how prototypical or canonical it is as an agreement process. Again, the results show that LSE agreement behaves in a relatively canonical manner. More interestingly, this evaluation highlights

those aspects in which LSE is unusual. Specifically, the optionality of the spatial agreement process is a remarkable characteristic (also taken up in chapter 7).

Chapter 7 once more analyses the LSE agreement data but from the point of view of generativist approaches to language structure: minimalist syntax and Optimality Theory. To prepare the terrain, two issues identified in the previous chapter are tackled first: the nature of the identity φ -feature and the optionality of the spatial agreement system. Adopting a distributed model of φ -features and a feature-sharing theory of agreement, I provide a syntactic analysis of spatial agreement in LSE that can account for the process of location assignment, and verbal agreement for two-place agreeing verbs, for single argument agreement and for agreement auxiliaries. Furthermore, this syntactic account can provide an explanation for the difference between syntactic agreement and a formally similar use of space that leads to different interpretations, namely pragmatic agreement. This chapter also includes a formal analysis of a specific type of agreeing verb that has unusual inflected forms due to a conflict between agreement markers and lexically defined phonological features. Using Optimality Theory, I provide an analysis of the LSE facts that can also be extended to analogous data from another sign language.

Chapter 8 concludes this thesis by revisiting the research goals to provide answers to the questions set out in the previous section, and also to assess the extent to which it has been possible to answer these questions. The chapter also includes discussion of the issues that arise from this examination of spatial agreement in LSE, and points the way for future research.

2. Theories of agreement

The object of study for this thesis is agreement in LSE, Spanish Sign Language, and this chapter lays out the theoretical background for theories of agreement that have been developed in the field of linguistics generally, based on spoken languages. The notion of agreement is ultimately a theory-bound concept, and as a result its definition changes from one theoretical framework to the next. This diversity of perspectives is exacerbated by two divergent tendencies in much work on agreement in sign languages. On the one hand, studies are carried out within their own terms, making it difficult to compare the proposals with more general models of agreement. On the other hand, researchers have adopted concepts from various linguistic frameworks without questioning either the applicability of these constructs to the specific case of sign languages, or the extent to which the meanings of terms are being stretched to accommodate sign language data. This is true of the notion “agreement” itself and this thesis addresses this issue by posing the following question: when we talk of agreement in a sign language, is it the same thing as agreement in spoken languages?

This question falls under the second research goal set out in section 1.5 of the previous chapter. What we might hope to find is that the agreement processes in sign languages and spoken languages are essentially the same, thus justifying the claim that we are dealing with the same phenomenon in both modalities. Alternatively, it is possible that sign language agreement shows radically different behaviour to spoken language agreement, in which case it will be necessary to reassess the extent to which sign language agreement is the same beast as spoken language agreement, and what this means for the notion of (modality-independent) universal grammar. Additionally, addressing the third research goal – to develop a syntactic account of agreement in sign language – requires taking the initial step of identifying the properties that characterize agreement in general linguistic theory.

Section 2.1 outlines current models of agreement that have been proposed within different linguistic frameworks (based on spoken languages), focusing on (i) the more theory-neutral stance taken within the typological tradition, which draws upon an extremely wide sample of

languages and takes in a great diversity of agreement patterns, and (ii) the Minimalist Program within the framework of Generative Grammar, for which agreement has taken a central role in recent versions. Section 2.2 presents the typological approach in greater detail, illustrating the diversity of agreement processes cross-linguistically by means of examples from a variety of languages. Section 2.3 gives an overview of the Minimalist Program, focusing on the role played by agreement within the syntactic component.

2.1. Two approaches to agreement

There is no universally agreed upon definition of agreement among linguists, so before going any further, some sort of characterization must be given in order to set out the bounds of the terrain.¹ In the most general terms, agreement refers to a formal relation between two elements:

The term agreement commonly refers to some systematic covariance between a semantic or formal property of one element and a formal property of another. (Steele 1978: 610, cited in Corbett 2003a: 109)

Thus, in the case of verbal agreement in spoken languages, certain markers on the verbal element (be it the verb itself or an auxiliary) match the number/person/gender of one or several of the verb's arguments. The more commonly-known pattern of verbal agreement (prevalent among most western European languages) is for the verb to be marked for the person and number features of its subject. In example (1), the ending *-en* on the verb 'give' corresponds to the third person plural subject 'the girls':

Catalan

- (1) Les nene-s et don-**en** els llibre-s.
 DEF.F.PL girl(F)-PL you give-3PL DEF.M.PL book(M)-PL
 'The girls give you the books.'

However, it is possible for the verbal element to mark features of more than one of its arguments, as occurs in the case of Basque. In (2), the verbal auxiliary marks the number of the direct object (here, plural *liburuak*, by means of *-zki-*), the person and number of the indirect object (2nd person

¹ Following both Corbett (2006) and Baker (2008), I refrain from using the term "concord", which has been employed alternately as a superordinate and as subordinate term by different authors (Corbett 2006: 6). The use of "agreement" as an umbrella term reflects the unifying intention of both authors to account for a wide range of phenomena as being manifestations of the same basic agreement mechanism, and fits in well with the affinities of this study.

singular gives *-zu-*), and the person and number of the subject (3rd person plural *neskek* gives *-te*) (only relevant features given in the glosses):

Basque

- (2) Neske-k (zu-ri) liburu-ak ema-ten **di-zki-zu-te.**
 girl-PL you-DAT book-PL give-HAB AUX-PL.P-2SG.GOAL-3PL.A
 ‘The girls give you the books.’

This agreement relation holds between the verb and its arguments, but the details of the characterization of that relationship depend on the theoretical viewpoint taken. In this chapter, I will introduce the notion of agreement from two different frameworks, as well as making reference to other theories that offer relevant insight on the topic.

The first, the typological perspective, which may be associated with the structuralist school of linguistics (van Valin 2007), sets out to examine a given aspect of language by looking at its manifestation in the broadest possible selection of different languages (Comrie 1989). The range of languages included in a typological study should take in different language families so that the data reflect the diversity of the world's languages. This acts as a fair guarantee that any generalizations that a typological study brings to light will hold true of all languages and represent a finding about the underlying structure of language. Needless to say, such across-the-board generalizations are extremely hard to find, and much work in typology involves statistical regularities and not absolute but implicational universals of the type: “If a language has a property ϕ , then it will also have property ψ ” (Greenberg 1975: 78). It must be noted that the research described here does not set out to be a typological study but rather adopts concepts and models that have emerged from typological work. This thesis does include cross-linguistic comparison both with other sign languages and with a variety of spoken languages, but the main focus is on a specific language and no claim to be typological in scope can be made.

The second framework presented in this chapter is the Minimalist Program (Chomsky 1995 and subsequent works), the latest development in the generativist tradition of linguistics, which endeavours to explain language as an abstract system that is capable of generating the sentences of any given human language, rather than the actual production or use of those languages (competence vs. performance: Chomsky 1965, 1986a). The Minimalist Program is guided by the principle that the language system fulfils its objective to intermediate between thought (the conceptual-intentional interface) and its expression (the articulatory-phonetic interface) in the most

parsimonious way possible, using a minimum of resources. Current work in this field is highly theoretical and enveloped in a great deal of specific technical terminology and constructs that have developed over the last fifty years since the inception of Chomskian generativism. In the overview of this framework (and throughout the rest of this thesis) I make every effort to maintain the assumption that the reader may not be versed in the intricacies of this way of doing linguistics, although there may be moments when the demands of brevity force me to rely on references to the relevant bibliography.

Before looking at the conceptualization of agreement in each of these frameworks, I feel some justification is required for this particular choice, especially as the two approaches might appear to be at odds with each other. On the one hand, the typological method encompasses a great variety of language data, which makes drawing any hard and fast conclusions very difficult. Generativism, on the other hand, generally makes very strong claims about language on the basis of a very limited data set. However, the two methodologies are not incommensurable: there has been important work that has combined both paradigms (cf. Baker 1996, 2003; Cinque 1999; Svenonius 2008; Zwart 2009), and it has been claimed that typological work and formal theoretical work represent “two sides of the same inquiry” (Cinque 2007: 93). Although generativist work has tended to draw on a relatively small set of Indo-European, East Asian and Semitic languages there is a growing tendency to incorporate data from a wider range of sources,² and the relative importance that each tradition gives to either the depth or the breadth of analysis can be balanced to create a “Middle Way” (Baker & McCloskey 2007). As such, I consider the typological and the generativist approaches to be compatible and complementary, and now turn to the individual merits of each for the research in hand.

The typological tradition has several advantages for this study of verbal agreement in LSE. First of all, it deals with “exotic” languages about which there is little known or documented. The closely related field of language description provides typologists with a means of approaching an unfamiliar language in order to gain an understanding of its structure. As there has been little linguistic work on LSE, which may be considered “exotic” if only because of its visual-gestural modality, the typological approach may provide a suitable set of tools for this study. Furthermore, the fact that typology takes

² See, for example, Aboh & Essegbey (2010) for a generativist analysis of Kwa, a branch of the Niger-Congo family including 45 languages spoken in Côte d’Ivoire, Ghana, Togo, Benin and Nigeria.

in such a vast range of languages means that the framework is not tied to any one language or even family of languages, but provides a relatively neutral set of terms to describe a language's properties. This is important on two counts. Firstly, it means that a given language is described and assessed in its own terms, or at least in terms that do not contain implicit theoretical assumptions. For work on sign languages, this is especially important since we do not wish to impose concepts from theories based on a small set of spoken languages. LSE may have very little in common with English, Italian or Japanese, and trying to make it fit into a theory developed on data from these spoken languages alone will probably produce scant results. More fundamentally, if we are interested in looking for modality effects, we need to guard against applying a theory that will a priori be blind to any possible differences due to modality (for example, a model that considered sign/word order only would be missing the fact that sign languages can and do make use of space to create relations between elements). Secondly, the relative neutrality of the description allows comparison across different languages, which is after all the *modus operandi* of the typological enterprise. The comparison of different languages offers the chance to uncover generalizations across languages and for this study it will be important to see how agreement in LSE shapes up against agreement phenomena cross-linguistically. The modality considerations raised in this study also represent a broadening of the typological perspective, taking in a greater range of languages to see how a well-studied mechanism such as agreement stands up to crossing the modality divide.

The generativist framework provides a powerful instrument for looking into fundamental questions concerning language as a cognitive capacity. The complex models proposed by generativist work are underpinned by the desire to get to the nuts and bolts of what language is, even more so under the current Minimalist Program, which postulates a basic set of operations that form the core linguistic system. One of these mechanisms, known as Agree, is a formalization of agreement relations and is deemed to be central to syntactic operations. The importance given to agreement is obviously of great relevance to this study. The Minimalist Program additionally makes claims about the architecture of the language faculty that bear upon the nature of the language system and its relation to other cognitive capacities. This is germane to agreement in sign languages since there is an on-going debate concerning the possible role that (non-linguistic) gesture plays in the use of space. The issue of modality also impinges upon the nature of the language system as modality effects may provide a means of delimiting the core properties. The Minimalist Program supplies a clear characterization of the language system;

it remains to be seen whether agreement in LSE complies with these stipulations, and this is one of the matters that will be addressed in chapter 7.

2.2. Typological approach

Going back to Steele's broad definition of agreement given earlier in this chapter, the phenomenon of agreement essentially involves displaced information: one element bears a mark that reflects some property of another element. This relationship can be characterized in terms of a number of elements and concepts that enter into the agreement configuration and for which a standard terminology has been developed. These components of agreement are presented in section 2.2.1, and each will be looked at in turn in the following sections (2.2.2-2.2.6). These terms have been established by the Surrey Morphology Group, and much of this section draws heavily on the work of Corbett (2003abc, 2006) and many of the examples are taken from the Surrey Database of Agreement (Brown, Corbett, Tiberius & Barron 2002). This overview is not exhaustive but rather presents those aspects of the diverse range of agreement phenomena that are salient to the discussion of agreement in LSE.

Corbett's approach is based on the notion of canonicity, which provides a means of describing the possible range of agreement phenomena. Also, the definition of canonical agreement serves as a yardstick against which to measure agreement in a particular language, and this will be useful when we turn to agreement in LSE. Canonicity in agreement is dealt with in section 2.2.7.

2.2.1. *Terminology*

Agreement is a relation of covariance between two elements that share a certain property. However, it is not a symmetrical relationship. Put simply, a verb agrees with its subject, not the other way round. The element that determines the agreement relationship (e.g. the subject noun phrase) is called the **controller**, while the affected element (e.g. the verb) is the **target**. The information that is shared between the controller and the target (or, more precisely, the information from the controller that is marked on the target) are the agreement **features** (e.g. number or person), and these features have certain values (e.g. number feature may be singular, plural, dual; person feature may be first, second, third). The controller and target stand in a specific syntactic relation to one another and this syntactic environment is the **domain**. Additionally, there may be **conditions** on the agreement relationship that modify the behaviour of agreement (e.g. definiteness of the subject may affect number agreement on the verb).

Before moving on to look at each of these factors, one more stipulation with regard to terminology must be made. Throughout this thesis I make use of the terms “subject” and “object” for ease of exposition. I am aware that these labels make assumptions about the syntactic status of the verb’s arguments, and that there is a need to look beyond such terms to capture the underlying, more primitive notions (McCloskey 2001). Comrie (1989: 70) makes use of a set of labels that obviate pre-empting the question of grammatical relations: S is the argument of an intransitive verb; A is the argument of a transitive verb that correlates most closely with the agent; and P is the argument of a transitive verb that correlates most closely with the patient. While I recognize the value of using such terms when working with a relatively undescribed language, I do not adopt them here (although they are sometimes used when discussing examples from the typological literature). The reason is that the distinctions these labels make do not add anything to the analysis of the LSE data and the challenge of spatial agreement lies in characterizing the use of space rather than the argument that is expressed.

2.2.2. *Controllers*

As Corbett (2006: 35) states, “Controllers are typically nominal in nature.” Nouns and noun phrases often control agreement with adjectives and verbs, respectively, as shown in (3). The adjective agrees in number and gender with the noun *personas*, and the verb agrees in person and number with the noun phrase *las personas ricas*:

Spanish

- (3) **Las** **persona-s** **ric-as** trabaj-an poco.
 DEF.F.PL person(F)-PL rich-F.PL work-3PL little.
 ‘Rich people work little.’

In the case of verbal agreement, the noun phrase controllers most often fulfil a prototypical semantic role, such as AGENT, THEME or GOAL, as exemplified by (1)-(3). However, other types of argument may be the source of agreement on the verb. In Chichew̃a [Nyanja] (Central Bantu, Niger-Congo), spoken in East Central Africa, the verb agrees in gender with the locative argument in specific constructions. In (4a) the marker *ku-* on the verb ‘come’ marks agreement with the locative argument ‘village’. The fact that the argument is locative, and not another role such as THEME or GOAL (as would be the case in a sentence like ‘The village received those visitors’), is confirmed by the semantics of the verb and the observation that under different word order conditions it agrees with the other argument, *a-lendô-wo* (‘those visitors’), as in (4b).

Chicheŵa (Bresnan & Kanerva 1989: 2)

- (4) a. **Ku**-mu-dzi **ku**-na-bwér-á a-lendô-wo.
 G17-G3-village G17.SBJ-REC PST-come-IND G2-visitor-G2.those
 'To the village came those visitors.'
- b. **A**-lendô-wo **a**-na-bwér-á ku-mu-dzi.
 G2-visitor-G2.those G2.SBJ-REC PST-come-IND G17-G3-village
 'Those visitors came to the village.'

G=gender class

A controller may also be a less typical nominal element than a noun phrase, such as a clause (5a) or an infinitival (5b):

Spanish

- (5) a. **Que** **las** **modelo-s** **gan-en** **tanto** parec-e injust-o.
 COMP DEF.F.PL **model(F)-PL** **earn-3PL.SBJV** **so_much** seem-3SG unfair-M[SG]
 'It seems unfair that models earn so much.'
- b. **Trabajar** no es san-o.
work.INF NEG be.3SG healthy-M[SG]
 'Working (lit. to work) is not healthy.'

These controllers are defective since they do not have specific agreement features so the target shows default agreement, which in this case is third person singular on the verbs. This is further shown by the fact that the predicative adjectives in both sentences also agree with the defective controller in the masculine singular default form, despite even the presence of a feminine plural controller within the embedded clause in (5a).

Controllers may also be non-overt, as occurs in pro-drop languages such as Pashto (Indo-European), an Indo-Iranian language spoken in Afghanistan, which does not require the subject argument to be explicit (6):

Pashto (Neeleman & Szendrői 2007: 672)

- (6) (**Zə**) manna xwr-əm.
 I.NOM apple eat-1SG
 '[I] eat the apple.'

It is also possible for the controller to be completely absent such that it cannot appear, as occurs with verbs that describe natural phenomena, exemplified by the Croatian example (7), in which no overt subject is possible.

Croatian (Mark Schmalz, personal communication)

- (7) Mrač-i se. (* Ono mrač-i se.)
 get_dark-3.SG REFL it.N get_dark-3.SG REFL
 ‘It’s getting dark.’

To summarize, controllers are generally nominal in nature – in the case of verbal agreement they are NPs – and it is possible that they are not overtly expressed.

2.2.3. *Targets*

The examples in the previous section make it clear that the most commonplace targets for agreement are adjectives (example 3) and verbs (all examples). However, there is a series of other elements that mark agreement, such as pronouns, numerals, quantifiers, adpositions and nouns. Before considering these targets, let us look more closely at agreement marking on verbs.

2.2.3.1. *Verbs and auxiliaries*

In nearly all the examples so far, verbal agreement has been marked directly on the verb, but it is also possible for an auxiliary verbal element to bear agreement information. An auxiliary verb may be defined as:

an element that in combination with a lexical verb forms a monoclausal verb phrase with some degree of (lexical) semantic bleaching that performs some more or less definable grammatical function. (Anderson 2006: 5)

Auxiliary verbs typically express verbal categories of aspect and modality, and may also express tense, negative polarity or voice categories. These categories encode information about the verb semantics, and so do not represent the displaced information that characterizes agreement. However, auxiliaries may also express the features associated with agreement, such as person, number and gender. In (8a) from Burushaski, a language isolate of Northern Pakistan, the auxiliary marks person for the subject argument, and person and number for the possessor of the object argument.

Burushaski (Berger 1998: 162, 161, cited in Anderson & Eggert 2001: 240, 242)

- (8) a. k^hak^háay-umuc p^haš **mée-t-aa**
 walnut-PL gobble_up 1PL-AUX-2
 ‘You gobbled up our walnuts.’

- b. *ǰáa* *a-yúgusanc* ***moó-y-a*** *bá-a*
 I.GEN 1-daughter.PL 2PL-give-1 AUX-1
 ‘I herewith am giving you my daughters.’

In such auxiliary verb constructions, there are a number of ways in which the inflectional material is distributed between the lexical verb and the auxiliary verb. In (8a) the lexical verb *p^haš* (‘gobble up’) is uninflected and the auxiliary *mée-t-aa* bears all the inflectional markers; in (8b), in contrast, some information is marked on the lexical verb ‘give’ while the auxiliary still bears an inflectional marker. Although Burushaski shows different ways of distributing inflectional material between the verb and auxiliary, many languages consistently use one pattern.

All information may appear on the auxiliary; an example of such an AUX-headed language is Iatmul (Sepik), as can be seen in example (9), in which subject marking appears on the auxiliary.

Iatmul (Foley 1986: 144, cited in Anderson 2006: 24)

- (9) *klə-kə* *li-kə-win*
 get-DEP AUX-PRES-1SG
 ‘I am getting it.’

DEP=dependent

Alternatively, it may be the lexical rather than the auxiliary verb that bears the person inflection; this is the case for Mödö (Nilo-Saharan), shown in example (10), which marks for subject on the lexical verb ‘rescue’.

Mödö (Persson & Persson 1991: 19, cited in Anderson 2006: 24)

- (10) *tí* ***mókònyì*** *yí*
 FUT 1:rescue you
 ‘I will rescue you.’

Another possibility is that both elements are inflected: example (11) shows how in Gorum (Austro-Asiatic) both the lexical verb ‘eat’ and the auxiliary bear marking for the first person subject.

Gorum (Aze 1973: 279, cited in Anderson 2006: 25)

- (11) *miŋ* ***ne-gaʔ-ru*** ***ne-laʔ-ru***
 I 1-eat-PST 1-AUX-PST
 ‘I ate vigorously.’

The inflectional material may be divided between the lexical and auxiliary verbs such that each element bears different information; Jakaltek (Mayan) is

a split language of this type and example (12) shows how the subject is marked on the lexical verb *ila* ('see') while the object is marked on the auxiliary.

Jakalteq (Craig 1977: 60, cited in Anderson 2006: 25)

- (12) šk-**ach** w-ila
 COMPL-ABS2 ERG1-see
 'I saw you.'

Anderson also identifies a fifth category of auxiliary verb constructions, which he calls the split/doubled type. In languages of this type, the information is marked on both the lexical and the auxiliary verbs, but incompletely so on one of the two elements. Burushaski has split/doubled auxiliary verb constructions, as can be seen in (8b): the subject is marked on both elements, but the object is marked on the lexical verb alone. The different types of auxiliary verb constructions are summarized in table 1.1.

	LEX	AUX
AUX-headed type	-	+
LEX-headed type	+	-
Doubled-type	+	+
Split type	+i/-j	-i/+j
Split/doubled type	+i/+j -i/+j	-i/+j +i/+j

Table 1.1. A typology of auxiliary verb constructions showing the possibilities for the distribution of the inflectional material between the lexical verb (LEX) and the auxiliary verb (AUX). (Adapted from Anderson 2006: 24-27.)

The division of labour between the lexical and the auxiliary verb in the split and split/doubled types varies from language to language, and there are different groupings that contrast negation, TAM (tense, aspect and modality) and subject/object marking. Leaving aside negation, the inflection on the lexical verb and auxiliary verb tends to differentiate between subject on the one hand and object on the other, or between TAM on the one hand and subject/object on the other. As we shall see in chapters 5 and 6, this second pattern is comparable to how agreement auxiliaries in LSE operate. For the moment we return to the different types of targets that can mark agreement.

2.2.3.2. Other targets of agreement

In addition to verbal elements, agreement marking may appear on other categories of word. This section looks at those that are relevant to agreement

in LSE. As we shall see in chapter 3, the spatial marking that appears on sign language verbs is closely related to the use of space also present in pronouns; additionally, spatial marking in LSE may also appear on numerals, quantifiers, adpositions and nouns, so agreement on these categories in spoken languages is described here.

Pronouns often mark the person, number or gender of their antecedent, or a combination of these features. In the case of Tamil (Dravidian), the pronoun marks person, number and honorific status. In example (13), the pronoun *avaru* matches the third person singular honorific antecedent *mutal mantiri* ('Chief minister').

Tamil (Asher 1985: 4-7, cited in Brown et al. 2002)

- (13) A utta vaaram mutal mantiri namma uur-ukku var-ra-arū.
 next week first minister our village-DAT come-PRS-3SG.HON
- avaru** a utta vaaram va-ruva-arū
 PRO.3SG.HON next week come-FUT-3SG.HON
- 'The Chief Minister is coming to our village next week.
 He will come next week.'

PRO=pronoun

This would not be treated as agreement under many models, since the pronoun does not have to be within a certain distance of the antecedent with which it agrees (see section 2.2.4, on domains). Such a model is binding theory (Chomsky 1981), in which a pronoun is taken to be subject to specific restrictions regarding its relation and relative position with respect to the antecedent. Condition B of binding theory ("a pronominal is free in its binding domain") basically requires that the antecedent does not appear in a syntactic position in which it controls the pronoun, and thus no relation holds. However, pronouns display the same agreement features (such as number, person and gender) that typically show up on agreement markers. Barlow (1999: 200) claims that agreement and antecedent-anaphora relations make use of the same underlying mechanisms, even though there may be more going on in the case of anaphoric reference (concerning distribution and control). Corbett (2006: 228-30) supports this view by pointing out that there is no obvious or logical point at which agreement phenomena can be qualitatively categorized into different types (e.g. local versus anaphoric agreement), and argues for a unified model of agreement. The question of relation or proximity required between a target and its controller will be looked at in the section on domains, and returned to in the overview of agreement in the Minimalist framework in section 2.3.3.

Another element that can mark agreement is numerals. It is common for the numeral ‘one’, which is often closely related to the indefinite article, to show gender agreement with the noun controller, but higher numerals may also show variance in some languages. In Catalan, the numeral ‘two’ marks the gender of the controller noun, as can be seen by the distinction between *dugues* with the feminine noun *ampolla* (‘bottle’) and *dos* with the masculine noun *bidon* (‘can’) in the examples in (14).

Catalan

- (14) a. **dugues** ampolle-s d’ aiga
 two.F bottle(F)-PL of water(F)
 ‘two bottles of water’
- b. **dos** bidon-s d’ aiga
 two.M can(M)-PL of water(F)
 ‘two cans of water’

This forms part of a general cross-linguistic pattern: the lower the numeral, the more likely it is to be a target of agreement. Conversely, the higher the numeral, the less likely it is to show agreement, and higher numerals show more irregular agreeing patterns: in Russian, the numeral ‘two’ distinguishes the feminine from the masculine and neuter genders, while ‘three’ and ‘four’ do not distinguish gender but do agree according to animacy (Corbett 1991, 1993).

Quantifiers and question words may also show agreement with a noun controller. This occurs in Turkana (Nilo-Saharan), spoken in Kenya, shown in the examples in (15) by the alternation of the form of the word ‘which’ depending on the gender of the controller noun.

Turkana (Dimmendaal 1983a: 433-434, cited in Brown et al. 2002)

- (15) a. e-kile **a-li`**
 M.SG-man M.SG.which
 ‘Which man is it?’
- b. i-kòku **a-ni`**
 N.SG-child N.SG.which
 ‘Which child is it?’

Adpositions may also show agreement and typically agree with the noun they govern, as occurs in the case of many modern Indic languages, some of the Iwaidjan languages (of Northern Australia) and the Celtic languages (Corbett 2006: 46). Example (16) shows agreement in person and number between the

Welsh preposition *am* ('about') and the noun it governs (only in the case where the noun is pronominal).

Welsh (adapted from Sadler 2003, example 7)

(16) a. Roedd Wyn yn siarad **amdanat** (ti).
was.3SG Wyn PROG speak **about.2SG** 2SG
'Wyn was talking about you.'

b. Roedd Wyn yn siarad **amdanom** (ni).
was.3SG Wyn PROG speak **about.1PL** 1PL
'Wyn was talking about us.'

The last category we shall look at that can mark agreement are nouns themselves. As we have seen, nouns typically control agreement on another element such as a verb or adjective, but they may also be marked to show agreement. Noun targets usually agree with some other noun, and often in the context of a possessive construction, in which the possessor agrees with the possessum, or vice versa. In Palauan (Austronesian), spoken in various islands of the Western Pacific, the possessum agrees with the possessor (17).

Palauan (Josephs 1975: 66-68, glossed following Potet 1992 and Tiberius 2002)

(17) a. a bli-l a Droteo
PM house-3SG.POSS PM Droteo[SG]
'Droteo's house'

b. urer-ir a re-dil
work-3PL.POSS PM PL-woman
'women's work'

PM=phrase marker

It is common for nouns to agree in number when they are predicative, so as to avoid a semantic mismatch. However, it should be kept in mind that there are languages that do not require a noun predicate to agree in number, especially when the subject is inanimate or non-human. This is the case for Hungarian, which shows number agreement in (18a), but not in (18b) for the non-human subjects.

Hungarian (Hall 1944, cited in Brown et al. 2002)

(18) a. Molnár és Kostolányi Magyar **iró-k**
Molnar and Kostolányi Hungarian **writer-PL**
'Molnar and Kostolanyi are Hungarian writers.'

- b. a tehén és a ló leg-hasznosabb **háziállat**
 ART cow and ART horse most-useful **domestic_animal**
 ‘The cow and the horse are the most useful domestic animals.’

So far we have seen which types of elements may mark agreement, namely verbs (including auxiliary verbs), adjectives, pronouns, numerals, quantifiers, adpositions and nouns. Now let us turn to the matter of how these targets mark agreement.

2.2.3.3. Means of exponence

The most common way of manifesting agreement is by means of affixes. This is what we have seen in the examples so far: mainly suffixes, but also prefixes in the case of gender marking in Chicheŵa (4) and infixes in the case of number agreement with the (absolutive) object in Basque (2). A particular type of affixal agreement has received some attention in the literature: alliterative agreement, common in Bantu and other Niger Congo languages. Alliterative agreement involves the presence of a marker on the controller and the same marker is used for agreement targets. In the Swahili (Central Bantu, Niger-Congo) example in (19), the singular marker for gender 7/8, *ki-*, is repeated on the adjective, the numeral and the verb that agree with the subject.

Swahili (Welmers 1973: 171, cited in Corbett 2006: 87)

- (19) **ki**-kapu **ki**-kubwa **ki**-moja **ki**-li-anguka
 SG-basket(G7/8) G7-large G7-one G7-PST-fall
 ‘One large basket fell.’

The interesting cases arise when the controller lacks a gender marker, which is a common situation for loan words. With no marker on the controller there is nothing available to be re-used to mark agreement on the targets. In this case, two options are available: in some cases a default marker is used, but in others the marker copies part of the phonological form of the controller. An example of this type of radical or literal alliterative agreement is shown in (20) for Bainouk (Atlantic, Niger-Congo): (20a) shows typical alliterative agreement for a noun that bears a gender marker; in (20b), on the other hand, the noun has no gender marker and the numeral uses the second strategy by copying the first consonant and vowel (CV) to mark agreement. Such radical alliterative agreement has been claimed to exist in other languages such as Arapesh (Toricelli), Wolof (Niger-Congo) and Landuma (Landoma, Niger-Congo), but evidence for a robust mechanism is scant (Corbett 2006: 90).

Bainouk (Sauvageot 1967, cited in Aronoff, Meir & Sandler 2005: 320)

- (20) a. **gu**-səl **gu**-fər
 G7-tunic G7-white
 ‘white tunic’
- b. **kata**:m-ã **ka**-nak-ã
 river-PL CV-two-PL
 ‘two rivers’

The importance of radical alliterative agreement lies in its undermining of the principle that syntax is phonology-free, since the (syntactic) agreement process needs to know about the phonological form of the controller. I will not enter into this debate, but note that the phenomena is relevant to sign language agreement as parallels have been drawn between radical alliterative agreement and agreement in sign languages (Aronoff, Meir & Sandler 2005).

Some verbal affixes fall into a grey area with respect to agreement, and there is a division of opinion as to whether or not they constitute a manifestation of agreement proper. These are bound markers for person, number and gender that are treated as pronouns attached to the verb rather than agreement markers. The distinction is often a difficult one to make, but is of consequence since from a syntactic point of view a pronoun is an argument of a verb, whereas a verb marked for agreement has independent arguments (though they may not be overt, as in the case of pro-drop languages). Corbett (2006: 110) points out that the difference is also important if agreement is restricted to the clausal level, since pronouns may be indexed (on this view they do not “agree”) with antecedents outside the immediate clause, whereas agreement markers must stand in a local relation to their controllers. The Australian language Bininj Gun-Wok [Gunwinggu] (Australian) makes use of pronominal affixes, shown by the prefix *gaban-* on the verb (‘scold’) in example (21).

Bininj Gun-Wok: Gun-djeihmi dialect (Evans 1999: 266, cited in Corbett 2006: 104)

- (21) al-ege daluk **gaban**-du-ng bedda
 F-DEM woman 3SG>3PL-scold-NPST them
 ‘That woman is scolding them.’

These pronominal affixes are hybrid elements as they are morphologically bound to the verb, yet at the same time they are arguments of the verb and referentially they function much like independent pronouns (Mithun 2003). In this sense they fall between typical agreement markers and free pronouns,

and they are quite common cross-linguistically as they represent a stage on a common grammaticalization path from pronoun to affix to agreement marker (Heine & Kuteva 2002). Corbett (2003c) presents a series of characteristics of pronominal affixes that may distinguish them from agreement markers on the one hand and free pronouns on the other. I summarise these criteria as they provide heuristics for identifying these elements.

- i) Case roles: pronominal affixes typically index all the main arguments (two or three), whereas agreement typically indexes just one (the subject or the absolutive argument) and free pronouns will normally index all the possible case roles in a given language.
- ii) Degree of referentiality: pronominal affixes are frequently referential, whereas agreement markers are indifferent to referential status (i.e. they may agree with definite, indefinite and negative expressions). Pronouns are normally referential.
- iii) Descriptive content (lexical vs. grammatical): this is a scalar criterion, with pronominal affixes falling somewhere between pronouns, which may have descriptive lexical content (e.g. certain pronouns can refer to persons only), and agreement markers, which have grammatical meaning.
- iv) Balance of information (with respect to the full nominal phrase): both pronominal affixes and free pronouns often give more information or mark more features (e.g. number) which is not given by the full noun phrase. Agreement markers, on the other hand, typically match the information on the noun target.
- v) Multirepresentation: agreement markers generally co-occur with other elements indexing the same referent (hence the idea of agreement as redundant displaced information). For pronominal affixes, there is often no other element indexing the verb's arguments, and at the extreme end of the scale, a free pronoun does not normally appear together with a full noun phrase that has the same function within the clause.

This last criterion gives rise to a couple of useful diagnostic tools for distinguishing between agreement markers and pronominal affixes. Firstly, if a free pronoun can co-occur in the same clause as the inflected verb, then it is agreement, but if it cannot, we have a pronominal affix. (This test is not clear-cut since the appearance of a free pronoun may be subject to restrictions or create contrast or emphasis.) Secondly, the presence of multiple targets in the clause (e.g. a lexical verb and an auxiliary verb) means that the inflection is clearly agreement (Corbett 2006: 109). These criteria will be useful for assessing the nature of verbal agreement in LSE.

As we have seen, affixes are elements that are morphologically bound to the target and may mark agreement. Another type of agreement marker is the clitic, which is neither a bound inflection nor a full word. Clitics may be more or less like inflections or free words, and they display a series of characteristic properties such as a low degree of selection with respect to their hosts and the inability to be affected by syntactic rules (Zwicky & Pullum 1983: 504). Example (22) shows agreement marked obligatorily by clitics in Skou (Sko).

Skou (Donohue 1999, cited in Corbett 2006: 75)

- (22) Ke m^óe **ke** = fue. (* Ke m^óe fue.)
 3SG.M fish 3SG.M=see.3SG.M
 ‘He saw a fish.’

A less common modification for agreement is stem alternation. The change in the root of the target may be minor, such as a change in stress, or complete, as occurs in suppletion. An example of a relatively minor change is provided by Chaha (Afro-Asiatic), a Gurage language of Ethiopia, in which a third person masculine singular object is marked on the verb by means of labialization. Importantly, this labialization occurs on the rightmost labializable consonant (in Chaha these are labial and dorsal consonants, but not coronal ones). In the examples in (23), the position of the labialization depends on the position of the rightmost labializable consonant: in (a) it is word final; in (b) word medial; and in (c) on the first consonant of the word since that is the only labializable one available.

Chaha (McCarthy 1983: 179, cited in Akinlabi 1996: 245)

- | | | | |
|------|----------------|------------------------|--------|
| (23) | without object | with 3rd m. sg. object | |
| a. | dänäg | dänäg ^w | ‘hit’ |
| b. | näkäs | näk ^w äs | ‘bite’ |
| c. | qätär | q ^w ätär | ‘kill’ |

The extinct Sino-Tibetan language of Tangut (spoken in north-western China in the 11th to 13th centuries) shows an alternation between two verb stems as shown in table 1.2. Leaving aside the agreement suffixes, the issue of interest here is the verb stem, which is most frequently *phji-* but also appear as *phjo-* twice in the paradigm (marked in boldface). This alternation coincides with an intersection of agreement features: the alternate form appears whenever the P argument is third person and the A argument is non-third person and

singular. The stem alternation distinguishes these forms from other person and number combinations.³

A P	1SG	1PL	2SG	2PL	3
1SG			phji-nja cause-2SG	phji-nji cause-2PL	phjo -ŋa cause-1SG phji-nji cause-1PL
1PL			2SG		
2SG	phji-ŋa cause-1SG	phji-nji cause-1PL	phji-nja cause-2SG		
2PL					
3					

Table 1.2. Verbal paradigm for the Tangut verb *phji/phjo* ‘to send, to cause to do’ (adapted from Jacques 2009: 20)

A complete change in form, or suppletion, is common in the verb ‘be’ in many European languages: the present tense of the singular paradigm for the verb in English (‘am’ /æm/, ‘are’ /ɑ:/, ‘is’ /ɪz/) shows absolutely no overlap between the different forms.

The final means by which agreement is marked on the target is multiple exponence. We have already seen something approaching this when we examined the distribution of inflection information between lexical and auxiliary verbs: the doubled-type auxiliary verb constructions manifest agreement on two targets, the lexical verb and the auxiliary verb (see example (11)). It is also possible for a single target to have various agreement slots that all mark the same features. Batsbi (North Caucasian) marks gender and number agreement (for the same controller) multiply on the verb (Harris 2009). In example (24), the noun ‘house’ belongs to a gender class that requires the marker *-d-*, and this marker appears twice on the verb ‘destroy’, agreeing in gender and number with the verb’s object.

³ Even though a stem alternation may coincide with agreement information, this does not necessarily mean that the alternation relates to an agreement feature (Corbett 2006: 74-75). It may be the result of some purely phonological process, such as umlaut, or represent a morphological patterning that happens to distinguish agreement distinctions. In the case of Tangut, Jacques (2009) claims that the stem alternation is not a true case of ablaut since the alternate form arose due to coalescence between the root vowel and a historical suffix, and thus was phonologically conditioned.

Batsbi (Harris 2009: 267)

- (24) oqar tišiⁿ c'a **d-ox-d-iy-er**
 they old house(d/d).ABS G-destroy-G-TR-IMPF
 'They tore down the old house.'

IMPF=imperfect

This sort of “exuberant” agreement raises questions concerning principles that underlie theories of morphology to do with identity and correspondence between morpheme and meaning. In the context of sign languages, and the multiple articulators available (manual and non-manual), agreement marking may occur repeatedly (and also simultaneously).

2.2.3.4. *Summary*

In this section on targets, we have looked at elements that mark agreement, and how they mark agreement. Targets may be verbs (including auxiliaries), adjectives, pronouns, numerals, quantifiers, adpositions and nouns. The means by which they may mark agreement are inflections (affixes and stem alternations) and clitics, and it is possible for markers to appear repeatedly on the same target, a phenomenon known as multiple exponence. We paid attention to two particular types of affixal agreement – radical alliterative agreement, which copies phonological material from the controller, and pronominal affixes, which fall between agreement markers and free pronouns – both of which will be of relevance to the issue of agreement in LSE.

2.2.4. *Domains*

We have identified the controllers and the targets of agreement but this is not sufficient to characterize the agreement relation. Specifically, it is the relationship between these two elements that needs to be described. In general terms, the domain is the context in which the relationship holds, for example, between a verb and the absolutive argument; more precisely, the domain is a description of the syntactic configuration that holds between the target and the controller, such as a spec-head relationship. Essentially, the way in which the domain is defined is what distinguishes different approaches to agreement. As we shall see in section 2.3, Minimalism takes a very narrow view of what counts as agreement, and this restriction is set out in terms of the relation between the controller and the target.

Corbett (2006: 54) identifies four broad domains for agreement: noun-phrase internal, clause internal, sentence internal and beyond the sentence. Within the noun-phrase, we find agreement between a noun and an adjective or a numeral. Clause-internally, agreement holds between a verb and its

arguments, typically the subject and object(s). This is the level at which most theories admit the agreement relation, though there are differences in the details of the workings of the relation. These first two domains (noun-phrase internal and clause internal) offer the possibility of specifying close syntactic relations between the controller and the target, and they show certain similarities to each other, especially when parallels between clause structure (CP) and noun-phrase structure (DP) are drawn upon (cf. Abney 1987). The resemblance between these two levels has led to unified models of agreement that aim to capture noun-adjective agreement as the same (syntactic) process as verb-argument agreement (Baker 2008). However, any characterisation of agreement in terms of local syntactic relations becomes more problematic as we move on to the next two domains, which are beyond the clause level. In the extreme case of agreement across sentences, a case in point is pronouns, which may bear the features of an antecedent (considerably) earlier in the discourse. As mentioned in section 2.2.3.2, many theories will already have drawn the upper limit of agreement and treat pronouns in terms of anaphoric reference and indexing rather than in terms of agreement. For brevity of exposition, I concentrate on the clausal level since this corresponds to verbal agreement and is of greater relevance for agreement in LSE. I start by looking at more canonical domains of agreement and then move on to agreement phenomena that represent unusual domains at the clausal level (possessor agreement and copying-to-object formations) and beyond the clausal level (long distance agreement).

A verb agreeing with its arguments is the most widely accepted type of agreement. This is clearly demonstrated by the examples we have seen so far, and verbal agreement is “typically characterized in terms of the structural position or grammatical function of the cross-referenced NP”, which is to say agreement with a subject or an object (Béjar 2003: 1). Within these grammatical relations there is an ordering with respect to agreement and the argument a verb agrees with is a reflection of a basic hierarchy of the type proposed by Keenan & Comrie in (25).

- (25) *subject > direct object > indirect object > oblique > genitive > object of comparison*

The Accessibility Hierarchy (Keenan & Comrie 1977: 66)

In accordance with this hierarchy, a language with verbal agreement will have agreement with the intransitive subject; if it has subject agreement, it may also have direct object agreement, and so on (Moravcsik 1978: 364). Furthermore, the hierarchy makes specific predictions in the opposite

direction: if a language has object agreement then it must also have subject agreement. However, there are instances of verbal agreement in which the verb appears to agree with some element that is none of these arguments. Before looking at these exceptional cases, a clarification about the distinction between direct object and indirect object is required.

Cross-linguistically, it is common for verbs to agree with the direct object in transitive constructions and the indirect object in ditransitive constructions (Bobaljik & Yatsushiro 2006: 80), as is the case for Tzotzil (Mayan): in (26a) the transitive verb ‘hit’ agrees with the first person direct object, but in the case of a ditransitive verb like ‘sell’ (26b), the indirect object is agreed with.

Tzotzil (Aissen 1983: 227, 280, cited in Dryer 1986: 818)

(26) a. Mi č-a-mah-**on**.

Q ASP-ERG.2SG-hit-ABS.1SG

‘Are you going to hit me?’

b. Mi mu š-a-čon-b-**on**

l-a-čitome.

Q NEG ASP-ERG.2SG-sell-BEN-ABS.1SG the-your-pig

‘Won’t you sell me your pigs?’

ASP=aspect

This is not a universal pattern, and different languages show different preferences between marking agreement with the direct or indirect object (Moravcsik 1978: 366), but it has been considered a common enough tendency to warrant a classification in the way languages treat non-subject arguments. Dryer (1986) argues that for some languages the direct object/indirect object distinction is relevant, whereas for others a difference is drawn between primary and secondary objects. A primary object is a direct object in a monotransitive clause and an indirect object in a ditransitive clause; a secondary object is a direct object in a ditransitive clause. This difference is important since LSE is sensitive to the primary/secondary object distinction, as can be seen by the fact that the patient argument in (27a) and the beneficiary in (27b) are both marked in the same way on the agreeing verb.

LSE

(27) a. JON IX_x MIREN IX_y xTRICK_y

‘Jon tricked Miren.’

- b. JON IX_x MIREN IX_y PROBLEM xEXPLAIN_y
 ‘Jon explained the problem to Miren.’

We have established that the typical domain for (verbal) agreement is between a verb and its arguments, but there are attested cases of agreement where the verb is controlled by an element that is not one of its arguments. The first case is possessor agreement, in which the verb agrees with the possessor of an argument rather than the argument itself.⁴ We have already seen an example of this in Burushaski, repeated here as (28). The auxiliary verb bears the first person marker *mée-* to indicate who the walnuts belong to, rather than indicating agreement with the walnuts themselves.

Burushaski (Berger 1998: 162, 161, cited in Anderson & Eggert 2001: 240, 242)

- (28) k^hak^háay-umuc p^haş **mée**-t-aa
 walnut-pl gobble_up 1PL-AUX-2
 ‘You gobbled up our walnuts.’

This agreement between the verb and the possessor of an argument occurs in several languages, such as Maithili (Indo-European), Banawá (Jamamadí, Arauan), Tabasaran (Daghestian) and Fox [Meskwaki] (Algic) (Corbett 2006: 61; Anderson 1997: 234). For this type of structure, it has been claimed that the possessor undergoes movement to a position typically occupied by verbal arguments (“possessor raising”), thus providing the syntactic justification for the manifestation of the agreement relation (Landau 1999). However, such raising analyses are ruled out for certain languages, such as Maithili, on the grounds of word order considerations: in spite of relatively free word order possibilities in the language, the possessor cannot be extracted from the major constituent of which it forms part. This shows that syntactically the possessor must be part of the containing possessum NP rather than a separate major constituent in the clause and thus it is hard to know what syntactic relation between the possessor and the verb constitutes the agreement domain (Comrie 2003: 335).

Conversely, the agreement controller does appear to occupy an argument position for the verb in the copying-to-object formations described by Anderson (1997: 231-233). In these constructions the argument of an embedded clause becomes the object of the matrix verb. In the example in

⁴ Possessor agreement between a verb and the possessor of one its arguments is to be distinguished from agreement between possessor and possessum, as mentioned in section 2.2.3.2. Recall that this discussion of domain focuses on verbal agreement, and as such ‘possessor agreement’ here refers to agreement with a possessor on the verb (not on a possessum).

(29a) from the North American language Fox, the verb ‘want’ could take a clausal object (which would be treated as an inanimate noun) but inflects for a third person (animate) object. Anderson claims that this is a copying mechanism rather than some sort of raising effect since the referent is signalled twice and both clauses are potentially free-standing. From the point of view of agreement domains, there is nothing too unusual going on here: once the argument is copied to the object position in the matrix clause, the verb marks agreement with it. However, Anderson reports cases in which the element that triggers agreement on the matrix verb has little to do with the embedded verb’s argument structure. In (29b), the embedded first person topic is what controls agreement on the matrix verb.

Fox [Meskwaki] (adapted from Anderson 1997: 232, 233)

- (29) a. net-aka:wa:n-a:-**wa**=koh(i) wi:h = ne:w-**aki**
 1-want-DTS(1 >)-3.IIND=you_know FUT=see-1>3.AOR

Lit. I want him (that) I will see him.

‘I do want to see him.’

- b. **ne**-kehke:nem-ek(w)-wa ni:na e:h = pwa:wi-ke:ko:hi-ašeno-niki
 I-know-INV-3(>1).IIND 1.TOP AOR=not-anything-disappear-INAN.OBV.AOR

Lit. He knows me that as for me nothing is missing.

‘He knows (that) as for me nothing is missing.’

DTS=direct theme sign, INV=inverse, IIND=independent indicative,
 AOR=aorist, INAN=inanimate, OBV=obviative

(29b) could perhaps be treated as a combination of possessor raising in the embedded clause and copying-to-object into the matrix clause. Semantically, the possessor agreement construction is reminiscent of the dative of interest common in Romance languages but rather than occupying an oblique argument position as occurs in (30), the referent in the possessor agreement and copying-to-object formations is marked as an immediate argument on the verb.

Spanish

- (30) Este niño no **me/te/le** com-e nada.
 This child NEG **me/you/him/her.DAT** eat-3SG nothing

‘This child_i will eat nothing (and I’m/you’re/(s)he’s affected).’

Together with possessive agreement and other data, examples like (29b) are used by Anderson to argue that agreement in Fox is conditioned by discourse-driven considerations to do with highlighting animate referents salient to the discourse. Initially, we had described these agreement-with-non-argument

phenomena – possessor agreement and copying-to-object formations – as being clause internal, but Anderson’s line of reasoning pushes the limits back beyond the clause (and the sentence) to the level of discourse.⁵ Under this view, agreement is (or, put more cautiously, in some languages may be) sensitive to effects that are not contained within the morphosyntactic domain and cannot be described in terms of (syntactic) structural relations. A more radical view of “agreement as a (purely) discourse phenomenon” is offered by Barlow (1999), who suggests that the relationship between controllers and targets cannot be reduced to feature identity and is better captured as a merging of interpretations associated with discourse referents. The characterization of agreement in terms of discourse considerations sits in stark contrast with the minimalist tack, which considers the domain of agreement to be within narrow syntactic structure (see section 2.3.3).

The last unusual agreement effect that we shall look at is a clear case of agreement beyond the clause, regardless of the role given to discourse considerations. Long distance agreement has been attested for various languages such as Godoberi (North Caucasian) (Haspelmath 1999), Basque (Isolate) (Etxepare 2005), and Lokaa (Cross River, Niger-Congo) (Baker 2008). Example (31) comes from the Daghestanian language Tsez [Dido] (North Caucasian), showing how the matrix verb ‘know’ agrees in gender with the object of the embedded clause, ‘bread’.

Tsez [Dido] (Polinsky & Potsdam 2001: 584)

- (31) enir užā **magalu** bāc’ruli **b-iyxo**
 mother boy **bread(G3).ABS** ate G3-know
 ‘The mother knows the boy ate the bread.’

It can be shown that movement in Tsez is strictly clause internal and there is no way for an argument to move outside of its clause. This means that the agreement between the verb and the embedded element must be across a clause boundary. Polinsky & Potsdam (2001: 641) conclude that this makes long distance agreement “problematic for theories of agreement that either explicitly stipulate or axiomatically derive the claim that all agreement relationships are clause bounded.”

To summarize this section, the domain of agreement is the relationship that holds between the two elements involved in the agreement configuration,

⁵ Another phenomenon which recommends the importance of taking into account (animate) referents salient to the discourse is allocutive agreement in Basque, in which the verb agrees with the addressee in person and gender even though the referent is not an argument selected by the verb (Oyharçabal 1993).

the controller and the target, and typically this is defined in terms of grammatical function (“the verb agrees with its subject”). We have looked at various agreement phenomena that resist any attempt to identify a straightforward connection between the controller and the target: in possessor agreement, the verb agrees with the possessor of its logical object; copying-to-object formations show the verb agreeing with a discourse salient referent (which plays no part in the verb’s argument structure); and long distance agreement allows the matrix verb to agree with the argument of a different verb in an embedded clause. One reaction to these unusual agreement effects is to say that agreement is sensitive to discourse factors or, more radically, that it operates entirely at the level of discourse. An alternative strategy, taken up by the Minimalist Program, is to characterize the domain of agreement in purely structural terms, limiting the description of the relation between controller and target to syntactic configurations.

2.2.5. *Features and values*

Features are the information from the controller that is marked on the target in the agreement process. More precisely, a feature is the type of information that is marked and the specific information shown is the value; for example, a verb may agree in number (the feature) with its object and in a given case that may be dual (the value). A feature has a set of possible values that varies from language to language: in the case of Northern Ostyak [Khanty] (Uralic), number may be singular, dual or plural, as can be seen from the different markers on the verb *we:l* (‘kill’) in (32).

Northern Ostyak [Khanty] (Nikolaeva 1999: 334)

- (32) a. ma tam kalaŋ we:l-s-∅-e:m
I this reindeer kill-TENSE-SG-1SG.SBJ
‘I killed this reindeer.’
- b. ma tam kalaŋ we:l-sə-ŋil-am
I these reindeer kill-TENSE-DU-1SG.SBJ
‘I killed these (two) reindeer.’
- c. ma tam kalaŋ we:l-sə-l-am
I these reindeer kill-TENSE-PL-1SG.SBJ
‘I killed these reindeer.’

The main features for agreement, the φ -features, are gender, number and person. There are other features that may be considered in the agreement process, such as case and respect. Before looking at each of these features and

their sets of possible values, I wish to look at the general properties of features themselves.

A feature may be categorised in terms of whether or not it is required by the syntactic context, in much the same way that inflection may be considered inherent or contextual (cf. Booij 1996). Applying this distinction to features, a contextual feature is one that is required by the syntactic context, while an inherent feature is not, although it may be relevant to the syntactic system. This property of a feature depends upon where the feature appears: gender is inherent for nouns, but contextual for adjectives (Corbett 2006: 123).

A further distinction (due to Zwicky 1992, cited in Corbett 2006: 124) may be drawn with respect to how a feature relates to semantics. Direct features express intrinsic content and are associated with prototypical semantics (number with numerosity, gender with a classification of objects, etc.). Indirect features, on the other hand, express meanings indirectly, by means of grammatical relations (nominative case is associated with the grammatical relation of subject, which in turn is associated with the semantic role of AGENT). These two properties coincide closely but are not the same: the first relates to syntax (and as such depends upon where the feature appears), while the second is to do with semantics. It is possible for a feature to be inherent and indirect and this is of importance for the theoretical apparatus of Minimalism (cf. uninterpretable features in section 2.3.3).

Another important property of features is that they represent a certain level of abstraction. A feature's values act as markers that categorize nominal elements as belonging to a given category, such as plural in number, or masculine in gender. These values have a semantic basis and serve as a means to carve up the world of linguistic elements into different types, which is made use of by the grammatical system. As such, many different items may share the same φ -features (and values). This means that φ -features do not uniquely individuate specific items, and they are to be contrasted with indices, which are specific labels for a single item. The distinction will be an important one when we come to look at the features at work in agreement in LSE. We now turn to the different features that play a role in agreement.

2.2.5.1. Gender

Gender is an inherent feature of the noun and categorizes it according to some sort of semantically based taxonomy. The better known gender systems have two or three values: masculine, feminine and neuter. However, other languages, such as the Bantu languages, have more involved gender systems that normally distinguish between seven and ten genders (or classes, as they are known in the Bantuist tradition). In the extreme, Nigerian Fula (Niger-

Congo) has around twenty genders, depending on the dialect (Corbett 2008a). Gender is an unusual feature in that it may or may not figure in a language's grammar: in a survey of 257 languages for the World Atlas of Language Structures (WALS – Haspelmath, Dryer, Gil & Comrie 2008), Corbett (2008a) finds that over half (145) have no gender system. Unsurprisingly, when a gender system is present, the more distinctions it makes, the less common it is.

Gender systems may be based on purely semantic criteria or a combination of semantic and formal criteria. In the first case, the categories established by the system are directly related to the meaning of the members in each category, as is the case for Kannada (Dravidian) for which all male humans are masculine gender, all female humans are feminine, and everything else is neuter (Corbett 2008c). Alternatively, the gender system may have a semantic base supplemented by other criteria that result in categories with a mixed set of members that do not seem to form a natural class of any sort. The additional assignment rules often take into account the form of each noun, and this may be done on the basis of phonology or morphology. The same WALS survey of gender systems found a roughly equal split between strictly semantic and mixed semantic/formal gender systems (Corbett 2008c).

A final consideration for gender systems is the underlying distinction of the semantic criteria for assigning gender. The majority of languages that have a gender system in the WALS survey (84 of 112) applies a sex-based categorization and the remaining languages make use of animacy as the basic differentiating factor. In the most limiting case, animacy is restricted to humans but it may also be extended to animals and spirits or trees. Many of the languages that make use of an animacy-based gender system are from the Niger-Congo and Algonquian families, but this type of language is also represented all over the world (Corbett 2008b).

In summary, gender is an inherent feature of nouns that stems from a semantic classification based on either sex or animacy, which may be obscured by additional formal criteria for gender assignment. Not all languages have gender systems, and the extent to which gender participates in agreement processes may vary from language to language: gender agreement is generally limited to the nominal domain, but may also play a role in verbal agreement. The following section looks at the feature of number.

2.2.5.2. Number

Number is an inherent feature of nouns⁶ and its value is normally marked on the noun (e.g. a plural marker), but some nouns may be lexically specified for number. Most commonly, the number feature distinguishes two values: singular and plural. The plural category may be further split into more specific values. Dual marks two and only two referents in Upper Sorbian (Indo-European) (Corbett 2000: 20) and Hopi (Uto-Aztecan) (Moravcsik 1978: 347), thus restricting the plural value to three or more. Trial marks three and only three referents and appears in languages that have a dual form, such as Larike [Larike-Waksishu] (Central Malayo-Polynesian, Austronesian) (Corbett 2000: 21). The paucal is used to refer to a small number of distinct referents: in Bayso (Afro-Asiatic) the paucal refers to between two and six individuals (Corbett 2000: 22). The paucal and the general plural may also be divided into lesser and greater categories, with the result that languages may have up to five different values for the number feature: Mele-Fila (Central-Eastern Oceanic, Austronesian) distinguishes between singular, dual, paucal, plural and greater plural (Corbett 2000: 42).

In addition to these number distinctions, some languages have a general value that is outside or beyond the number system. A language may have a specific form that is neutral with respect to number. In the Fouta Jalon dialect of Fula (Niger Congo), the word *toti* may refer to one or several toads, and contrasts with the forms for the singular, *totii-ru* ('a toad'), and plural, *totii-ji* ('toads'). Many languages have a general meaning but rather than use a separate form, this is achieved by means of one of the forms for more restricted number meaning. Thus, in Turkish *ev* can mean 'house' or 'houses', while the plural form *evler* always means 'houses' (Corbett 2000: 10-14). This notion of general number will turn out to be relevant when interpreting the LSE data, especially given the apparent optionality of number marking.

Number as a nominal feature needs to be distinguished from verbal number. We are used to thinking of number as being a feature that a verb agrees with (that is, is expressed as a contextual feature on the verb as a target), but a verb may have number as an inherent feature. Verbal number reflects the event semantics of the verb and indicates whether an action is performed several times or at several places (event number), or whether it affects or involves several participants (participant number). In this sense, verbal number may overlap with both aspect (iterative and distributive) and

⁶ The notion that number (and gender) is inherent to a noun actually depends on how this information is represented in the syntactic structure. I return to this issue in section 7.1.1 when re-examining the location of φ -features.

nominal number as reflected in agreement (Veselinova 2008; Corbett 2000: 256). However, it is often possible to distinguish verbal number as a grammatical category that is marked on the verb. In Georgian (Kartvelian), the form of the verb stem ‘sit’ marks the plurality of the action (one person sits vs. several people sit). The verb also bears an agreement marker that indicates the number of the controller argument. The contrast between (33a) and (b) highlights the different verbal forms associated with a singular subject argument/single event (i.e. singular verbal number) and with a plural subject argument/multiple event (i.e. plural verbal number). However, it is possible to distinguish between nominal (argument) number and verbal number due to the fact that in Georgian numerals require a singular noun and control singular agreement on the verb. Thus, in (33c), with the numerically quantified subject ‘my three friends’, the verb is marked to show agreement with a singular subject by the affix *-a*, similarly to (33a), but also contains the affix *-sxd-*, similarly to (33b), to mark plural verbal number.

Georgian (Aronson 1982: 243, 406-7, cited in Corbett 2000: 254)

- (33) a. ivane še-mo-vid-a da da-**jd**-a
 John PRV-PRV-enter-AOR.3.SG and PRV-**sit**.SG-AOR.3.SG
 ‘John entered and sat down.’
- b. čem-i mšobl-eb-i še-mo-vid-nen da da-**sxd**-nen
 my-AGR parent-PL-NOM PRV-PRV-enter-AOR.3.PL and PRV-**sit**.PL-AOR.3.PL
 ‘My parents entered and sat down.’
- c. čem-i sam-i megobar-i še-mo-vid-nen da
 my-AGR three-AGR friend.SG-NOM PRV-PRV-enter-AOR.3.PL and
 da-**sxd**-a
 PRV-**sit**.PL-AOR.3.SG
 ‘My three friends entered and sat down.’

PRV=preverbal

Verbal number is marked on the verb and is an inherent feature of the verb. As such, it does not represent a case of agreement since there is no displaced information. However, it is relevant to agreement because, as we have seen, the verb may also carry agreement markers that reflect the number feature value of one (or various) of its arguments. This is true for Georgian, and it was relatively straightforward to distinguish the two phenomena. However, it is not always so easy to differentiate between verbal number and agreement markers. Durie (1986: 357-62) provides the following diagnostics:

- i) verbal number operates on an ergative basis, reflecting the number of the most directly affected participant, which is the subject of intransitive sentences (S) or the object of transitive sentences (P), and this may contrast with other marking on the verb (e.g. subject marking, which agrees with S and A).
- ii) verbal number may mark different values to those marked by agreement, especially when verbal agreement is restricted by some condition (such as singular agreement for numeral phrases in Georgian).
- iii) verbal number may have a different set of values to nominal number; although rare, it is possible for verbal number to include a value (such as dual) that is not marked by nominal number in the same language, or vice versa.
- iv) verbal number is retained in contexts where agreement is absent, namely non-finite forms that lack agreement morphology such as control constructions, imperatives and attributive usage.
- v) verbal number is preserved in derivational word formation, but agreement inflection for (nominal) number is not.

These differences between verbal number and nominal number marked on the verb serve to identify how much of the inflectional material on a verb is due to agreement (and conversely, how much is marking inherent features of the verb). This will be useful for delimiting verbal agreement in LSE.

Number differs from gender due to the fact that it is held to be universally present in all languages: Universal #42 proposed by Greenberg (1963: 113) states “All languages have pronominal categories involving at least three persons and two numbers.” This is not quite true. Firstly, there are languages that make no grammatical distinction in number. Corbett (2000: 50-51) mentions Kawi (Austronesian), Classical Chinese (Sino-Tibetan) and Pirahã (Mura) as examples of languages that have no plural nouns or pronouns (though semantic number may be expressed by means of conjunctions and quantifiers). Example (34) shows how the third person pronoun is used indistinctly in Pirahã for singular or plural reference.

Pirahã (Everett 1986: 282, cited in Corbett 2000: 51)

- (34) **hiapióxió** soxóá xo-ó-xio
 3 already jungle-LOC-DIR
 ‘He already went to the jungle.’ or
 ‘They already went to the jungle.’

DIR=directional

A second problem with Greenberg's universal is that it is couched in terms of pronominal categories and the question of what counts as a pronominal cross-linguistically is a thorny issue. This is closely connected to the category of person so we shall look more closely at this matter in the following section.

2.2.5.3. *Person*

Person is a feature inherent to pronominal elements rather than nouns, which are taken to be third person by default.⁷ According to Greenberg's Universal #42, person is a universal feature of the pronominal category and always distinguishes between three different values: first (the speaker), second (the addressee) and third (neither speaker nor addressee). Since the grammatical category of person is closely linked to the category of personal pronoun, the definition of what counts as a personal pronoun is central to assessing the universality of person. Cysouw (1997) claims that some languages, such as West-Greenlandic Inuit (Eskimo-Aleut), lack a third person pronoun, making use instead of a demonstrative. Cysouw's definition of a third person pronoun is as an intersubjective deictic: "an item that can be used by all speech-act participants alike to refer to something" (1997: 9). Since demonstratives are not intersubjective ('this' for me may be 'that' for you, while 'he' remains constant for me and you) he concludes that they are not pronominal and thus that third person pronouns are not a universal category. In a similar vein, if pronouns are defined as a morphosyntactic category, there are languages such as Thai (Tai-Kadai) and Japanese (Japonic) whose person markers behave more like nominals than pronominals, with the result that it is not clear that all languages have a pronominal category (Siewierska 2004: 9).

There are two responses to these claims. The first is to use an alternative definition of pronouns in terms of referential role and functions which focuses on their referential deficiency (to distinguish them from nouns) and anaphoric

⁷ However, some languages do allow non-third person agreement with a nominal phrase. Spanish is often cited in this respect because of examples like the following:

- (i) a. ¿El grupo entero v-áis?
 DEF.M.SG group(M.SG) whole-M.SG go-2PL
 'Is the whole group (of you) going?'
 b. Los marica-s abund-amos en est-e campo.
 DEF.M.PL poof(M)-PL abound-1PL in this-M field(M)
 '(Us) poofs are in abundance in this field.'

nature (to distinguish them from pure deictics).⁸ Such a functional definition of pronouns fairly well guarantees that every language will have a term that qualifies as pronominal. A more “agnostic” strategy is to ensure that all languages have some pronoun-like element by using the term “person marker”, thus avoiding the issue of defining what is or is not a pronoun (cf. Siewierska 2004: 13). Secondly, recall that we are interested in the person feature and not personal pronouns *per se*. While personal pronouns are a good indicator of the person categories marked by a language, they are not the only indicator (Cysouw 2001). For instance, Basque is similar to West-Greenlandic Inuit in its use of a demonstrative, *bera*, in place of a third person pronoun, but the three-way person distinction is marked in the verbal agreement paradigms, illustrated in the examples in (35).

Basque

- (35) a. Ni etorri naiz.
 1 come AUX.1.SG
 ‘I have come.’
- b. Zu etorri zara.
 2 come AUX.2.SG
 ‘You have come.’
- c. Bera etorri da.
 DEM come AUX.3.SG
 ‘He/she has come.’

In a review of the person-marking paradigms of a broad sample of languages, including both pronominal forms and verbal agreement markers, Cysouw (2001: 313) found 98 different paradigms for distinguishing different person and number combinations. The only exceptions to Ingram’s (1978) universal 1 (“There are at least four persons in every language: I, thou, he, we”) are languages such as Pirahã that have no number category and so do not have a ‘we’ form (Cysouw 2001: 78). This suggests that all languages have some

⁸ Although Lyons (1977: 637) claims that deixis is the more basic kind of pronominal reference over anaphora, Bresnan (2001: 115) defines pronouns as “basic anaphoric expressions characterized by systematically shifting reference to persons within the context utterance.” There seems to be an important distinction between first and second person pronouns, which require information from the extra-linguistic context (i.e. deictic reference), and third person pronouns, which typically require information from the linguistic context (i.e. anaphoric reference). Bresnan claims that in all cases the notion of anaphoricity is applicable as a referential dependence on a superordinate pronoun within a sentence, such as ‘I said that I would come.’

(grammaticalized) means of distinguishing first, second and third person (even though a particular paradigm of a given language may not distinguish between all three person values). However, in subsequent work, Cysouw (2003: 44) mentions that Qawesqar, an Alcalufan language of Chile, does not distinguish between second and third person: the same independent pronoun is used for second and third person. Since the language does not have person inflection, this means that Qawesqar does not exhibit a three-way person distinction. As we shall see in chapter 3, this typological rarity has been used to support the claim that some sign languages make a two-way person distinction.

Beyond the minimal three person distinctions, some languages make additional differentiations in the person feature. For the first person plural there may be a distinction between the inclusive, which includes the addressee (first + second person), and the exclusive (first + third). Some languages, such as those from the Nyulnyulan and Gunwingguan families (both Australian), further distinguish the augmented inclusive (first + second + third) from the minimal inclusive (first + second) (Cysouw 2001: 292-3). A distinction may also be made in the third person between proximate and obviative, to mark the difference between an argument that is or is not central to the discourse, respectively. This distinction is common in Algonquian (Algic) and Athapascan (Na-Dene) languages of North America (Moravcsik 1978: 357). Rather than categorizing the discourse space, some languages mark distinctions to do with physical space. Ute (Uto-Aztecan) has a grammaticalized distinction between visible and non-visible in the third person (Givón 1984: 356-8). The exclusive/inclusive differentiation involves a combination of the values of the person feature, whereas the proximate/obviative and visible/invisible distinctions introduce new parameters and could perhaps be treated as separate features (which combine with person) as we shall consider below for the notion of respect.

To summarise, the three-way person distinction is reflected almost universally cross-linguistically, even if the distinction is not marked by a set of pronominal forms of the same morphosyntactic category.

2.2.5.4. *Other features: respect and case*

Agreement may be affected by respect, a reflection of the social relation of the speaker with regard to the addressee, and possibly with regard to third persons also (see example (13) above for Tamil). Honorific forms often involve using an already established person form as an alternative to mark respect (for example, Italian uses the third person for the second person respect form), in which case respect is subsumed under the person feature.

Alternatively, the honorific forms may be unique, signalling that a respect feature is required. It has been claimed for Japanese that object honorification is an agreement process (Boeckx & Niinuma 2004; Boeckx 2006).⁹ Of interest to us here is the covariant marking on the verb depending on the social status of the object with respect to the speaker. Example (36b) shows the inclusion on the verb of an honorific marker *o-* for the direct object in contrast with the case where respect is not marked (36a).

Japanese (Bobaljik & Yatsushiro 2006: 356, 360)

- (36) a. Taroo-ga Tanaka sensee-o tasuke-ta
 Taro-NOM Tanaka Professor-ACC help-PST
 'Taro helped Prof. Tanaka.' [non-honorific]
- b. Taroo-ga Tanaka sensee-o o-tasuke-si-ta
 Taro-NOM Tanaka Professor-ACC HON-help-do-PST
 'Taro helped Prof. Tanaka.' [object-honorification]

HON=honorific prefix

Case is often considered to form part of the agreement system of a language as it is marked across various elements, such as the dependents of a noun, as can be seen by the presence of the suffix *-ngumi* in Kayardild (Australian) in (37).

Kayardild (Evans 1995, cited in Brown et al. 2002)

- (37) dan-kibana-**nguni** dangka-naba-**nguni** mirra-**nguni** walbu-**nguni**
 this-ABL-INS man-ABL-INS good-INS raft-INS
 '...with this good man's raft'

However, if we return to our classification of the properties of features, it is clear that case is not an inherent feature of a noun, but rather appears due to the syntactic environment (structural case) or to add semantic content (inherent case). In contrast, the features we have considered so far have all been inherent on the controller and contextual on the target, as a result of agreement between the two. Case is treated instead as a result of government between the case-marked item and its dependent elements. This is not to say that case is not very closely related to agreement. Case and agreement features such as number may be combined in inflectional markers (one need only think of the contrast between genitive singular and plural in Latin: *puellae* 'of the girl' versus *puellorum* 'of the girls'). Furthermore, structural case

⁹ The characterization of Japanese object honorification in terms of minimalist Agree has been questioned by Bobaljik & Yatsushiro (2006).

assignment plays an integral role in the agreement process as conceived by Minimalism.

Before concluding this section on features, we return briefly to the relation between pronominal forms and agreement markers that was touched upon in the discussion of person (and also in section 2.2.3.3 in relation to pronominal affixes). In a review of agreement features, Moravcsik (1978: 369) concludes by stating that any feature that is present in the agreement marking system will also be present in the pronominal system. The feature values available may not necessarily be identical in both systems, but the pronominal system will always include as many features as the agreement markers do. This is related to the pronominal theory of agreement, which claims that agreement markers and anaphoric pronouns are derived by the same type of rules. Again, crucial to the validity of this claim is the definition of pronoun that is adopted.

In this section we have looked at the features that operate in agreement and the values that they take. The main features for agreement are gender, number and person (and respect may also play a part in the agreement systems of some languages). Person and number are (near) universal features cross-linguistically (with the exception of a handful of languages that do not mark number), whereas in many languages gender does not appear as a feature.

2.2.6. *Conditions*

Agreement may be determined by factors that are not realized by agreement itself, that is to say, variables that are not agreement features. A common case is animacy, which may affect whether or not agreement occurs. Furthermore, these conditions may be absolute or relative in nature; in the latter case, conditions influence agreement such that the presence or absence of a factor will make it more or less likely for agreement to be one way or another. In this section I look at different factors that may operate as conditions on agreement (namely, animacy and topicality) before making some remarks on the theoretical nature of conditions.

The role of animacy in agreement processes is well attested. In a number of languages, such as Persian (Indo-European) or Georgian (Kartvelian), plural inanimate nouns fail to trigger plural verb agreement (Comrie 1989: 190). Additionally, some languages show a marked division between non-third and third person, favouring agreement with the former. Bearing in mind that first and second person (i.e. the speaker and the addressee) are inevitably high on the animacy scale, this means that in terms of animacy the argument agreed with is higher than or equal to the other argument. The agreement

suffixes of Tangut shown in table 2.2 reflect such a system and other languages that show this non-third versus third person distinction are Chuckchi (Chukotko-Kamchatkan), Southern Tiwa (Kiowa Tanoan) and Navaho (Na-Dene) (Comrie 1989: 192-3). Finally, for object agreement, Esthehardi (Indo-European) limits gender agreement to animate objects (Comrie 1989: 194).

Another example of object agreement highlights the role of topic as a condition on agreement. As we have seen, Northern Ostyak shows agreement between the verb and the object (example (32c), reproduced here as (38a)). Object agreement is only possible when the object has topic properties, and cannot occur when the object is focused (and therefore cannot be a topic) as can be seen in (38b) (Nikolaeva 2001). Other discourse functions, such as definiteness and focus, can also act as conditions on agreement (Corbett 2006: 200-4).

Northern Ostyak [Khanty] (Nikolaeva 2001: 16-17)

- (38) a. ma tam kalaŋ we:l-sə-l-am
 I these reindeer kill-PST-PL-1SG.SBJ
 'I killed these reindeer.'
- b. mati kalaŋ we:l-əs /*we:l-s-əlli?
 which reindeer kill-PST.3SG.SBJ /*kill-PST-SG.3SG.SBJ
 'Which reindeer did he kill?'

Conditions involve the syntactic or "higher" levels (semantics and pragmatics), and should be distinguished from prerequisites for agreement, which operate at the phonological or morphological level. Prerequisites are requirements that must be met for agreement to take place, whereas conditions have an effect on the agreement process. Prerequisites may be of different types. Firstly, the category of a word may determine whether or not it agrees: verbs in English, for instance, agree (minimally), adjectives do not. Additionally, the features that are available for agreement may vary across categories: for example, verbs in Spanish agree in number and person; adjectives in number and gender. Furthermore, there may be differences within word categories with respect to agreement to the effect that each word's agreement properties must form part of its lexical entry. Often agreement behaviour is predictable from a word's phonological form, but there are normally exceptions that mean that lexical information is also necessary. In Ingush (North Caucasian), only 30% of verbs agree: only verbs that are vowel initial show agreement, but being vowel initial is not a guarantee for agreement (Corbett 2006: 82).

In contrast to prerequisites, conditions operate at the syntactic level or higher: the examples of conditions we have looked at operate at the semantic level (animacy) and the pragmatic level (topic). Within a characterization of agreement the status of conditions depends on the theoretical framework one adopts, and, more specifically, on the amount of work that is expected of the syntactic system. Corbett makes clear that he treats topic as a matter for pragmatics (2006: 56), but alternative models, especially the mainstream generativist tradition, account for pragmatic effects in terms of syntactic positions (cf. Rizzi's (1997) fine structure of the left periphery). From this perspective, conditions are subsumed under the specification of the domain of agreement, since notions like "topic" or "focus" are worked into the structural configuration that defines the agreement relation. Put simply, the explanatory load is placed on syntax, and the structural relation between the agreeing elements (i.e. the domain) accounts for agreement and its properties. As we shall see in section 2.3, the Minimalist Program makes much of the syntactic component and aims to characterize agreement in terms of structure.

In this section we have seen that agreement may be subject to certain conditions that affect its behaviour. These conditions are to be distinguished from morphological prerequisites for agreement, and may even be subsumed into the domain of agreement if the linguistic model gives enough power to syntactic structure. This brings us to the end of the elements that enter into play in agreement: targets, controllers, domains, features and conditions. We now turn to the notion of canonicity in agreement.

2.2.7. *Canonicity*

As should be clear from the discussion so far, and even more so from the examples I have presented, there is a great deal of diversity in the agreement systems of the languages of the world. As with any phenomenon, there are instances of agreement that seem to be borderline cases: they show some properties of agreement but barely seem to qualify as agreement due to some unusual behaviour. Examples such as a verb agreeing with the possessor of its argument (possessor agreement) in Burushaski or exuberant agreement marking in separate places on the same verb (multiple exponence) in Batsbi come to mind as instances where agreement is doing something out of the ordinary. We need to be able to decide what counts as ordinary and what extraordinary to provide some means of gauging the possible variation in agreement.

One option would be to take a democratic or statistical approach: whatever most languages do is taken as normal and any deviation is measured in terms of the distance from the norm. This approach has various

shortcomings, two of which I will address. Firstly, from a practical point of view, establishing the norm would be a huge undertaking as it would involve taking stock of the agreement systems of all the world's languages. Secondly, a statistical approach could also run into problems due to the levelling nature of averages. To give a facile illustration, take gender as a case in point. Using the figures for languages with different numbers of gender values from the WALS sample of 257 languages (Corbett 2008a), a rough calculation gives an average of around 2 genders. Yet the most common category is for a language not to mark gender at all. Equally, a simple statistical average fails to capture the interaction between different factors: continuing with the gender example, the fact that non-sex-based gender systems tend to have many more values than sex-based ones would be lost in an averaging process. Obviously, these errors could be overcome by improved statistics (in these cases using the mode instead of the mean, and more complex variance statistics), but there remains an underlying problem of failing to capture the full extent of the agreement phenomena. Establishing a statistical norm fails to delimit the extent of the phenomenon and only gives us an image of the most populated part of the agreement terrain rather than the peripheries.

An alternative approach, based on the notion of canonicity, examines the different ways in which agreement can vary and stipulates criteria based on these variables. The criteria lay out the different options for agreement systems and thus provide a mapping of the theoretical space of possibilities. For each variable a canonical value is designated in accordance with general principles that are deemed to characterize (canonical) agreement. This means that the most canonical system is the one that best conforms to the general principles and is not necessarily the most commonly occurring system among the world's languages. Each of the criteria provides a parameter to evaluate a given agreement system against the prototypical agreement system.

Corbett (2003b, 2006: 10-27) develops a canonical approach that I will adopt here. I limit myself to listing Corbett's principles and criteria, providing explanation only where the terminology demands it. Readers interested in the motivation and justification for Corbett's choices should refer to his work. The general principles of canonical agreement are as follows:

- Principle I: Canonical agreement is redundant rather than informative.
- Principle II: Canonical agreement is syntactically simple.
- Principle III: The closer the expression of agreement is to canonical (i.e. affixal) inflectional morphology, the more canonical it is as agreement.

These principles dictate what the more canonical value is for the different parameters, which are set out in table 1.3.

C-1:	controller is present	>	controller is absent
C-2:	controller has overt expression of agreement features	>	controller has covert expression of agreement features
C-3:	consistent controller (all targets take the same value for a given feature)	>	hybrid controller (targets take different values for a given feature)
C-4:	controller's part of speech is irrelevant	>	controller's part of speech is relevant
C-5:	marking is bound	>	marking is free
C-6:	marking is obligatory	>	marking is optional
C-7:	marking is regular (affixal)	>	marking is suppletive
C-8:	marking is alliterative (marker on all targets is the same and identical to formant on controller)	>	marking is opaque (marker changes from target to target and is not identical to formant on controller)
C-9:	marking is productive (applies to all members of a category)	>	marking is sporadic (only appears on some members of a category)
C-10:	target always agrees	>	target agrees only when controller is absent
C-11:	target agrees with single controller	>	target agrees with more than one controller
C-12:	target has no choice of controller	>	target has choice of controller
C-13:	target's part of speech is irrelevant	>	target's part of speech is relevant
C-14:	domain is asymmetric	>	domain is symmetric
C-15:	domain is local	>	domain is non-local
C-16:	domain is one of a set	>	single domain
C-17:	feature is lexical	>	feature is non-lexical
C-18:	features have matching values	>	feature values do not match
C-19:	no choice of feature value	>	choice of feature value
C-20:	no conditions	>	conditions

Table 1.3 Criteria for canonical agreement. The symbol > means "is more canonical than". Adapted from Corbett (2006: 10-27).

These criteria provide a gauge of how canonical agreement in a given language is, and may be applied to the agreement system of a language as a whole, or to specific aspects of agreement for that language. Thus, for a given language verb agreement may be strongly canonical while DP-internal agreement is less so. I shall apply this notion to agreement in LSE to give us an idea of whether or not LSE has an agreement mechanism and, more

generally, whether what has been treated as agreement in the sign language literature is justifiably labelled as such.

2.2.8. *Summary*

In this section, we have looked at agreement from a typological point of view, surveying the phenomenon from the perspective of the diversity of its manifestations across the world's (spoken) languages. In order to accommodate this variation, no rigid definition of agreement is stipulated, but rather a terminological framework that can describe the different types of agreement that are attested. This descriptive approach identifies the different elements that enter into play in the agreement relationship, and we have examined each of these in turn: controllers, targets, features, domains and conditions.

Controllers, the elements agreed with, are generally nominal elements (in the case of verbal agreement nominal phrases), which may or may not be overtly present.

Targets are the elements that agree with a controller, and carry some sort of marking that shows the agreement. There is greater heterogeneity among targets and we have seen that verbs (both lexical and auxiliary verbs), adjectives, pronouns, numerals, quantifiers, adpositions and nouns may be targets. There is also a variety of means by which agreement is marked on the target including inflection, clitics and multiple exponence. Two types of agreement marking will be especially relevant to LSE. The first is alliterative agreement, found in many Bantu languages, which involves the apparition on the target of a formant (such as a gender-marking prefix) already present on the controller, and the more exceptional case of radical alliterative agreement, which involves copying phonological material from the controller onto the target (often because no formant is available). The second type of marking is pronominal affixes, which represent a grey area between agreement markers and free pronouns.

The domain is the context in which the agreement relation holds between the controller and the target, and is generally some sort of local grammatical relation or syntactic configuration. Delimiting the agreement domain is for many the defining factor for what counts as agreement and what does not. From the typological perspective of this section, we have looked at the variety of the phenomenon and this has included instances of "badly behaved" agreement in which the relationship between the controller and the target is extremely unusual: possessor agreement, copying-to-object constructions and long distance agreement.

Agreement involves the representation of displaced information: some aspect of the controller is marked on the target. This information may be categorised into different types, or features: the main features of agreement are gender, number and person. Each feature has different values and these values determine the specific marking that appears in an agreement relation (e.g. first person plural inclusive). Languages vary in both the features that are used and the set of values available for a given feature. The features that enter into a specific agreement relation may depend on specific prerequisites such as the word category, phonological form or lexical information. Additionally, agreement may be subject to syntactic or semantic conditions: considerations such as animacy and topicality may affect the behaviour of agreement.

This framework provides descriptive tools that can accommodate the range of agreement phenomena across the world's languages, without being too deeply entrenched in any specific theory concerning the nature of agreement (or language structure in general). As stated at the beginning of this chapter, this offers a way of describing agreement in a relatively undocumented language, in this case LSE, in such a way that we can compare it to agreement in other languages. A further means of assessing agreement in LSE is provided by the notion of canonicity developed by Corbett (2003b, 2006) on the basis of the descriptive framework already described. Table 2.3 contains the criteria for canonicity, which set out the properties of agreement in its most agreement-like manifestation.

As well as describing agreement in LSE and placing it in the context of agreement cross-linguistically, a further object of this study is to examine the role of agreement within the language system, and specifically the extent to which it forms part of the grammar's syntactic mechanisms. The Minimalist Program has developed a theory of agreement that distils the properties of agreement down to the barest syntactic terms, thereby converting it into one of the fundamental operations carried out by syntax. The next section presents the conception of agreement within the Minimalist Program.

2.3. The Minimalist Program

As the latest incarnation of the generativist school of linguistics, the Minimalist Program is the product of a research tradition that focuses on the nature of language as a unique cognitive capacity of humans. The guiding principle behind the generativist approach is the notion that language is a system that can be described in terms of a set of rules: these rules determine what is permissible and should produce correctly-formed sentences in the

language. Generativism has been applied across different areas of linguistic research, from phonology to language acquisition, but much of the body of work has centred on syntax (and its interaction, or interfaces, with other linguistic levels, such as semantics and phonology). Initially, rules were of the form $N VP \rightarrow S$ (“put a noun and a verb phrase together and you get a sentence”), but they have since evolved to a much greater level of abstraction expressed in terms of the structural relations between elements (as will be exemplified in the explication of agreement from a minimalist point of view in section 2.3.3 below).

Recall that for the study of agreement in LSE, the Minimalist Program is of relevance on two main counts. Firstly, because agreement has taken centre stage within the Minimalist Program and is judged to be one of the basic operations used by syntax to create well-formed sentences. As a result, agreement is defined in very specific (syntactic) terms. Secondly, the Minimalist program stems from a tradition that asks fundamental questions about the characteristics of language as a cognitive capacity. These questions tie in well with those that underlie this study of agreement in LSE concerning the way in which the use of space in a (signed) language is accommodated by the language system.

The presentation of the Minimalist Program is organized as follows: in section 2.3.1, I give a brief background to the generativist tradition, providing an overview of the important issues and the developments that have shaped current thinking and that are relevant to the Minimalist Program. Section 2.3.2 presents the architecture of the language faculty as envisaged by minimalism. Finally, the theory of agreement within minimalism is set out in section 2.3.3.

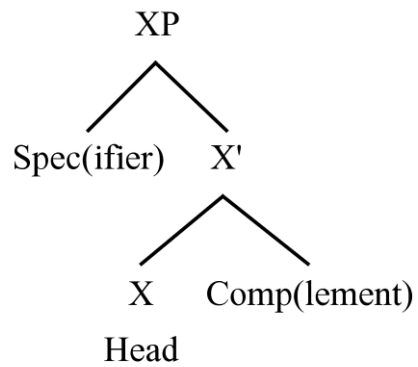
2.3.1. *Generativism: issues and developments*

A central concept that has motivated the Chomskian revolution in linguistics and guided the generativist enterprise is the notion of Universal Grammar (UG), the idea that at its core language is a cognitive capacity with a fixed set of properties. Individual languages may differ in details, but all languages share a common set of properties that are shaped and limited by UG. Furthermore, Chomsky (1965) makes strong claims about the nature of UG and maintains that it is an innate faculty that is hard-wired into the human brain.

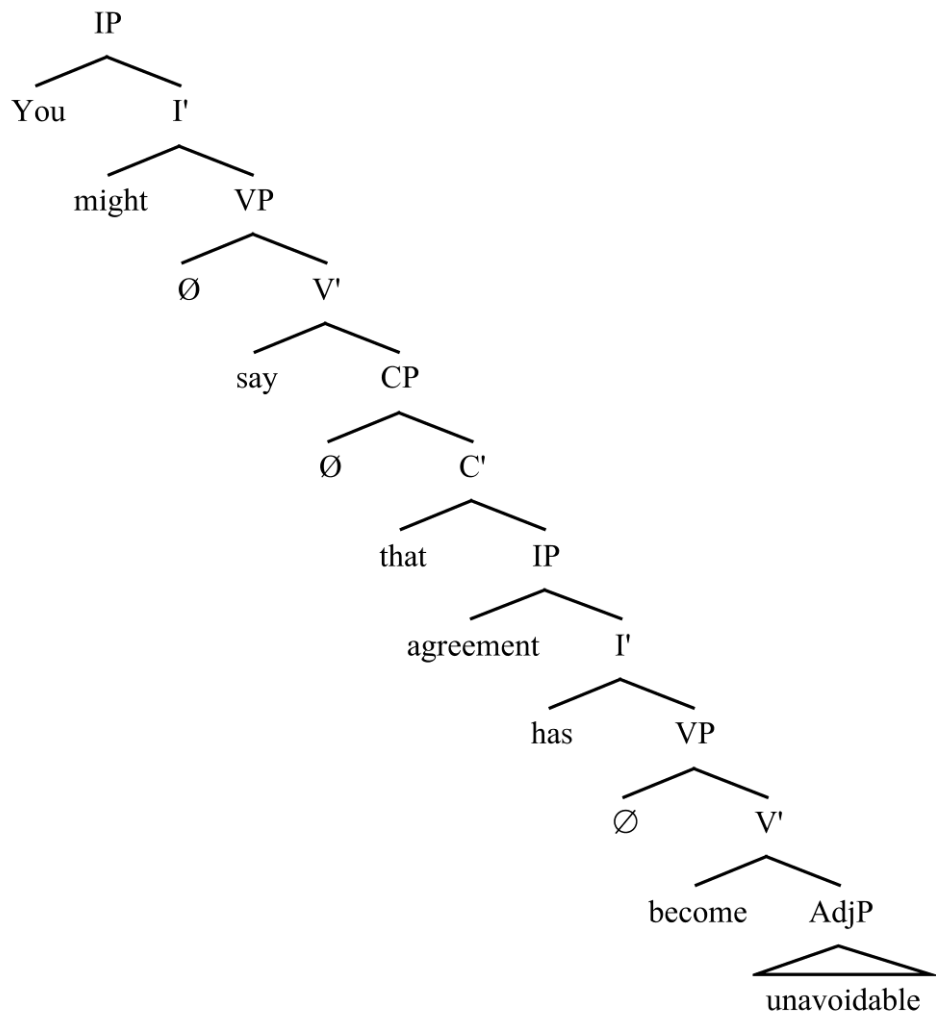
This conceptualization of language as a limited set of rules leads to the search for those rules. Initially, rules expressed the means by which syntactic elements could be combined and manipulated to form sentences. This gave rise to the development of X-bar theory, which provided the basic framework

for creating syntactic structures, most commonly represented in the form of tree diagrams.

(39) a.



b.



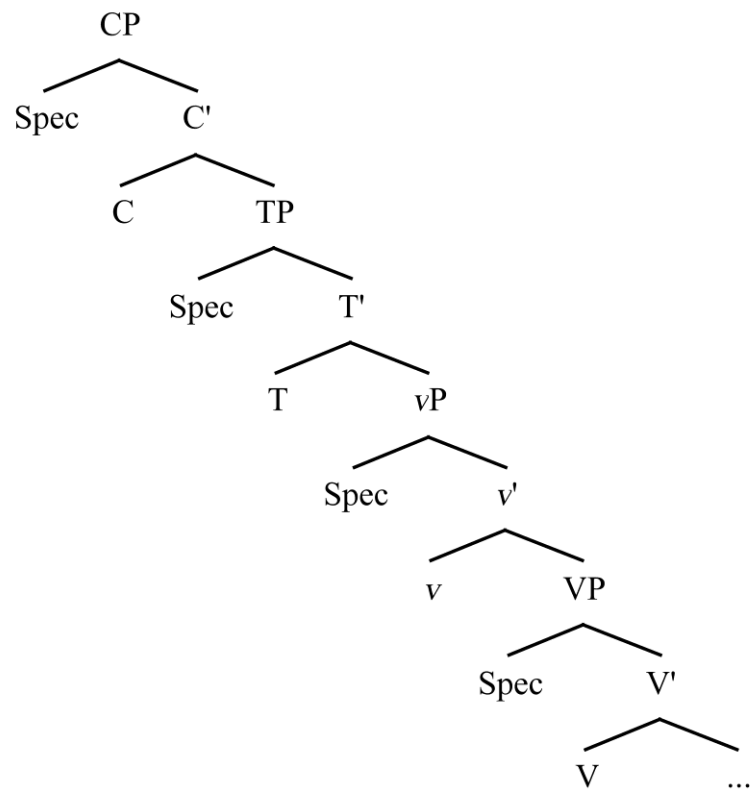
More specifically, X-bar theory provides a greater level of abstraction than merely formulating rules, as it characterizes the way in which rules are

constrained. The basic unit of X-bar structure is the building block for a recursive configuration that can account for the arrangement of elements in a sentence. (39a) shows a head *X* projecting a maximum projection of the same type, *XP*. The complement and specifier positions may be occupied by other maximal projections, thus making it possible for one structure to be nested inside another. Applying this basic structure to the syntactic analysis of an English sentence produces a tree diagram as shown in (39b).

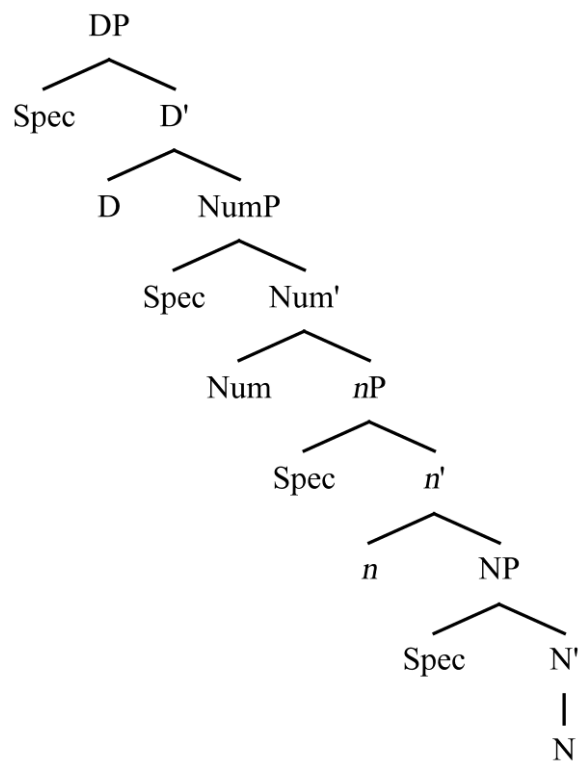
The positions within the syntactic structure are occupied by lexical elements such as verbs, nouns, and adjectives, which project verb phrases (VP), noun phrases (NP) or adjectival phrases (AdjP), but there are also positions that are functional in nature and serve to account for the role in syntax of elements such as inflection (IP), and complementizers (CP). IP initially provided the structure required for a finite verb to acquire its inflected form. Subsequently, the split-Infl hypothesis for clausal structure subdivided this part of the structure into various projections such as TP (for tense), AgrSP (for subject agreement) and AgrOP (for object agreement) (Pollock 1989, Kayne 1989, Belletti 2001). Of relevance here, the AgrSP and AgrOP projections were dedicated explicitly to accounting for agreement phenomena (but, as shall be explained in section 2.3.3, they were subsequently done away with). Furthermore, the verb itself has more structure than a simple projection: in addition to VP, a higher *v*P projection (or “shell”) dominates VP. The lexical verb occupies VP while a light verb, and by extension verbalizing affixes, may occupy *v*P (Hale & Keyser 1993; Chomsky 1995). In the same manner, CP, also known as the left periphery, has been expanded into a series of specific functional projections, but details will not be given here as they do not bear directly upon the analysis of agreement (for details see Rizzi 1997, 2004). The basic clausal structure with the projections that will be of relevance in this study is shown in (40).

Another important development in the repertoire of functional projections that populate the syntactic structure is the introduction of the determiner phrase (DP), which dominates the noun phrase. Furthermore, parallels have been drawn between the internal structure of the determiner domain and the clausal domain (Abney 1987; Ouhalla 1991; Aboh, Corver, Dyakonova & van Koppen 2010), with specific functional projections for number (NumP) and a nominalizing equivalent of *v* (*n*P). These projections are described in more detail in sections 7.1.1 and 7.1.2 when looking at the location of the φ -features within the DP. The internal structure of DP adopted in this thesis (showing only relevant projections) is displayed in (41).

(40)



(41)



The Minimalist Program aims to make generativist theory as parsimonious as possible, and is driven by considerations of economy. The underlying notion is that language achieves its ends with the fewest possible resources. This has brought about a reconsideration of the theoretical apparatus required to account for syntactic phenomena, and a rejection of unnecessary baggage. (As we shall see when we look at agreement in Minimalism in section 2.3.3, one of the victims of this purge for economy is the set of Agr projections.) One of the guiding principles for Minimalism is the Inclusiveness Condition, which states that no new features are introduced by the computational system (Chomsky 2000: 113). This means that syntax must make do with the set of lexical items that appear in the numeration: it may manipulate the items by means of syntactic operations, but may not add anything else in the process of the derivation.

The Inclusiveness Condition calls into question the validity of X-bar theory: the three different levels for each projection (X , X' and XP) do not figure as part of the lexical entry of a given item and must be added during the derivation, thus contravening the Inclusiveness Condition. Rather than define the differences between syntactic objects in terms of their intrinsic features (as is done in X-bar theory), a relational view of projections obviates the need to add unnecessary labels. Under this perspective, a minimal projection (X) is a lexical item that has been selected, a maximal projection (XP) is a syntactic object that does not project, and an intermediate projection (X') is a syntactic object that is neither a minimal nor maximal projection (Chomsky 1995).¹⁰ As a result, X-bar theory gives way to bare phrase structure, a more streamlined characterization of the way syntactic elements are configured. (Note that this is a change in the way of conceptualizing the structure and how it is represented by the computational system. It is still common practice to refer to and to represent X-baresque positions, even though the underlying concepts depend on bare phrase structure. This is the practice I adopt here.)

Bare phrase structure includes only lexical features and the objects constructed from them. Syntax constructs objects from the basic elements taken from the lexicon by means of syntactic operations: Merge and Move. Merge is more basic, and is a recursive, two-place operation that combines two elements to form a larger one. The properties of the resulting object depend on those of the elements that are merged. Merge is essentially the

¹⁰ Additionally, the need for labels themselves has been brought into question. As an alternative, category labels may be replaced by sets of grammatical features which characterize the idiosyncratic properties of individual words. Also, labels may represent a violation of the Inclusiveness Condition (Uriagereka 2000).

simple mechanism by which words (or more specifically items from the lexicon) are put together in a structured way to create sentences. In contrast, Move allows an element to change location during the derivation, as occurs with *wh*-movement, to give a facile example. Move is not a basic operation and can be decomposed into more fundamental steps. Movement does not simply place an element in a new position thereby leaving the original position empty, but in fact it leaves behind some sort of residue (known as traces in earlier versions of syntactic theory). This is attested by the fact that the residue or trace left by the movement creates effects such as cliticization blocking or may even be partially present in non-standard language, as can be heard in auxiliary copying in child language and preposition copying in speech errors. In (42a) the deleted copy of *should* (represented as '~~should~~') prevents the auxiliary *have* from cliticizing onto the pronoun *they*; in (42b), a two-year-old repeats the auxiliary verb *can* in a question in the position that it would occupy in a declarative sentence; and in (42c) a radio reporter repeats a preposition that has already been moved to the beginning of the relative clause (examples taken from Radford 2004: 157, 156, 192).

- (42) a. Should they ~~should~~ have called the police?
(*Should they've called the police?)
b. Can its wheels **can** spin?
c. Ikea only actually has ten stores from which to sell **from**.

To account for this, movement is considered to be made up of two operations: Copy and Merge. The element to be moved is copied, and then the copy is merged into the new position. To complete the Move operation, some sort of deletion mechanism is required, otherwise there are two instances of the moved element: the copy in the new position and the original in the initial position. The deletion process may be postulated as a separate operation (Chomsky 1995: 400) or as a failure of the original to be given phonological form. The important point is that the deletion process cannot be absolute since the original material affects other processes – such as cliticization, as in (42a) – but at the same time the item does not appear in its initial position in normal speech – in contrast to (42b, c). An alternative explanation is that the deletion occurs at a specific point in the derivation such that it is deleted after it has had an effect, but before it is assigned phonological form.

In this section we have seen that the generativist tradition of linguistics revolves around the search for rules of syntax, or more generally, the way in which those rules are constrained. X-bar theory provided a means for characterizing the rules of syntax, but considerations of parsimony introduced by the Minimalist Program have led to the development of bare phrase

structure, a theoretically simpler representation of syntactic structure. Bare phrase structure employs two basic operations to manipulate syntactic objects: Merge and Move. While Merge is a simple operation,¹¹ Move may be broken down into simpler processes involving a combination of a copying operation and Merge. As we shall see when we look at the characterization of agreement in Minimalism, it has been suggested that agreement plays a part in establishing this copying process and as such forms an integral part of the Move operation. Before focusing on agreement, we turn to the organization of the language faculty as proposed by the Minimalist Program.

2.3.2. *The architecture of the language faculty*

As mentioned in the previous section, generativism is an attempt to articulate the rules that embody the workings of language. Initially, the rules sought to explain word order and structure in the context of considerations such as the propositional equivalence between active and passive sentences, as exemplified in (43).

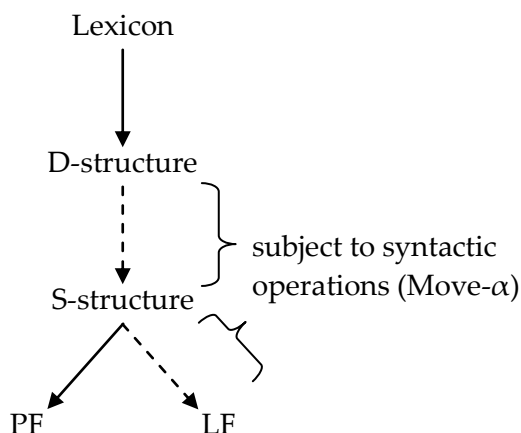
- (43) a. Tess tickles Jack.
b. Jack is tickled by Tess.

The transformational rules that explain the transformation from (43a) to (43b) postulate a correspondence between a deep level of structure and a surface level of structure. The syntactic component creates a basic D-structure from items in the lexicon, and then manipulates that structure by means of movement operations, to create the S-structure with the word-order of the sentence as it is actually uttered.

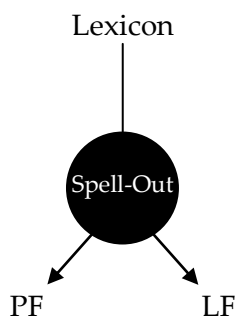
Language is a union of form and meaning, and the derivational process must give rise to the relevant sounds or gestures (the phonetic form, PF) and a representation of the corresponding meaning (the logical form, LF). Under the standard T-model shown in (44), which included the deep and surface levels of structure, S-structure fed directly into PF, whereas the syntactic configuration could undergo further manipulation, known as covert movement, before reaching LF (Huang 1982).

Minimalist considerations of economy lead to a questioning of these different levels: to what extent are they really necessary or are they just theory-internal constructions? The PF and LF levels must remain as part of a model of language as a system that brings together form and meaning. However, the D- and S-levels are methodologically dispensable.

¹¹ While more basic than Move, it is possible that Merge may also be broken down into constituent parts: see Boeckx (2009) for a discussion of the decomposition of Merge.

(44) *The standard T-model for language architecture*

On the one hand, much of the explanatory work carried out by D-structure can be covered by the operation Merge, and the separation of structure-building and movement that D-structure imposes is actually empirically problematic. S-structure, on the other hand, may be replaced by other implementations, principally the Spell-Out rule, which sends the relevant structure to each interface (PF and LF) and, importantly, does not involve a specific level of representation for filtering conditions to apply.¹² The resulting structure is shown in (45).

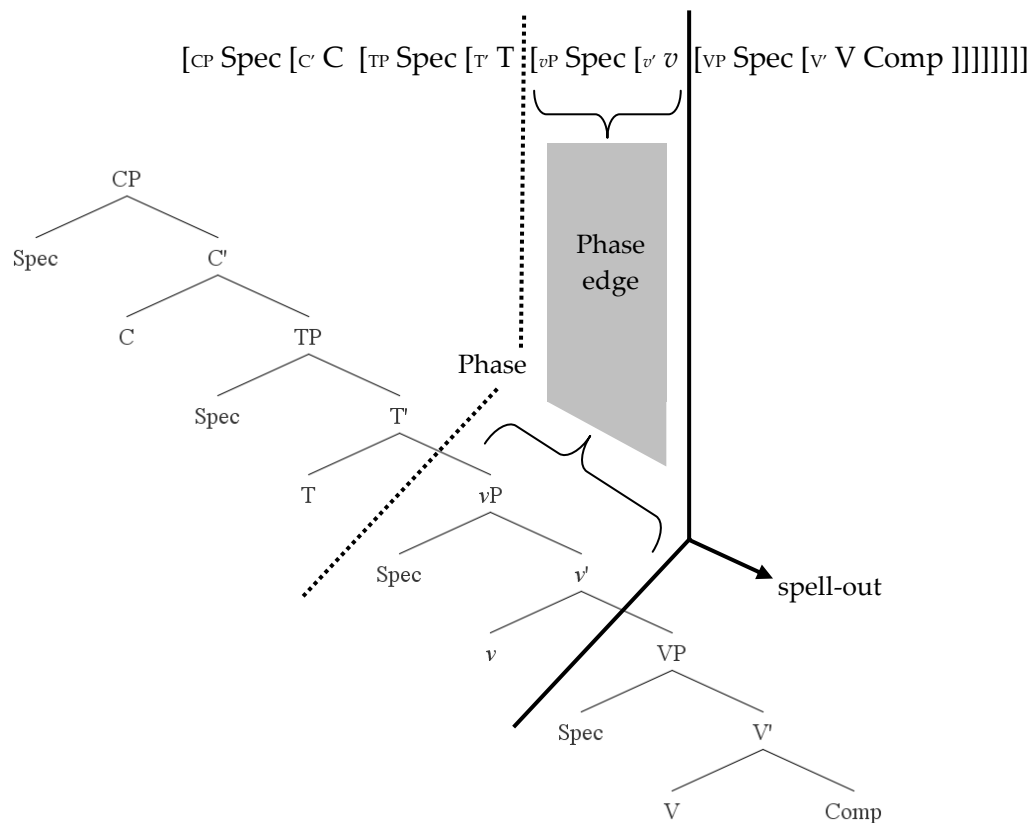
(45) *The Minimalist architecture for the language faculty*

It is important to bear in mind that Spell-Out is not just another name for S-structure since it represents a new way of thinking about how the structure created by syntax is sent to the interfaces to produce form (PF) and meaning (LF). S-structure was envisaged as the (almost) finished product of the syntactic operations that represented how things would sound phonologically and required a little extra tinkering (covert movement) to get things right for

¹² For a review of the arguments against D- and S-structure, see Hornstein, Nunes & Grohmann (2005: 24-72).

the representation of meaning. Spell-Out, in contrast, is an operation that may occur at different points in the derivation, and may be applied cyclically (Uriagereka 1999). Multiple Spell-Out is closely linked to the notion of phases, the stages by which the derivation proceeds (Chomsky 2004). Once the derivation reaches a certain point, the material that has already been assembled is rendered inert (“the head of a phase can trigger no further operations”) and much of the material becomes inaccessible to any subsequent operations (the Phase Impenetrability Condition). CP and *v*P are generally assumed to constitute phases: for example, once a *v*P is created by the syntax, its domain (equivalent to its VP complement) is spelled out, leaving only the head *v* and its specifier (known as the edge of the phase) available to later stages of the derivation. The edge of the phase will subsequently be spelled out as part of the TP complement when the CP is completed – see (46) for a diagrammatic representation of multiple Spell-Out by phase.

(46) Phases in minimalist syntax



Furthermore, when (a given instance of) Spell-Out is applied, that's it: the material leaves the syntactic domain and is passed on to the interfaces. There is no possibility for subsequent adjustments of the covert movement type. This simplifies the proposed architecture still further, conforming to minimalist desiderata of elegance and parsimony in the design of the language faculty.

Minimalism has economized the organization of the language faculty by doing away with unnecessary theoretical constructs: the innovations are Spell-Out and phases, which together create cyclic derivations between the application of syntactic operations and the form/meaning interfaces. These design features also have a bearing on the question of how the output of language is linearized, an issue that I will return to in chapter 7. Having presented an overview of minimalist syntax in this and the previous section, we now turn our attention to how agreement is dealt with by the Minimalist Program.

2.3.3. *Agreement and Agree*

The discussion of domains (section 2.2.4) brought to light that much of what is at stake in theories of agreement (and grammatical relations in general) is the notion of locality: the extent to which the relation may be described in terms of a structural configuration. Early versions of the Minimalist Program (Chomsky 1993, 1995) inherited from Government and Binding Theory (Chomsky 1981, 1986b) the characterization of agreement in terms of a spec-head configuration, in which the controller occupies the specifier position and the target the head of the projection, and both share the same φ -features. Under this view, agreement involves the checking of unvalued features: certain lexical heads enter the derivation with valued φ -features, whereas functional heads contain unvalued φ -features that need to be checked. This feature-checking operation occurs in the context of the spec-head relation, and the syntactic position for this was provided by the functional Agr projections (AgrSP and AgrOP, mentioned in section 2.3.1).

This view of agreement as a spec-head relation in a specific Agr projection requires that (at some point) the head with the unvalued φ -features moves into the head of the Agr projection and that the valued φ -features occupy the spec position after XP-movement so that the checking operation can occur. As such, agreement is parasitic on movement and cannot take place without the relevant syntactic objects reaching the required functional positions in the structure. Sentences with expletive subjects like those shown in (47), which exhibit word orders that do not coincide with the requirements of the proposed functional structure, made it necessary to postulate covert

movement that could create the required configurations not apparent in the phonological form. In (47) the word order shows no indication of how the DP *a problem/several problems* enters into a spec-head relation with the verb *seem(s)* in order for agreement to occur.¹³

- (47) a. There seems to be a problem with this theory.
 b. There seem to be several problems with this theory.

Apart from the fact that the need for covert movement is problematic since, as we saw in the previous section, such an option is eliminated in the most recent models of the Minimalist Program, there are cases in which there is no evidence to show that such covert movement occurs (Costa 1996). Furthermore, the postulation of functional projections dedicated to the expression of agreement also runs into problems. The main objection to Agr projections is raised by Chomsky (1995: 377): Agr heads do not contribute to the interpretation of the sentence (unlike other functional heads such as C or T, which indicate the discursive value of the sentence or the verbal tense and thus have some import at LF) and therefore they cannot be motivated in terms of the interfaces. The minimalist quest for simplicity of design dictates that superfluous categories be suppressed.¹⁴ As a consequence, Agr projections have been abandoned and the theory of agreement has been thoroughly revised in later versions of the Minimalist Program (Chomsky 2000, 2001).

Agreement is still viewed in terms of a syntactic operation that is triggered by the need to eliminate certain features that cannot be interpreted at the interfaces. Such features are inherent to a given head, but unvalued and therefore uninterpretable. These uninterpretable features are present on core functional heads (*v*, T and C) and must be valued by means of the syntactic process, *Agree*. For verb agreement, the uninterpretable features on *v* are responsible for object agreement, and those on T give rise to subject agreement. The agree operation does not require a spec-head relation (thus obviating the need for the controller to move into the specifier position of the functional projection that hosts the unvalued features) but “establishes a

¹³ Another bugbear for spec-head agreement, which has received a great amount of attention in the literature, is the case of quirky subjects in Icelandic (Sigurðsson 1996; Boeckx 2000; Bobaljik 2008).

¹⁴ By the same token, agreement is not limited to the verbal domain: agreement also occurs within the DP (between determiners and nouns, or adjectives and nouns) but it is not clear that there are specific Agr projections to deal with need for spec-head configurations in this domain (Costa & Figueiredo 2006: 3). For a proposal for Agr within the DP domain, see Belletti (2001: 494-5) and references therein.

relation (agreement, Case checking) between a [lexical item] α and a feature F in some restricted search space (its domain)” (Chomsky 2000: 101).

Before continuing, a clarification concerning terminology is required. In section 2.1 of this chapter, we saw that the typological tradition refers to the agreeing element as the target and the agreed-with element as the controller. The Minimalist Program uses different terms, which may appear counterintuitive with respect to the target/controller terminology we have handled so far: the set of unvalued features is referred to as a *probe*, and the set of valued features as the *goal*. Thus, for the simple case of verb agreement with the subject, the noun (controller) is the goal, and the verb (target) is associated with the probe (which are unvalued features on the T head).

The Agree operation involves the probe locating a suitable goal and then assigning the value of the goal’s features to its own. Once the process is complete, the features on the probe, which are valued but continue to be uninterpretable, are marked for deletion. Since they are uninterpretable, these features are illegible to the LF as they have no semantic interpretation and this would cause the process to fail, or “crash”. The deletion occurs only at Spell-Out and not before because the information on the valued features must be available to PF so that the correct form is given to the agreeing element. Focusing on the details of the Agree operation, it consists of three stages:

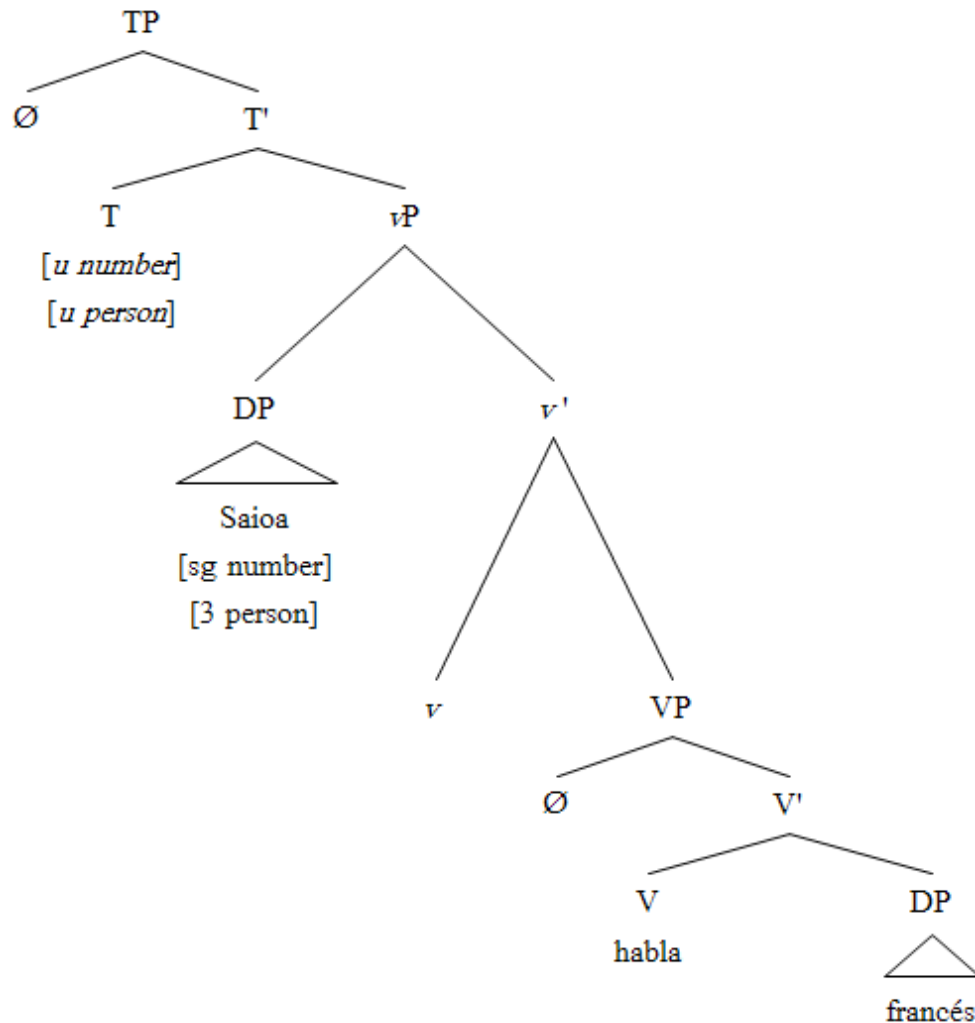
- i. probe: the probe searches for a set of valued features within its domain (the sister of the probe).
- ii. match: the probe evaluates whether a potential goal has interpretable features that can value those of the probe on condition that the two sets of features are identical and the goal is the nearest possible candidate (there can be no other nearer goal that could do the job).
- iii. value: the values of the goal’s features are assigned to the probe’s features, which are also marked for deletion.¹⁵

Furthermore, a probe must have a full set of φ -features to be able to delete an uninterpretable feature on the goal. What constitutes a full set of φ -features

¹⁵ Agreement is closely associated with case assignment. In addition to the valuing (and deletion) of the probe’s φ -features, the process results in the goal being assigned case (nominative as a result of agreement with T, accusative as a result of agreement with *v*). Thus, it is stipulated that the goal has an uninterpretable case feature that is deleted as a result of the Agree operation, and that a goal is available for agreement (or active) only when it has an uninterpretable case feature. Once a goal enters an agreement relation and its case feature is deleted, it can no longer serve as a goal for further Agree operations. (But see Fuß (2005) for the claim that a DP with a case feature marked for deletion may still serve as a goal for an Agree operation.) Since there is no ostensible case marking in LSE, I do not consider case in the analysis of agreement.

depends on the language: English verbal agreement involves person and number, whereas in Arabic it also involves gender (Nasu 2001).

(48) a.

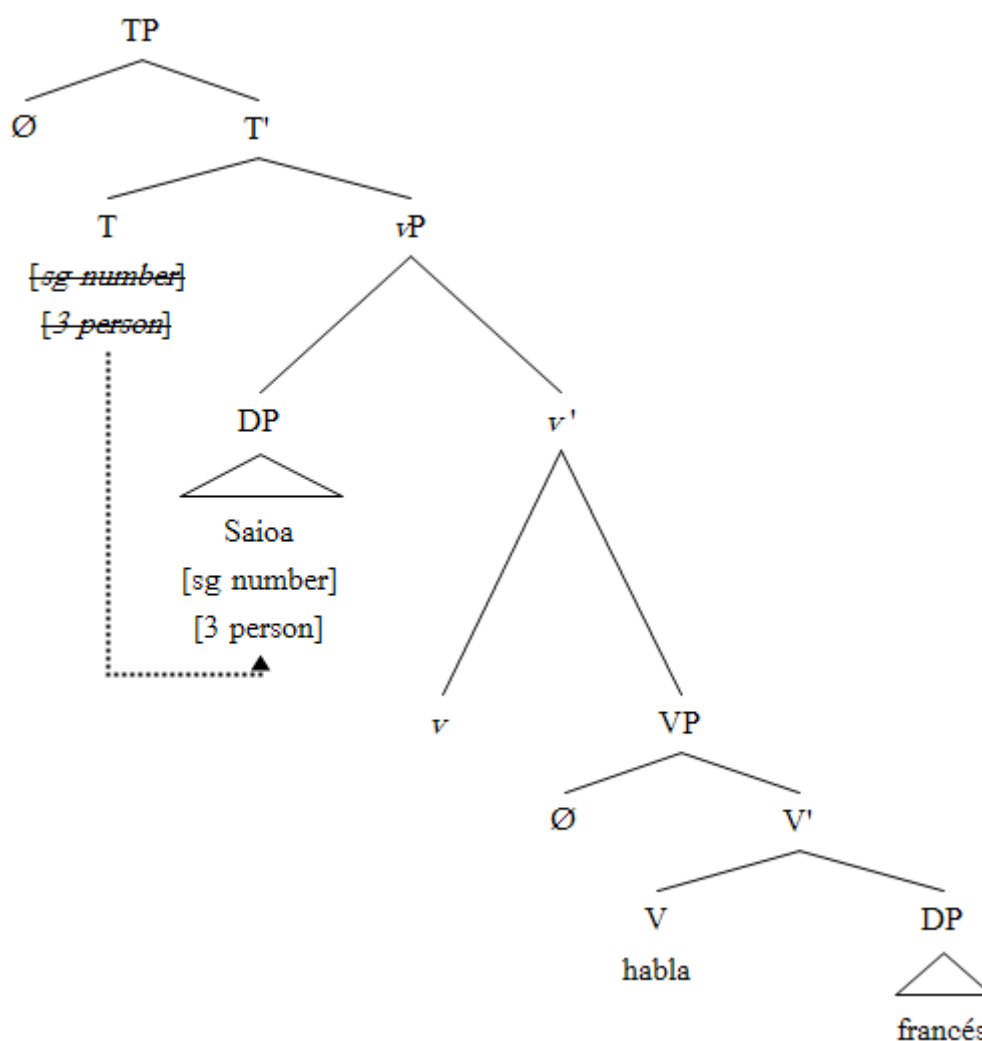


To provide a concrete example of the Agree process in action, let us look at a simple case of subject-verb agreement in Spanish. In the sentence *Saioa habla francés* ('Saioa speaks French'), the verb 'speak' agrees with the subject 'Saioa' in person (third) and number (singular). In the derivation, the different elements are merged into the structure from the numeration as shown in (48a).¹⁶ The verb *habla* merges with its direct object, the DP *francés*, and continues to merge with (empty) structure to form a syntactic object (v'). The

¹⁶ The internal structure of the DPs is not shown here as the main aim is to illustrate how the agreement mechanism works in terms of the functional heads involved in verbal agreement. The question of the DP-internal structure and location of ϕ -features is addressed in section 7.1.1.

subject DP, *Saioa*, merges with this object to form a maximum projection, *vP*. This DP has interpretable inherent features number and person, shown in square brackets. (Note that the object DP also has interpretable inherent features, but these are not shown here in order to focus on the subject agreement process). The *vP* merges with the minimal projection, T, which hosts uninterpretable, unvalued features that require checking and are marked as *u* in (48a). Finally, the resulting syntactic object, T', projects a maximal TP.

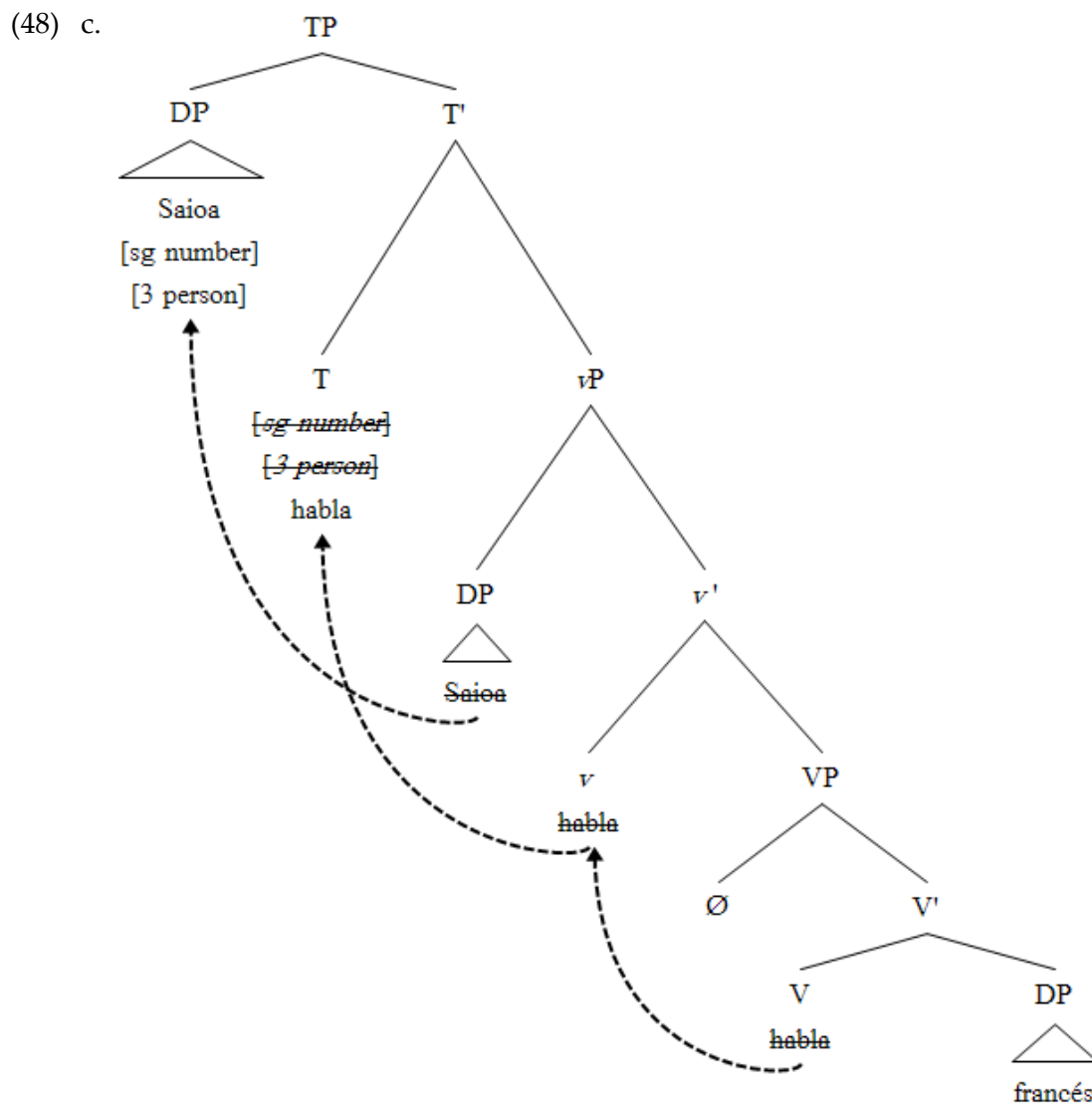
(48) b.



The agreement process occurs in order for the unvalued features on T to be valued and marked for deletion. Acting as a probe, T searches within its domain (*vP*) for a set of valued features. The nearest possible candidate is the subject DP, *Saioa*, which has a full set of interpretable features (person and number). (The object DP also has a full set of interpretable features, but the intervening subject DP blocks it from acting as the goal.) This probe-goal

relation is shown by the dotted line in (48b). The uninterpretable features on the probe are valued and marked for deletion, indicated by the crossed out features in (48b).

Subsequently, the verb undergoes head movement to *v* and from there to T. As a result, the valued features on T are affixed to the verb so that the correct form is produced at PF after Spell-Out. Finally, the subject DP undergoes movement to the Spec-TP position (to fulfil an independent condition, the Extended Projection Principle), yielding the correct word order: *Saioa habla francés*. This final stage of the derivation is shown in (48c).



Note that this derivation also works under multiple Spell-Out and cyclic phases with minor adjustments to the order in which operations are applied so as to respect each cycle. Since *v*P represents a phase, the head movement of

V to *v* must occur before the first phase completes and sends its complement, VP, to Spell-Out. Once this happens, both the subject DP and the verb are within the phase edge (see (46) above), and thus available to operations in the following phase. This means that the Agree operation can take place since the goal is visible to the probe, as can the remaining movement operations.

This revised characterization of agreement in terms of the Agree operation does away with the need for movement to establish an agreement relation.¹⁷ Although there was movement in the Spanish example in (48), the Agree operation did not depend on this and the movement took place due to independent considerations. Agree is essentially an operation that deletes the uninterpretable features on the probe, and is, Chomsky claims, specific to language, unlike Merge, which has analogues in other cognitive domains.

In this section we have looked at the Agree operation as formulated by the Minimalist Program. This operation establishes a relationship between an uninterpretable feature located in a core functional head (the probe) and an inherently valued feature (the goal) within a specific syntactic configuration. As a result, the uninterpretable φ -features on the probe are deleted. Agree is a basic syntactic operation that is unique to the language faculty.

2.4. Summary

In this chapter, I have presented two very different – but not incompatible – views of agreement that have been developed on the basis of data from spoken languages. The first, which I have called the typological approach, aims to capture the diversity of agreement phenomena in the world's languages based on a very open definition: systematic covariation between the properties of two linguistic elements. The second is the characterization of agreement as a fundamental syntactic operation that is at the core of (and perhaps unique to) the language faculty, as developed within the framework of the Minimalist Program. Despite the disparity between these two approaches, both offer frameworks within which to examine agreement in LSE. In addition, they provide a series of tools that will serve to analyse the phenomenon and to judge the degree to which agreement-like processes in LSE are the same as what is described as agreement in spoken languages.

¹⁷ Under the current analysis, Agree becomes a prerequisite for movement since both Merge and Agree are each components of Move: Move establishes agreement between α and F and merges a phrase determined by F to a projection headed by α (Chomsky 2000: 101). The copying component of Move mentioned at the end of section 2.3.1 has been reformulated as an Agree relationship plus some other process that determines the phrase that enters the Merge operation.

When we come to examine the LSE data, these aids will bring us closer towards answering one of the basic research questions motivating this study: are we talking about the same thing when we describe agreement in signed and spoken languages?

Before turning to the LSE data and evaluating it using the contributions of theories developed by the study of spoken languages, the theoretical background for this thesis would not be complete without looking at the work that has been carried out on other sign languages. Although research into sign language is a much younger field, there is a considerable body of work related to agreement in several sign languages and various theories have been developed concerning verbal agreement. The next chapter presents these theories.

3. Agreement in sign languages




The previous chapter reviewed the literature on agreement as studied for spoken languages. This chapter overviews the diverse manifestations and analyses of agreement as have been proposed in the literature for different sign languages, and attempts to take in as many agreement-like phenomena from the repertoires of sign languages. The objective, as set out in section 1.5, is to look at all possible candidates for an agreement mechanism in signed languages based on what has been described in the literature, before turning (in chapter 5) to the specific signed language that is the focus of this study, Spanish Sign Language (LSE). This will put us in a position firstly to situate the LSE data in preceding work on other sign languages and secondly to assess to what extent agreement in LSE resembles agreement in other sign languages. This will also lay the groundwork for comparing what is called agreement in LSE with agreement as understood for spoken languages by adopting the frameworks introduced in chapter 2.

As mentioned in chapter 1, most research attention has been focused on agreeing verbs and they will also take up much of this chapter. The agreeing mechanism underlying agreeing verbs is spatial, and (as outlined in section 1.3) the verb changes certain aspects of its form in order to indicate one or more of its arguments. The agreement process relies upon an association between a referent and a point or location in the signing space. A more basic use of this association between referent and location is seen in the pronominal system, and in many ways pronominal reference underlies the verbal agreement system. For this reason, in section 3.1 pronominal reference and the nature of the spatial reference system will be described before looking at verbal agreement proper in section 3.2. The description of agreeing verbs includes a detailed look at prototypical agreeing verbs, and the interesting properties they show, as well as backward agreeing verbs, which provide an opportunity to review previous analyses for this type of directional verb.¹


¹ This review is not exhaustive as there has been much work on verbal agreement in sign languages, and I limit myself to those analyses that are relevant to this study. One notable absence is Liddell's (2000, 2003) work that calls into question the linguistic status of this spatial "agreement" mechanism and has undeniably catalysed much work in this field. Nevertheless, I refer to Liddell's work where relevant and many of the issues raised by

Section 3.2 also includes another type of verb that shows spatial agreement not normally included in analyses of verbal agreement in sign languages. This process, which I refer to as single argument agreement, occurs when a verb is articulated at a location in signing space to agree with just one argument. Continuing within the verbal domain, section 3.3 deals with agreement auxiliaries and describes the different types of auxiliary verbs that mark agreement that have been attested in the sign language literature. The spatial agreement mechanism described in this chapter may also be expressed by non-manual features that can indicate locations in the signing space, such as head tilts or eye gaze. Evidence for such non-manual markers of agreement is examined in section 3.4. Just as agreement is not restricted to the verbal domain in spoken languages, this spatial agreement mechanism in sign languages may also be exploited for agreement in other domains; in section 3.5 we consider this possibility for the nominal domain and look for evidence of DP-internal agreement. The chapter closes with a section that summarizes the main characteristics of spatial agreement in sign languages.

3.1. Pronominal reference

The pronominal system in most sign languages is most crudely described as pointing. In the case of physically present referents, the signer points towards the referent in order to achieve deictic reference. For non-present referents, the signer's point is to a location associated with that referent (Cormier 2012). To go beyond a mere crude description of pronominal reference in sign languages, various refinements are necessary. Firstly, pointing may be done in various ways: manually, most commonly with the extended index finger () but also with the  handshape or the  handshape (Pfau 2011). In some sign languages (e.g. Libras, Berenz 2002), the handshape used for pointing may change according to style or register.² In the non-manual domain, pointing may be carried out by means of a head nod/tilt, eye gaze or even by lip pointing, as described for Providence Island Sign Language (Washabaugh 1986, cited in Meier & Lillo-Martin 2010: 348) and for an idiolect of ASL (Bahan 1996: 86fn). Secondly, in the case of non-present referents, there are various ways in which the referent may be associated with a location in space. The general process of making use of a point in signing space has been called

Liddell have stimulated (and are, to some extent, I hope, addressed by) the analysis offered in this thesis.

² The non-dominant hand may also be introduced to “shield” the pointing hand when using the  handshape in order to make the signalling more discrete. This form has also been reported as a polite pronoun in some sign languages, such as Libras (Berenz 2002).

“indexing” (Friedman 1975) or “nominal establishment” (Klima & Bellugi 1979). The specific process by which a referent is associated with a location in space, which I shall refer to as location assignment, is described in the next section. Finally, the association between a location in space and a referent is discourse-dependent: the association is created and valid for a given stretch of discourse, and may change from one discourse setting to the next. Furthermore, the association may change within a given stretch of discourse in systematic ways through the use of role shift, described in section 3.1.2.

3.1.1. *Location assignment*

From the formal point of view, the association between a referent and a location in space may be established by means of a point or index toward that location (which may be any variety of the manual or non-manual types described above) in combination with a nominal sign. This can be seen in the NGT example in (1), which involves the assignment of the nominal INGEBORG to a location to the signer’s right by means of a point immediately after the nominal. (The sentence also contains a second point to the same location, which serves as an anaphoric reference to the same referent.)

NGT (van Gijn 2004: 18. Images reproduced with kind permission from the author.)

(1)

The diagram shows a sequence of six signs, each represented by a stick figure with a specific hand gesture. Below each figure is a label: INGEBORG, IX_x, HAPPY, BECAUSE, IX_x, and GRADUATE. The first sign (INGEBORG) has the right hand pointing to the right. The second sign (IX_x) has the right hand pointing to the right. The third sign (HAPPY) has both hands in a specific configuration. The fourth sign (BECAUSE) has the right hand pointing to the right. The fifth sign (IX_x) has the right hand pointing to the right. The sixth sign (GRADUATE) has both hands in a specific configuration. Below the labels is the sentence: ‘Ingeborg_i is happy because she_i will graduate.’



An alternative strategy, which obviates the need for any pointing, is to articulate the nominal sign directly at a location (which I shall refer to as localization), thus associating the referent with that location.³ The availability of localization depends on the phonological properties of the sign in question: body-anchored signs, which are articulated in contact with or near to part of the body, cannot be moved out into the signing space. To overcome the immobility of body-anchored signs, a classifier may be used to localize the

³ For the sake of clarity, it should be noted that localization is not necessarily location assignment. A referent may already be assigned a location, and subsequent productions of the localized sign merely refer to that referent. It is the first articulation of the nominal and the location (via pointing or localization) that achieves the association between the two. The continued use of a localized sign may be due to considerations of referential identity and coherence. It is also possible that pragmatic and discursive functions play a role, and the signer may wish to reassert a location assignment to ensure that her interlocutors are keeping track of the spatial distribution of the referents.

referent in the signing space. The use of classifiers is particularly suited to spatial descriptions (see section 1.1.1) but they may also be used for referent differentiation in general discourse.⁴ Location assignment, then, may involve pointing, localization and classifiers.

As far as the choice of location is concerned, various factors may play a role. If there is a location in the discourse setting that the interlocutors associate with a referent (for example, the desk a colleague normally sits at) then that location may be used (Cormier 2012). Often in such cases, the non-present referent is imagined as being present at the location and occupies a life-size space (Liddell 1990). For Danish Sign Language (DTS), Engberg-Pedersen (1993: 71-74) identifies various conventions that may guide the selection of a location for a referent: the iconic convention conditions the choice of locations so that they reflect the actual spatial relationships between the referents; the convention of semantic affinity places semantically related items at the same location in signing space; and the convention of comparison places referents being contrasted with each other on the left-right lateral axis in front of the signer. Furthermore, locations may be chosen according to metaphorical schemes: for example, Nilsson (2008: 53) describes how in a Swedish Sign Language (SSL) discourse describing an interaction between a doctor and a patient, the doctor may be associated with a location higher than that associated with a patient to reflect the power relation between the two. This sort of convention has also been described for other sign languages (e.g. Bahan & Petitto 1980 for American Sign Language – ASL). At a more formal level, Barberà (2014) describes how in LSC different planes in the signing space are used for location assignment according to the semantic properties of the referents, such as specificity. Nevertheless, when such discourse and pragmatic factors do not play a role, it is generally assumed that the choice of locations is arbitrary.

In addition to locations in the signing space, referents may also be associated with locations on the non-dominant hand, specifically the tip of each of the fingers. This strategy is normally used when dealing with two or more referents that form some sort of natural class or group, and is known as a list buoy (Liddell 2003: 223). The location assignment may or may not involve pointing, and may make use of the possibilities for simultaneity afforded by having the non-dominant hand do something different from the dominant hand. Similarly to locations in the signing space, once established

⁴ In the use of classifiers for personal reference, for Turkish Sign Language (TID) a distinction between a neutral and a honorific classifier has been described (Zeshan 2003b: 64-67). The neutral form uses the  handshape, in contrast to the  handshape of the honorific form.

list buoys may be used for anaphoric pronominal reference and in verbal agreement.

Finally, it is also possible that location assignment does not occur explicitly before the location is used to signal the referent. Rather than the textbook cases of the type JOHN IX_x MARY IX_y xTRICK_y with explicit placing of the discourse referents, it is very common in normal signing not to spell out the location assignment but to establish the location on the fly by means of the first anaphoric reference (that is, by any spatial mechanism such as pronominal reference, verbal agreement or a classifier construction). In such cases, discourse and pragmatic considerations make it clear which referent is involved. Omissions of explicit location assignment comply with the notion of linguistic economy: if the same job can be done while giving additional information (such as an agreeing verb), then there is no need to spend time merely establishing the location.⁵

The pronominal reference system makes use of space by signalling referents that are either located in the communicative setting (present referents) or, if non-present, have been assigned a location in the signing space (explicitly by a point-nominal combination, a localized nominal or a classifier construction, or by direct anaphoric reference) or on the non-dominant hand. This, however, is not yet the full picture, as the spatial map set up for pronominal reference may be shifted about by the strategy of role shift.

3.1.2. Role shift

The spatial framework of distinct locations for pronominal reference is complicated by the use of role shift. Role shift involves the signer taking on the role of a referent (usually a person) from the discourse in order to represent that referent's words, thoughts or point of view. If a spatial framework of locations/referents has already been established, the role shift will involve a reference shift. Most notably, when the signer points to herself, the meaning is no longer "me, the signer", but "me, the assumed referent". An example can be seen in the short stretch of DTS discourse in (2), in which the first instance of IX₁ refers to the signer's son, not to the signer herself.

⁵ Nilsson (2008: 30) suggests that there may even be use of locations for which there is no antecedent in the discourse. In such cases, there is no anaphoric reference to resolve so the interlocutor must use contextual clues to supply the intended referent. This seems to be equivalent to the corporate impersonal use of the third person plural in English or Spanish: 'The education system is in a mess and **they** need to do something about it'; 'El sistema educativo está de pena y **tienen** que arreglarlo' (Cabredo Hofherr 2006). (See also footnote 8 below for indefinite/non-specific reference.)

fall within the scope of the role shift. This is illustrated in (4): the interpretation of NOW is linked to the context of utterance, not to the shifted context of last year when Joan was thinking about these matters.

LSC (Quer 2005: 160)

- (4) $\frac{\text{LAST-YEAR}}{t}$ JOAN_i THINK IX₁ $\frac{\text{STUDY FINISH NOW}}{\text{role shift}_i}$
 ‘Last year Joan thought he would finish his studies {now #then}.’

This observation demonstrates that role shift – and the associated referential shift – involves an interplay with other factors that form part of the language system. Furthermore, in section 5.1.2, we will see further evidence from LSE that role shift cannot be reduced to a simplistic exploitation of the signing space. The mechanism of role shift demands greater study in order to tease apart the nuances of the referential system of sign languages. Role shift and its irregularities do, however, draw our attention to the association between a location and a referent, which will be examined in the following section.

3.1.3. *R-locus and space*

Pronominal reference in sign languages relies on the association between a location (in the signing space) and a referent. These associations create a spatial map in which various points are associated with their respective referents. Furthermore, this map can be exploited to express relations between the referents being mapped. These relations may be spatial, as in the case of the topographic use of space by the classifier system described in section 1.2, or conceptual/grammatical, as we shall see for verbal agreement in section 3.2. The previous sections have described the ways in which the association between a location and a referent is established and used, but what is the nature of this association?

At first sight, the unique correspondence between a location and a referent suggests the presence of an indexical relationship: each location serves as a unique index for the referent associated with it. For most spoken languages, pronominal reference does not uniquely identify a single referent but just narrows down the options to a certain class. If there is more than one salient referent in the discourse, this may lead to ambiguity, as illustrated in (5).⁶

⁶ Lillo-Martin & Klima (1990: 209) point out that phonological information, specifically contrastive stress, may disambiguate sentences such as (5), and also mention that pragmatic aspects of the discourse situation may be relevant to the interpretation. The discourse context itself may play a decisive role (Nieuwland & Van Berkum 2006), in this case, forcing an interpretation of ‘Fin’ as coreferential with the pronoun ‘he’:

- (5) When Eddie_i kissed Fin_j he_{i/j} liked it.

In the case of sign languages, pronominal reference literally points out which specific referent is being referred to. Lacy (2003) claims that pronominal points⁷ in ASL display a set of properties that are characteristic of formal logical indices: they are infinite in number; they have minimal semantic content; they are coreferentially constant; and they facilitate a simple antecedent search. However, there are various problems with this picture. Firstly, as Rathmann & Mathur (2002: 377) point out, the locations in signing space are better characterized not as infinite but rather as bounded (by the signing space itself) and unlistable, in much the same way that the set of rational numbers between 0 and 1 is unlistable but bounded. This is not fatal to Lacy's approach, since a set of bounded but unlistable elements is still infinite in nature. However, a more serious setback is the fact that the proposal does not explain all the data: the ASL examples that inform Lacy's proposal are somewhat simplistic or overoptimistic, as they reflect textbook descriptions of simple referent placement. The reality of sign language discourse is much messier, and the one-to-one correspondence between location and referent is not as straightforward as a simple logical relationship. This can be seen in examples of stacking, where several referents are associated with the same location, or in the use of different locations for the same referent (van Hoek 1992), especially common in reference shift or to mark changes in discourse units (Nilsson 2008). Furthermore, although the reference system of sign languages appears to unequivocally pick out a given referent, as one would expect of an indexical system, there *is* a certain amount of ambiguity. Firstly, certain structures with pronominal reference, as shown in (6), which allow a sloppy or a non-sloppy reading may be just as ambiguous in sign language (Lillo-Martin & Klima 1990: 200).

-
- (5') Eddie_i wasn't really Fin_j's cup of tea. Even so, when Eddie_i kissed Fin_j he_j liked it.

⁷ Lacy restricts those pronominal forms which are true logical indices to non-deictic, non-analogic anaphors. Non-deictic forms exclude cases where pointing is directed at present referents and non-analogic forms exclude cases where the location in space is topographically relevant. Lacy does not say what the mechanism behind deictic and/or analogic reference could be, but his aim is to show that "highly abstract logical indices may be realised [at] surface structure" (2003: 242).

- (6) Ileana thinks she's pregnant and Acebo does too.
 Sloppy reading: Ileana thinks that Ileana is pregnant and Acebo thinks that Acebo is pregnant too.
 Non-sloppy reading: Ileana thinks that Ileana is pregnant and Acebo thinks that Ileana is pregnant too.

Additionally, the referent of a single instance of pronominal reference in sign language may indeed be ambiguous. While in the case of spoken languages there may be ambiguity between competing discourse entities, as we saw in (5) when it was unclear whether Eddie or Fin was liking the kissing, the spatial nature of sign languages may create confusion between a referent and the physical location of that referent (Janis 1992). This may happen whether or not the signing space is exploited topographically: all that is necessary is for a location to be associated with both a referent and any other discourse entity, which may be a locative argument or even a more abstract concept such as a situation or a mental state. The referent and the discourse entity are closely related (for example, the referent is present at a place or forms part of a situation) and this is why both are associated with the same locus, giving rise to the possible ambiguity.⁸

To account for much of this complexity, Lillo-Martin & Klima (1990) maintain the notion of pronouns as indices but add a layer to their model (based on Roberts' (1986) discourse representation structure) that separates indexation at the syntactic level from reference (to entities) at the level of discourse. In this model, each nominal element has a referential index, or R-index, which is assigned a semantic referent at the discourse level. In spoken languages, this R-index is not phonologically manifest, but in sign languages the reference can be made explicit in the form of an R-locus, a location in the signing space. Introducing the discourse level effectively pushes the "unlistability" issue into the realm of discourse, where it stops being problematic since the number of discourse referents is in principle unlimited. Equally, the model can accommodate exceptions to the one-to-one rule and the potential for shift in the referential system, as demanded by the phenomenon of role shift described in the previous section. The model does not deal with ambiguity between associated referents and locative arguments

⁸ Related to the issue of uniquely identifying referents are the notions of definiteness and specificity. Given that the referential system of sign languages appears to rely on picking out specific entities, how is indefinite or non-specific reference dealt with? MacLaughlin (1997: 280) claims that in ASL indefinite DPs are associated with an area, as opposed to a location, in signing space. For LSC, Barberà (2012) suggests that non-specificity is marked by weak localization in the upper part of the signing space.

(of the type mentioned in the previous paragraph), but this could well be a modality-specific feature of pronominal reference in sign languages, just as pronominals in spoken languages tend to group together (and allow for ambiguity within) classes of referents. At the same time, it is not altogether surprising that a spatially-based system should introduce ambiguity related to locative arguments. Finally, R-loci offer a coherent model in the sense that they operate in the domain of discourse: given that referent-locus associations are valid for a given stretch of discourse, it is fitting that a model that considers the mapping of indices onto discourse referents should provide an adequate framework to account for this use of space for reference in sign languages.

Such an indexical approach to pronominal reference means that each referent has its own label, and in the case of sign languages these distinct labels (different loci in signing space) are explicit. This contrasts with a system based on grammatical person, a categorical feature that may take one of a set of values, typically first, second or third person, and has led various researchers to claim that sign languages do not show grammatical person contrasts (Ahlgren 1990; Lillo-Martin & Klima 1990; Zwitserlood & van Gijn 2006). This would place sign languages in a typologically extraordinary position: as we saw in section 2.2.5, Greenberg's (1963: 113) Universal #42 states that all languages have pronominal categories involving at least three persons and two numbers. Even if we take the weaker version of this claim developed in chapter 2, according to which the three-way person distinction is present in all languages but is not necessarily made by pronominal forms of the same morphosyntactic category, the absence of any person distinction in the pronominal system would be remarkable. Furthermore, the fact that – as we shall see in section 3.2 – the verbal agreement system uses the same spatial mechanisms as pronominal reference severely reduces the chances of finding person distinctions elsewhere in the language system.

An alternative analysis that preserves the person category in sign languages, but only as a two-way distinction, is the first versus non-first person account proposed by Meier (1990) for ASL, and Engberg-Pedersen (1993) for DTS. They base the distinction on various properties of first person forms such as specific handshapes, the presence of contact and a lack of compositionality/indexicality. As further support, as we saw in section 2.2.5.3, there is at least one spoken language (Qawesqar, an Alcalufan language of Chile) that only distinguishes between first and non-first person (Cysouw 2005: 253), making the two-way person distinction in sign languages slightly less of a typological rarity. According to this account, non-first person reference (in signing space) is explained in terms of R-loci. The issue of person

distinctions will be returned to in the discussion of the φ -features present in LSE in chapters 5 and 6.⁹

The locations employed to track references in sign languages are not pure logical indices since a clean, constant one-to-one correspondence is not adhered to. However, pronominal points are dominantly indexical in nature, as becomes clear when comparing them to pronominal reference in spoken languages (Cormier, Schembri & Woll 2013). Treating locations in space as R-loci that serve as an explicit manifestation of an abstract index (which is mapped onto a discourse referent) provides a framework that can explain the largely indexical nature of pronominal reference in sign languages. Furthermore, the model also accounts for the unlistability, the discourse determinacy and the potential for shift of these forms. This is the model that will serve as the basis for the analysis developed in this thesis.

3.2. Agreeing verbs

Verbal agreement has attracted much attention in the sign language literature, and the existence of verbs that show a spatial means for marking arguments has been identified and described for many sign languages (see Mathur & Rathmann 2010, 2012 for overviews of the phenomenon from descriptive and theoretical perspectives, respectively).

A striking feature of verbal agreement in sign languages is that not all the verbs in a sign language show agreement. Although most verbs can be modified for aspect and many sign languages display a rich aspectual system (Pfau, Steinbach & Woll 2012), not all verbs can inflect to mark their arguments. Thus, for example, in Mexican Sign Language (LSM), verbs such as KNOW, UNDERSTAND and LOVE do not move between points in space to mark their arguments (Cruz Aldrete 2009). These are known as plain verbs. Of those verbs that are directional, an important distinction is made between spatial verbs and agreeing verbs (Padden 1983/1988¹⁰). Underlying this

⁹ The glosses in the transcriptions distinguish between locations on the signer's body (by using a 1 subscript) and locations in the signing space (by using a letter subscript, such as x or y). (See the notation conventions for more details.) Although this gives the appearance of a first/non-first distinction, this is done for clarity given the phonemic salience of contact with the body. Using this notation convention does not commit me to a first/non-first person distinction, and, as shall become clear in the analysis developed for agreement in LSE, this is not the path I take.

¹⁰ Padden initially distinguished between spatial verbs and inflecting verbs (1983/1988, 1986), but this was merely a question of nomenclature, and in later work (1990, 1998), she adopts the term "agreement verbs" (following Liddell & Johnson 1989). Other terms that are used in the literature, such as "indicating" (Liddell & Metzger 1998 and subsequent work by Liddell) or

distinction is a difference in the use of space: spatial verbs use the signing space topographically to describe spatial relations, whereas agreeing verbs use space categorically to mark person and number of the verbal arguments (Padden 1990). This has several consequences for how each type of verb behaves. Spatial verbs (such as MOVE, PLACE, THROW and STOP in LSM) use the entire signing space to show manner and path of movement such that any slight change in the movement of the sign alters its meaning; agreeing verbs (such as HELP, TEACH, PAY and RESPECT in LSM) restrict movement to the horizontal plane and “vary the position of the beginning and end points of the sign depending on the person agreement, an inflectional category to which spatial verbs are oblivious” (Padden 1983/1988: 47). Examples of each type of verb in LSM are shown in (7).

LSM (adapted from Cruz Aldrete 2009: 733, 761, 747)

- (7) a. PEPE IX_x IX₁ $\overline{\text{NOT-KNOW}}^{\text{neg}}$
‘Pepe doesn’t know me.’
- b. GLASS IX_x TABLE $\overline{\text{yMOVE}}^{\text{eye gaze}_x}$
‘Take the glass to the table.’
- c. PEPE xRESPECT_y IX_y MARÍA
‘Pepe respects María.’

The plain verb NOT-KNOW (7a) cannot inflect to mark its arguments, even though the referents in the sentence are associated with points in the signing space (‘Pepe’ at locus *x*, and the first person at the signer’s chest). The verb MOVE (7b) is modified spatially to alter the meaning of the verb: the start point of the sign is the locus associated with the addressee, or more specifically, the place where the addressee is, and the end point is the locus associated with the table. Additionally, the end point is also marked by eye gaze towards that location, as marked in the glosses. The arguments associated with the verb are locative, giving a literal meaning of ‘Take the glass from the place where you are to the table’. In contrast, the arguments of the verb RESPECT (7c) are not locative but person arguments: the verb starts at the locus associated with the subject argument (PEPE) and moves to the locus associated with the object argument (MARÍA).

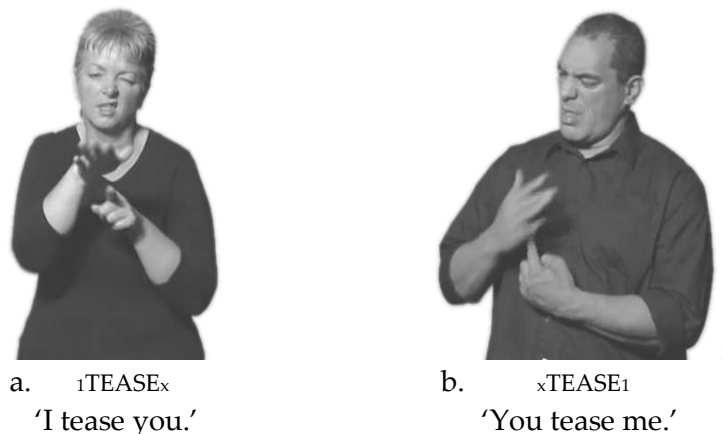
“deictic” (Morales-López et al. 2005) verbs, reflect the framework and analysis adopted by the authors, and will be mentioned where relevant in the description of theories of verbal agreement in sign language throughout this section.

These agreeing verbs, as they are now most commonly known, are described in section 3.2.1, with an overview of the difficulties in providing a systematic account of the phenomenon and of the different theories that have attempted to characterize this verbal process. Additionally, the existence of certain “backwards” verbs that show the reverse pattern of association between start/end point and subject/object makes finding a coherent account even more challenging, and this is dealt with in section 3.2.2. Although work on verbal agreement is normally restricted to directional verbs with two arguments, some verbs make use of a spatial mechanism to mark just one of their arguments, and this mechanism is described in section 3.2.3.

3.2.1. Prototypical agreeing verbs

The spatial behaviour of multi-directional (Friedman 1976) or directional (Fischer & Gough 1978) verbs, as they were first described, has been the focus of most of the work on verbal agreement in sign languages. The phenomenon of interest is shown by the different realizations of the verb TEASE in New Zealand Sign Language (NZSL) in example (8). A change in the direction of the verb changes the arguments that are identified as the subject and object: in (8a), the verb moves from a point associated with the first person subject, to a point associated with a non-first person object, yielding ‘I tease you.’; while the inverse movement (and, in this case, orientation of the hand) gives the meaning ‘You tease me.’

NZSL (Online Dictionary of New Zealand Sign Language)¹¹
(8)



The means these verbs use to mark agreement manually, by movement and/or orientation, are described in section 3.2.1.1., as well as marking for

¹¹ Images taken from videos of sentence examples in the Online Dictionary of New Zealand Sign Language, available at <http://nzsl.vuw.ac.nz/>.

plurality. Section 3.2.1.2 addresses the fact that agreement does not always appear, neither on all the verbs of a given sign language nor all the time on a given agreeing verb, describing agreement marker omission and defective agreement, two phenomena that contribute toward the optionality of agreement. The restriction of agreement to certain verbs is explored in section 3.2.1.3 by looking at the possible prerequisites and conditions that apply to agreement and that could offer an explanation as to why agreement is sporadic in sign languages. Any attempt to restrict agreement to agreeing verbs inevitably leads to assessing what sets them apart from the other group of inflecting verbs, namely spatial verbs. Section 3.2.1.4 re-examines the distinction between agreement and spatial verbs, and refers to analyses that treat all inflecting verbs (both agreeing and spatial) as a single category. A summary is given in section 3.2.1.5.

3.2.1.1. *Marking agreement*

Agreeing verbs in sign languages mark two arguments by moving between loci associated with the verb's arguments, specifically from the subject locus to the object locus. However, this is not the whole story. The different forms of the NZSL agreeing verb shown in (8) change in the direction of the movement but also in the orientation of the (dominant) hand.

RSL (Schwager & Zeshan 2008: 536. Images reproduced with kind permission from John Benjamins Publishing.)

(9)



a) ${}_1\text{DISTURB}_x$
'I disturb you.'



b) ${}_x\text{DISTURB}_1$
'You disturb me.'

For some verbs, orientation alone may be used to mark agreement, typically with the palm or the fingers of the hand facing towards the object locus and away from the subject locus. This is the case of the Russian Sign Language (RSL) verb *DISTURB*, which includes a downwards movement and so uses only

orientation to mark agreement, as shown in (9).¹² The distinction between movement and orientation is central to some characterizations of agreeing verbs that will be discussed in section 3.2.2.

Whether or not the inflected verb form moves through the signing space, the important idea is that its form aligns with a vector between the two loci associated with its arguments (Padden 1990). As such, agreeing verbs are always transitive or ditransitive verbs, since two arguments are required for agreement to take place. In the case of ditransitive verbs, the second argument that is marked is invariably the notional indirect object rather than the direct object (Cormier, Wechsler & Meier 1999), as shown in (10) for the LSM ditransitive verb GIVE. As mentioned in section 2.2.4, this distinction between primary (direct object in a monotransitive clause or indirect object in a ditransitive clause) and secondary (direct object in a ditransitive clause) objects is not uncommon in spoken languages (Dryer 1986).

LSM (adapted from Cruz Aldrete 2009: 749)

- (10) IX_x IX_y BOOK xGIVE_y
 'She gave him a book.'

The claim for agreeing verbs is that they mark the person and number features of their arguments. The issue of person marking has been mentioned already in the discussion of pronominal reference in section 3.1.3; the manifestation of number will be described here. Number and plurality are marked in a variety of ways by sign languages, and in the verbal domain there are various possibilities for distinguishing between singular and plural referents. Singular has zero marking, a strategy that is extremely common in spoken languages also (Steinbach 2012). For non-singular referents, different forms have been described: multiple or collective marking by means of an arc in the horizontal plane; distributive or exhaustive marking by means of multiple reduplication together with a sideward movement; dual marking by a single reduplication (with a change of location between each realization), or by simultaneous or sequential realization on each hand (Padden 1983/1988; Mathur & Rathmann 2010: 181). The multiple and distributive forms for the Australian Sign Language (Auslan) verb ASK are contrasted with the singular (zero marked) form in (11).

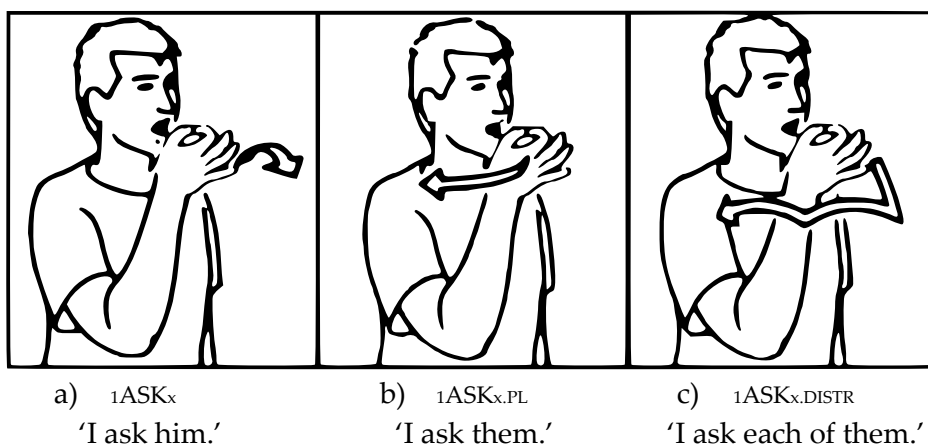
The distributive form (11c) is very similar in form to certain types of aspectual marking, such as the iterative (Wilbur 2008). Additionally, the modification relates to the temporal structure and properties of the event

¹² For more examples with photos of different agreeing verbs that contrast the use of movement and orientation, see (8) in section 5.2.1.

being described, as proposed by Wilbur's (2008) Event Visibility Hypothesis. Taken together, these observations suggest that the distributive marking is as much about the event expressed by the verb as about its arguments. Recall that in section 2.2.5.2 a distinction was drawn between nominal number – relating to the arguments controlling the agreement process – and verbal number, which is an inherent feature of the verb. The distributed form, insofar as it involves reduplication of the verb, appears to provide information about verbal rather than nominal number. For the time being, I focus on the multiple form (11b) as the marker on the verb of plurality of the verb's argument, but will return to the issue of these different plural markers in section 6.4.2 in the assessment of the expression of number in verb agreement in LSE.

Auslan (Johnston & Schembri 2007: 148. Images reproduced with kind permission from Cambridge University Press.)

(11)



3.2.1.2. *Lack of agreement marking*

Verbal agreement in sign languages shows several interesting properties related to the optionality of the appearance of agreement. Firstly, not all verbs in a given sign language show agreement. Secondly, those verbs that are agreeing verbs often do not show agreement for one or even both of the arguments. Finally, some agreeing verbs show a defective paradigm due to the fact that their phonological form obstructs the appearance of the marking for the subject argument. Each of these phenomena will be described in turn.

As pointed out in the introduction to this section, agreeing verbs constitute a subset of the verbs, which means that this mechanism is not uniform across all verbs in a given sign language. Cross-linguistically, this is extremely unusual since if a language has verbal agreement, it appears on all verbs (Corbett 2003): although there are two spoken languages that show

agreement on only 30% of the verbs, the Nakh-Daghestanian languages Chechen and Ingush (Bickel & Nichols 2007), this is a very rare situation.

Within the class of agreeing verbs, there is a notable tendency not to show agreement. For ASL, Meier (1982) and Padden (1983/1988) noted that the marking of both arguments is not obligatory and the verb may inflect for just one of its arguments. If this happens, the argument that is omitted is always the subject, as shown in (12). The agreeing verb GIVE starts not at a locus associated with the subject argument WOMAN but at a neutral location in the signing space. This phenomenon of agreement marker omission is also attested in other sign languages: example (13) from LSM shows how an agreeing verb may mark only the object argument (compare with (7c) above, in which the verb RESPECT marks both arguments). This will prove important for characterizing agreeing verbs when considering backwards verbs, described in section 3.2.2.

ASL (adapted from Padden 1983/1988: 136)

- (12) WOMAN _{neut}GIVE₁ NEWSPAPER
 ‘The woman gave me a newspaper.’

LSM (adapted from Cruz Aldrete 2009: 739)

- (13) JUAN RESPECT_x
 ‘Juan respects you.’

Additionally, agreement may be completely absent and neither argument is marked on the verb. Corpus-based studies in various sign languages have revealed that that agreeing verbs more often appear uninflected than inflected, even in contexts in which agreement marking could be expected (de Beuzeville, Johnston & Schembri 2009 for Auslan; Schuit 2013 for Inuit SL).

The optionality for marking one of the arguments, described above as agreement marker omission, should be distinguished from the case of transitive verbs that can only show marking for one argument, which has been called single agreement (Meier 1982). In order to avoid confusion with the distinct phenomenon of single argument agreement, to be introduced in section 3.2.3, I use the term *defective agreement* to refer to this (phonological) restriction of agreement to a single argument. In the case of agreement marker omission, marking for one of the arguments may not appear; for defective agreement, marking for one of the arguments *cannot* appear. This occurs with verbs such as SEE or TELL in ASL (Hahm 2006), which cannot show marking since the form of the verb includes a location (near the eyes and near the mouth, respectively, for these verbs). As a result, these verbs show a defective agreement pattern in which only the object is marked. In this sense, the

phonological form of the verb is a prerequisite for agreement: the verb must have no specifications for location in order for full (i.e. two-place) marking to take place. This issue of defective agreement will be returned to in the next section when we look at the phonological constraints that operate on agreeing verbs.

3.2.1.3. *Prerequisites and conditions*

As the previous section showed, agreement in sign languages is both sporadic, in the sense that only some of the verbs show agreement, and optional, since agreement may or may not appear. Leaving aside the issue of the optionality of agreement, which will be addressed in chapter 6, the uneven distribution of agreement across the verbs of sign languages may be due to various constraints on agreement in the form of prerequisites and conditions. In section 2.2.6, we saw that prerequisites operate on agreement at the phonological and morphological level, while conditions are considerations of a syntactic or semantic order that have an effect on agreement.

Considering possible conditions on agreement, a syntactic condition could be that agreeing verbs must be transitive or ditransitive since two arguments must be available for agreement to take place. This condition is implicitly included in many authors' definitions of agreeing verbs, whether they mention agreement with subject and object (Padden 1983/1988: 47; Meir 2002: 421) or make explicit mention of two arguments (Edge & Herrmann 1977: 147; Mathur 2000: 212; Hong 2008: 170). As we saw in section 3.2.1.2, defective agreement occurs when arguments cannot be expressed on the verb (for phonological reasons) but the verb is still required to have two (or more) arguments. Limiting agreement to verbs with two or more arguments is a somewhat arbitrary state of affairs, and as I shall suggest in section 3.2.3, agreement can and does occur on verbs with a single argument. Furthermore, the condition would be necessary but not sufficient for agreement to occur: many plain verbs are transitive, such as KNOW in (7a) above.

A semantic condition imposed on agreeing verbs is the requirement that both the verb's arguments be [+human], or less restrictively [+animate]. Some authors include such a condition in their definition of agreeing verbs (e.g. Mathur 2000: 212; Hong 2008: 170).¹³ This semantic condition may be subject to cross-linguistic variation since there are clear differences in the literature.

¹³ This restriction seems to be related to the notion of transfer mentioned below in section 3.2.1.4: arguments which can be the source or goal of transfer are either locative (in which case the verb is spatial) or potential possessors (and therefore most likely [+human], or at least [+animate]). This idea is picked up in Meir's (1998b) analysis, which will be described in section 3.2.2.

For example, Yang & Fischer (2002: 171) report an agreeing verb in Chinese Sign Language (CSL) that can inflect for the object only if the object is animate. In contrast, for LSQ, we find an example of an agreeing verb marking for two inanimate arguments: in (14) the verb FEND-OFF marks two non-first person arguments, which are 'the ozone' (presumably mentioned earlier in the discourse) and 'the solar system'.

LSQ (adapted from Nadeau & Desouvrey 1994: 153)¹⁴

- (14) _xFEND-OFF_y SOLAR-SYSTEM
 '[Ozone] protects us from the solar system.'

Alternatively, one way to explain the distribution of verbal agreement might be that a phonological prerequisite excludes many verbs from agreeing. As we saw above in the description of defective agreement (section 3.2.1.2), verbs with a specified location cannot show full agreement. Thus, since agreement may be manifested through movement and/or orientation, it may be that verbs for which both movement and orientation are specified in their phonological form cannot show agreement. The full specification of location (i.e. for all the location slots of the sign's phonological matrix) may also bar agreement since this effectively limits movement and makes it unavailable for the expression of agreement. This would go a long way to explaining why body-anchored verbs are plain verbs. However, it would do little to explain why spatial verbs do not show agreement. The distinction between spatial and agreeing verbs is questioned in the next section.

In trying to distinguish agreeing verbs from other verb classes we have looked at (syntactic/semantic) conditions and (phonological) prerequisites that might determine the appearance of agreement. We now focus on the class of agreeing verbs themselves to consider phonological constraints to which they are subject. These verbs fall into two categories: the first, already mentioned above, is defective agreement, which occurs when an agreeing verb cannot inflect for both arguments; the second arises due to gaps in the agreement paradigm caused by phonologically illicit forms for certain person/number combinations of the arguments.

In order for agreement to take place, a verb must be able to move through space (or at least to orient itself in space). However, many verbs have

¹⁴ In the original example, Nadeau & Desouvrey give the glosses in French, and the verb is glossed as DEFENDRE. I gloss the verb as FEND-OFF in order to show the argument structure more clearly, since the subindices on the verb indicate that it agrees with two third person arguments and not with 'us', which the authors include in the English translation of the sentence. The important point is that the verb is agreeing with inanimate arguments.

a lexically specified location that constrains the start point of the sign, thus blocking the possibility for marking agreement with the subject argument. This gives rise to a defective agreement paradigm. In her analysis of the phonological clashes that arise between verb roots and the movement needed for agreement, Meir (1998b: 90) mentions that several such verbs exist in Israeli Sign Language (ISL), such as ASK and ANSWER (both specified near the mouth), SEE (near the eye) and TELEPHONE (near the ear). These verbs generally agree with only the object argument, and the subject argument must be marked in some other way (by the presence of an explicit nominal or pronominal), as shown in (15) for the defective agreeing verb SEE in ASL.

ASL (adapted from Cormier, Wechsler & Meier 1998: 220)

(15) IX_x SEE_y
'She sees him.'

In ISL, though, certain forms of these verbs may show agreement with both arguments:

[t]he only forms of these [defective] verbs which agree with two arguments are those that inflect for 1P object. In such cases, the verb form has a complex path movement: it begins [at the locus associated with] the subject, moves to the specified location, and then to the 1P locus (the signer's chest). (Meir 1998b: 90-91)

When describing defective agreeing verbs in ASL, Mathur & Rathmann (2010: 178) mention that a variant of the verb TELL does allow agreement with both arguments: in contrast to ISL, which includes the specified location as the intermediate point of the sign (subject>mouth>object), the strategy in ASL is to begin the sign at the lexically specified location and then move to subject locus and from there to object locus (mouth>subject>object).

The second type of constraint on the form of agreeing verbs arises as a result of articulatory incompatibilities. For example, the ASL sign GIVE is lexically specified as having the palm of the hand orienting upwards, which requires radio-ulnar supination. At the same time, it expresses agreement through movement and orientation. A first person object form would require pointing and moving the hand inwards (towards the signer) and a plural form would involve adding an arc movement. If the target form is first person plural object, this would require both of these movements. However, combined with radio-ulnar supination (in order to keep the palm of the hand facing upward), the result puts the arm in an awkward configuration, and therefore the resulting form is not possible. In order to study which verbs allow which combinations, Mathur & Rathmann (2001, 2006) collected data

from various sign languages (ASL, DGS, BSL and Auslan).¹⁵ The data collection consisted of selecting a sample of around 80 verbs from each language and asking signers to produce four different forms of the sign (1VERB_x, xVERB₁, 1VERB_{x.PL}, xVERB_{1.PL}). In order to elicit the different forms, the informant saw the (uninflected) citation form of a verb and was then asked to visualize a specific configuration of referent loci in the signing space. This was done by means of visual aids that showed an array of circles, which represented the signer, the addressee and other referents. If the participant had problems visualizing the target, then additional context was provided through further descriptive information, but without showing the target form (Mathur & Rathmann 2006: 296). The results revealed systematicity in the variability of the forms across the different sign languages and identified phonological constraints that interact with the rules that specify the inflected forms. An adapted version of this study was used to examine the constraints on the inflection of agreeing verbs in LSE; the results will be reported in section 5.4.2.2.

3.2.1.4. *Agreement versus spatial verbs*

The distinction between agreement and spatial verbs is not as clear cut as it may seem, and both types of verb have in common that they inflect spatially. Padden (1983/1988) separated the two categories of verb based on the observations that they used space in very different ways and that they take different types of arguments (locative versus personal), and as a result they show different properties. Indeed, psycholinguistic studies have shown that the topographic and referential uses of spaces are processed differently (Emmorey, Corina & Bellugi 1995). However, several authors have observed that the distinction between locative and agreeing verbs is difficult to maintain when attempting to classify the actual verbs of a sign language (Engberg-Pedersen 1986; Bos 1990; Johnston 1992) and the authors of the psycholinguistic study mentioned above also emphasized that the two uses of space are not mutually exclusive.

Furthermore, various analyses of verbal behaviour in sign languages have grouped spatially inflecting verbs as a single category. In an analysis of ASL, Janis (1992, 1995) characterizes verb agreement in terms of the case of the nominal controller, which may be locative (resulting in spatial agreement) or direct (resulting in person agreement). In the case of agreement with a direct case-marked nominal (i.e. what Padden would call agreeing verbs), Janis provides a hierarchy for grammatical role of the arguments that aims to

¹⁵ For a similar crosslinguistic study looking at person and number combinations but in the pronominal domain, see Cormier (2007).

motivate the syntactic behaviour of these verbs (preference for marking indirect object over direct object, and object over subject, as we have seen). Alternatively, Quadros (1999) classifies verbs in Brazilian Sign Language (Libras) as non-inflecting (i.e. Padden's plain verbs) and inflecting (spatial and agreeing verbs) based on syntactic evidence due to word order differences for sentences with each type of verb. The possibility that both spatial and agreeing verbs have the same underlying agreement mechanism will be considered in chapter 6.

The commonalities between agreeing and spatial verbs are not limited to their syntactic status but can also be observed in their semantic properties. This was captured in the first descriptions of directional or multi-directional verbs, which characterised the relationship described by the verb as one of transference (Edge & Herrmann 1977: 144) between a SOURCE and a GOAL (Friedman 1976: 126). The movement of the verb goes from the SOURCE argument to the GOAL argument (as was consolidated by the existence of backwards agreeing verbs, described in section 3.2.2). This notion of motion is also present in spatial verbs, which describe a movement from point A to point B. The viability of maintaining the tripartite classification of verbs as plain, spatial and agreeing will be discussed further, especially in the context of single argument agreement in section 3.2.3.

3.2.1.5. *Summary*

This section has described agreeing verbs in sign languages, in the context of Padden's tripartite classification of verbs as plain, spatial or agreeing. Agreeing verbs mark their subject and object by moving the hand(s) between the loci associated with the subject and object referent and/or by orienting the hand away from the subject locus and towards the object locus. These verbs may express plurality of the argument by adding an arc movement. We have looked at a series of interesting properties of agreeing verbs, starting with the tendency to agree with the object rather than the subject (as evidenced by both agreement marker omission and defective agreement paradigms). This type of verbal agreement in sign languages is also unusual because it is sporadic in the sense that not all verbs show agreement, a typologically very anomalous situation. We have looked at different factors that could determine the candidacy for agreement of a verb. Phonological prerequisites fail to distinguish between spatial and agreeing verbs, and open up the thorny issue of whether such a distinction is necessary at all. A syntactic condition in terms of the number of arguments the verb must have yields a somewhat arbitrary solution but fails to account for two-place plain verbs (and will become less tenable when we look at single argument agreement in section 3.2.3). Finally,

a semantic condition based on the animacy of the arguments is not empirically supported for (at least) some sign languages.

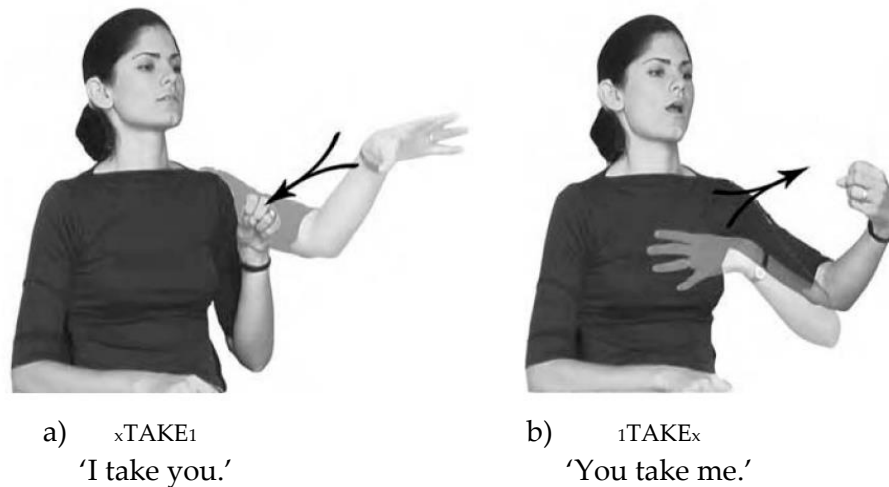
The next section turns to a specific sub-group of agreeing verbs that show a reversal of the correspondence between the start/end point of the sign and the subject/object argument, and which have helped to shape theories about verbal agreement in sign languages.

3.2.2. *Backwards agreeing verbs*

A small number of agreeing verbs possess the unusual property of inverting the association between the start/end points of the verb and the subject/object argument. A review of the literature suggests that, whenever a sign language has agreeing verbs, a subset of these verbs consists of such backwards verbs. Thus, a backwards agreeing verb like TAKE in ISL, shown in (16), moves from the locus associated with the object toward the locus associated with the subject.

ISL (Meir & Sandler 2008: 84. Images reproduced with kind permission from Lawrence Erlbaum Associates.)

(16)



Backwards agreeing verbs across different languages typically have similar meanings: INVITE, TAKE, STEAL, EXTRACT, COPY in ASL (Padden 1983/1988); INVITE, IMITATE, CHOOSE in Taiwan Sign Language (TSL) (Smith 1990); INVITE, TAKE, PERCEIVE in DTS (Engberg-Pedersen 1993: 59); INVITE, TAKE, COPY, IMITATE, ADOPT, CHOOSE in ISL (Meir 1998a: 7); INVITE, ENTICE, HATE in Korean Sign Language (KSL) (Hong 2008: 173, 181); INVITE, STEAL, INVESTIGATE in LSM (Cruz Aldrete 2009: 742).

Backwards verbs provide useful insights into the spatial verbal agreement process as the associations between agreement slots and syntactic positions are reversed (with respect to prototypical agreeing verbs), whereas

the semantic roles of the arguments are maintained. The debate between semantic and syntactic agreement is presented in section 3.2.2.1, and evidence for a syntactic account, based on work by Padden and Meir, is provided in sections 3.2.2.2 and 3.2.2.3. Meir's account provides a detailed model of verbal agreement and is described in some detail: subsequently, section 3.2.2.4 identifies those issues that Meir's model cannot handle. Finally, a brief summary of backwards verbs is given in section 3.2.2.5.

3.2.2.1. *Semantic or syntactic agreement?*

The fact that similar lexical items, such as 'take', 'invite' or 'copy', show up as backwards agreeing verbs in different sign languages suggests that these verbs have common semantic properties. Looking more carefully at the different meanings expressed by these verbs reveals that the arguments fit into the roles of SOURCE and GOAL, and, furthermore, the verb maintains the directionality (SOURCE to GOAL) identified for prototypical agreeing verbs and introduced above in section 3.2.1.4. In the same way that the NZSL verb ${}_1\text{TEASE}_x$ ('I tease you') moves from SOURCE ('I') to GOAL ('you'), the ISL verb ${}_x\text{TAKE}_1$ ('I take you') also starts at the SOURCE ('you') and ends at the GOAL ('I'). The observation that the movement of agreeing verbs (both prototypical and backwards) is from SOURCE to GOAL has led to a semantic analysis of the phenomenon (Friedman 1976; Shepard-Kegl 1985).

Padden's (1983/1988) characterization of agreeing verbs is in syntactic terms: these verbs agree with the subject and the object of the sentence, and this is marked by the movement from the subject to the object argument. The case of backwards verbs presents a problem for this analysis since such verbs appear to move from the object argument to the subject argument. Padden's solution is to propose that order of argument marking (i.e. whether an agreeing verb is backwards or not) is lexically specified. Indeed, such verbs are only "backwards" in such a syntactic account, since a semantic account can offer a unified analysis of both prototypical and backwards verbs. A frequently raised objection is that the backwardness of verbs such as TAKE or COPY is a result of the spoken language gloss assigned to them:

The "backwardness" Padden attributes to these verbs seems clearly to be an artefact of the English gloss, TAKE, and the baggage carried with it. Neither the morphology nor the syntax of ASL seems to treat these verbs as "backwards." It seems feasible to consider the possibility that the agreement of [locative argument markers] on the verb in ASL is stated on the basis of thematic relations (source and goal) rather than grammatical relations (subject, object); and certainly that Agent is not among the set of primitive thematic relations overtly marked on the verb. (Shepard-Kegl 1985: 422)

The objection is that the meaning of these verbs is related to the English gloss (such as TAKE), but that the argument structure of the verb does not coincide with that of the English verb, being more akin to something like TAKEN-BY.¹⁶ The problem of spoken language glosses influencing how we treat signs is certainly well considered, and the argument is intuitively appealing. However, although Shepard-Kegl explicitly claims that AGENT is not overtly marked on the verb, the notion of agentivity does seem to be relevant to the meaning of the verb: ‘give’ and ‘take’ both involve the notion of transfer from SOURCE to GOAL, but which of the two arguments is agentive is intrinsic to the semantics of the verb.¹⁷ Furthermore, two pieces of evidence suggest that this agreement marking cannot be reduced to a semantic account and does involve syntactic considerations: argument marker omission and the distinction between movement and facing. Each will be dealt with in turn in the following sections.

3.2.2.2. *Argument marker omission in backwards verbs*

As we saw in section 3.2.1.2, agreeing verbs frequently show marking for just one of the arguments. Crucially, for prototypical verbs, the argument that is omitted is the first argument, producing forms like _{neut}GIVE₁. For backwards verbs, argument marker omission does not target the first argument, but the second, as shown in (17).

¹⁶ Slobin (2008: 124) offers a similar argument for the ASL backwards verb INVITE, suggesting it would be better glossed as OFFER-TO-COME, since _∞INVITE₁ or _∞OFFER-TO-COME₁ has the meaning ‘I offer that you come to me’. This, Slobin claims, would be more “appropriate” for the movement of the sign since it reflects the proposed movement implicit in meaning of the sign. I can see two problems with this approach. Firstly, it assumes that the form of the sign (or at least the movement) must be iconically motivated to reflect its meaning. Since INVITE can also be used in the sense of paying for somebody else (“I’ll invite you to a drink”), it is not clear what real movement or transfer the form of the sign should correspond to in this context. Secondly, in this specific example, the modification of the gloss to OFFER-TO-COME introduces an element (‘come’) which provides a clear SOURCE and GOAL for the movement of the verb, but fails to account for the ‘offer’ part, leaving unanswered the question of how the verb marks the subject/agent argument.

¹⁷ A similar example can be seen in the pair *pagar* (‘pay’) and *cobrar* (‘charge’ or ‘take payment’) in Spanish, which both refer to the transfer of money but with different argument structures. Interestingly, in LSE PAY is a prototypical agreeing verb while TAKE-PAYMENT is a backwards verb.

ASL (adapted from Padden 1983/1988: 138)

(17) a. IX₁ xTAKE-OUT_{neut} FRIEND SISTER
'I'm taking out my friend's sister.'

b. *IX₁ neutTAKE-OUT₁ FRIEND SISTER

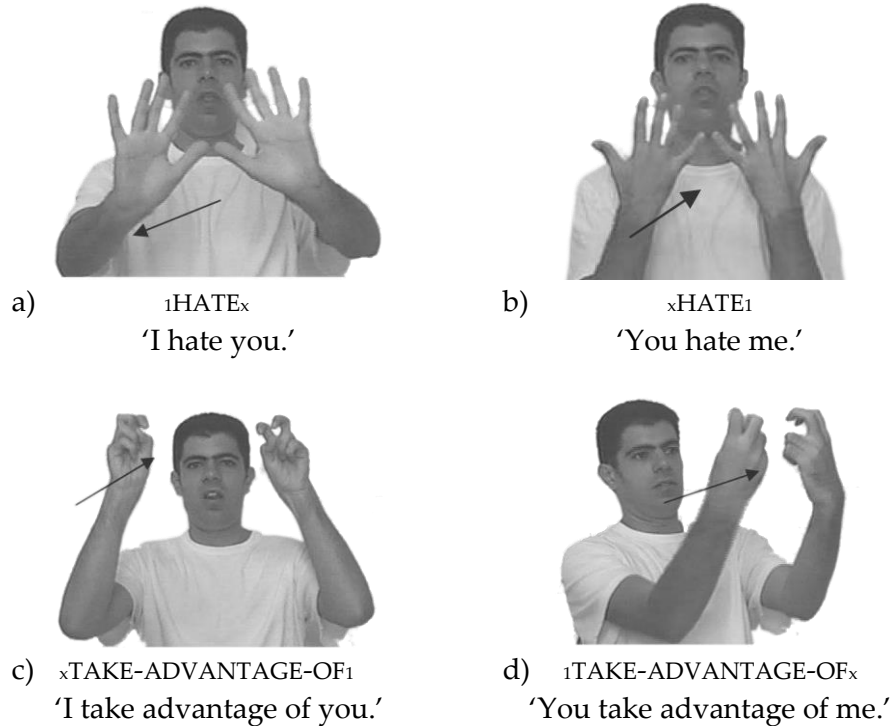
In (17a), the backwards verb TAKE-OUT omits marking for the second argument, which corresponds to the syntactic subject ('I'). In contrast, omission of the marking for the first argument, corresponding to the object ('my friend's sister'), is not possible, as demonstrated by the ungrammaticality of (17b). For a semantic account, this means that argument marker omission targets the SOURCE argument for one type of verb (prototypical) and the GOAL argument for the other type (backwards). The syntactic account, in contrast, can provide a straightforward explanation of these facts by positing that argument marker omission simply targets the subject argument. Thus, the behaviour of argument marker omission is governed by the syntactic role of subject, regardless of the position that the marking for that role occupies on the inflected verb.

3.2.2.3. *Meir's account: movement vs. facing*

The second piece of evidence against a purely semantic account is a refinement of the analysis of verbal agreement in sign languages proposed by Meir (1998ab, 2002). Based on earlier work by Brentari (1989), who observed that the orientation of the hand is relevant in the manifestation of spatial agreement, Meir developed an analysis that includes two independent mechanisms: on the one hand, the path movement of the verb marks the semantic SOURCE>GOAL relationship, whereas the syntactic object is marked by the facing of the hand(s). Facing is not equivalent to orientation, since the part of the hand that faces the object locus depends on the specific verb and may be realized by different parts of the hand, such as the finger tips, the palm or the ulnar side. Even so, facing captures an orienting of the hand that is relevant to the process of marking a verb's arguments. Thus, although backwards verbs differ from typical verbs in that the direction of movement is not from subject to object, the facing of the hand(s) is towards the object locus, as it is for prototypical agreeing verbs. This can be seen in the NZSL prototypical agreeing verb TEASE (8), in which the fingers face the object locus, and the ISL backwards verb TAKE (16), in which the palm faces the object locus. Further examples of facing in a prototypical and backwards verb in ISL are shown in (18): in both HATE (prototypical) and TAKE-ADVANTAGE-OF (backwards) the palms face the object locus.

This separate mechanism of facing allows a distinction to be drawn between semantic roles (reflected by the direction of the movement) and syntactic roles (reflected by the facing of the hands). Since Meir's proposal will be relevant to properties of LSE verbal inflection as analysed in chapter 7, some further details of the proposal will be given here.

ISL (Meir 1998b: 84, 123. Images reproduced with kind permission from the author.)
(18)

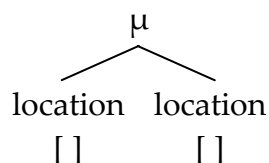


Based on the observation that agreeing verbs have a specific lexical structure that denotes transfer from a SOURCE argument to a GOAL argument, Meir developed a thematic structure agreement analysis according to which agreeing verbs merge with a particular predicate, DIR (called PATH in Meir 1998b), which denotes movement from one place to another (also present in spatial verbs, which also include the semantic concept of motion). It is this DIR predicate that shows agreement and not the verb itself. To explain the mechanisms of the agreement process, Meir proposes that DIR is a bound morpheme that fuses with the root of the verb, and describes this in terms of a merger of the lexical conceptual structures of each element which results in a complex verb. Essentially, DIR fills the argument slots of the verb root with its own arguments (which have already been assigned thematic roles of SOURCE and GOAL); the complex verb then checks the referential features of its arguments in the syntax (Meir 2002: 438). The referential features of the

arguments are expressed as an explicit index in the form of spatial loci and these locations are copied onto the verb's phonological features at Spell-Out.

From a phonological point of view, the DIR morpheme has two empty location slots and may be represented in terms of Sandler's (1989) Hand Tier Model as in (19):

(19) DIR: (adapted from Meir 1998b: 167)



After the merger with the verb root, these empty slots serve as the landing site for the phonological location features copied from the arguments' loci. For this to happen, the verb root must also be underspecified in its phonological matrix for location and path movement,¹⁸ so that the fusion of the verbal root and DIR does not result in a phonological clash. Otherwise agreement cannot be expressed, or is only partially expressed. We have already mentioned cases of this sort: the examples in section 3.2.1.1 showed how agreement by movement may be completely blocked by lexically specified movement (and/or location/contact) in the verb's phonological matrix, resulting in either a plain verb (such as LOVE in LSM) or a verb marking agreement through orientation alone (such as DISTURB in RSL). Alternatively, movement may be partially blocked (as described in section 3.2.1.2) in the case of defective agreement: a lexically specified location prevents the first slot in the DIR morpheme from serving as the landing site for the location of the SOURCE argument.

Meir (1998b, 2002) characterizes the independent mechanism of facing, which marks the object argument, as a case marker rather than an agreement process. The main motivation for this is the fact that in sign languages object marking is more prominent than subject marking, as demonstrated by argument marker omission and defective agreement (section 3.2.1.2). While it is typologically unusual to find agreement with only the object, case marking for only the object is common, so the fact that sign languages mark the object in this way fits into common cross-linguistic patterns of case marking for the object argument. What is slightly unusual is that the case marking appears on

¹⁸ Brentari (1998: 4) distinguishes between local and path movement. The distinction is both articulatory and phonological: local movements are made by the wrist, knuckles or finger joints, and may cause a change in handshape or orientation; path movements are made with the elbow or shoulder and may be specified as a movement feature or a change in location.

the verb rather than on the noun argument itself, but case relations may be marked by verbal affixes in head-marking languages, that is, languages that mark relations on the head (rather than the dependents) of the phrase (Nichols 1986). The case marking by means of facing appears on those verbs whose lexical conceptual structure includes the notion of transfer, thus making a distinction between spatial and agreeing verbs. The former denote motion but not transfer and thus have no facing, whereas the latter do denote transfer, according to Meir's analysis. Again, if the phonological specification of the verb root contains a specification for the palm and finger orientation, this blocks the possibility of marking the object argument via facing. For ISL, Meir (1998b: 245-52) shows how different phonological clashes restrict the way in which a verb expresses agreement and case marking.

One problem with a semantically based account is that it fails to describe the agreement phenomenon in configurational terms; recall from chapter 2 that agreement relationships hold *in the context of a specific syntactic configuration*. In order to get round this, Meir suggests that agreement is a property of the spatial DIR predicate (present in both spatial and agreeing verbs) and that it is the close relationship between the thematic roles that DIR assigns to its arguments and the agreement slots these arguments are associated with that gives agreeing verbs their thematic flavour. As Meir (2002: 440) puts it, "agreement in ISL is related to specific spatial thematic roles because of the spatial nature of the agreeing element". Essentially, agreement looks spatial because what agrees in sign languages is a spatial element (DIR). This proposal also deals with another anomaly: as mentioned in section 3.2.1.2, a remarkable property of sign language verbal agreement is that it is not manifested by all verbs in a language, in contrast to the case for spoken languages that whenever a language has verbal agreement, all the verbs show agreement. A consequence of Meir's analysis is that sign language agreement behaves more consistently since it is no longer a property of a restricted class of verbs (or of any verbs for that matter) but rather it arises whenever a particular predicate (DIR) is present.

Another outcome of this model of agreement is a refinement of the semantic restraints placed on the arguments of agreeing verbs. As mentioned in section 3.2.1.3, in the literature it is often claimed that agreeing verbs can only take [+animate] arguments (cf. Janis 1995; Mathur 2000; Rathmann & Mathur 2005; Quadros & Quer 2008); in contrast, following from the characterization in terms of transfer, Meir suggests that the relevant feature is that arguments be potential possessors (1998b: 203 fn).

3.2.2.4. *Problems with Meir's account*

Although Meir's analysis distinguishes the movement and facing as two separate mechanisms, treating facing as a case marker effectively excludes it from the agreement process, and the movement element is the only agreement marker. This has two consequences for the analysis. Firstly, the agreement process is common to both spatial and agreeing verbs, despite the differences in the use of space that each type of verb seems to involve (as described in section 3.2.1). Thus, agreement is characterized by the use of loci as the means of exponence whether the verb be spatial or agreeing, in the context of movement between two loci. As we saw in section 3.2.1.4, the distinction between spatial and agreeing verbs is difficult to maintain, and many proposals have grouped together both types of verbs as inflecting verbs (cf. Quadros 1999), so this does not seem to be a drawback. The second consequence is problematic: since movement is closely tied to the (semantic) SOURCE-GOAL relationship (whether this be in terms of motion or transfer), this makes Meir's account of agreement essentially semantic in nature. The formal device of restricting agreement to a predicate (DIR) with arguments that happen to have specific semantic roles (i.e. SOURCE and GOAL) explains why a syntactic process (agreement) is semantic in appearance and provides a syntactic framework for agreement, but also means that agreement is limited to the semantic context of SOURCE and GOAL. For spatial verbs, this is no issue since a verb that describes movement is necessarily from SOURCE to GOAL.¹⁹ However, Quadros & Quer (2008) point out that (in LSC and Libras) the second argument of an agreeing verb is not always a GOAL, but may be a THEME, as in verbs like PRESS or INVITE. Furthermore, various agreeing verbs, such as CHOOSE or SUMMON, do not have a clear sense of transfer.

Meir's account does not address the question of the features involved in the agreement process and limits itself to stating that the referential features of the language (R-loci) appear as the agreement markers. This leaves the issue of what referential features sign languages use to a theory of reference. However, since the features involved in agreement are central to the process, and as we have seen (in section 3.1), reference in sign language shows very particular characteristics, this issue will be examined carefully in chapters 6

¹⁹ A possible exception is the use of movement to trace the shape of a referent, such as a bend in a road, such that the movement describes a path and not motion between a SOURCE and a GOAL. This is normally achieved with classifier constructions (see section 1.2), which use a strongly isomorphic mapping of the signing space onto real space. These structures are usually considered distinct from spatial verbs and the issue is not dealt with in this thesis, but the question of how the use of space in classifier structures interacts with that of lexical verbs deserves further attention.

and 7, when we assess these agreement-like phenomena in terms of the theoretical frameworks developed for spoken language data.

3.2.2.5. *Summary*

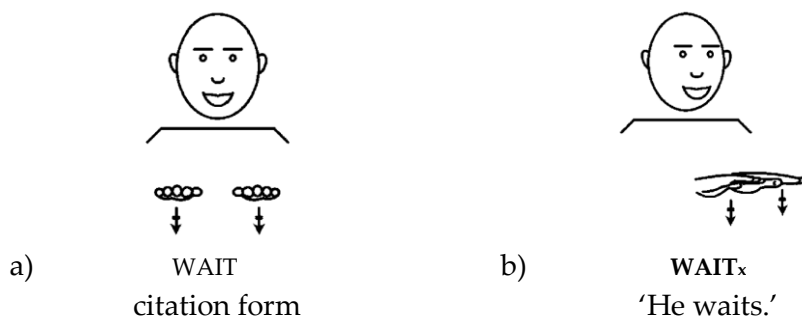
Backwards verbs show the unusual property of inverting the association between the start/end point of the sign and the subject/object argument. Similar lexical items show up as backwards verbs in many different sign languages, though there is variation from one language to another. These verbs make clear that there are two mechanisms at play in agreeing verbs: on the one hand, the movement between the loci associated with the verb's arguments; and on the other, the facing of the hands towards the locus associated with the object. Backwards verbs are a subset of the agreeing verbs in that they mark agreement for two arguments. The next section looks at verbs that modify spatially to agree with just one argument.

3.2.3. *Single argument agreement*

The verbal agreement mechanism we have examined so far has involved movement (or orientation) between two points in space, and the verb agrees with two arguments. In section 3.2.1.2 we saw cases of verbs marking just one argument (in the context of agreement marker omission or defective verbs) but these were situations in which marking of a possible second argument was omitted or blocked; the verbs are directional but for some reason one of the arguments is not marked. In contrast, in single argument agreement the verb is not directional but localizable: the verb is articulated at the locus associated with the argument. As such, the spatial mechanism employed by the verb only ever allows for one argument to be marked, and only a single agreement slot exists. Example (20) shows how the NGT verb *WAIT* can be articulated at a point in the signing space associated with a referent, thus showing single argument agreement.

NGT (Zwitserslood & van Gijn 2006: 198. Images reproduced with kind permission from Oxford University Press.)

(20)



The observation that not all plain verbs are body-anchored, and can be articulated at different points in the signing space has appeared frequently in the literature: for example, Fischer & Gough (1978: 22) mention “incorporation of location” in verbs in ASL, and Bergman (1980) uses the term “localization” for verbs in SSL. Bergman’s term for this mechanism fits with the definition of localization already adopted (in section 3.1.1): a sign is articulated at a specific point in the signing space. I use the term to describe the modification of a location of a sign; it does not refer to the function of that modification (see fn. 3 for further clarification).

Some authors (Bergman 1980, 1990; Smith 1990; Zwitserlood & van Gijn 2006) consider this phenomenon to be part of the verbal agreement system, on a par with two-place agreeing verbs. However, much of the literature on verbal agreement in sign languages avoids this phenomenon and restricts the discussion of agreement to prototypical and backwards agreeing verbs as described in the previous two sections. For example, a recent landmark paper on agreement in ASL makes passing reference to the issue:

Although this class of [plain] verbs is considered non-agreeing, some of them can actually be signed in a locus associated with a location of an event (e.g. WANT, BUY, and LEAVE-ALONE). (Lillo-Martin & Meier 2011: 106)²⁰

This has led to a certain amount of confusion in the field and deserves attention to make the issues involved explicit. The exclusion of verbs articulated at a single location from the analysis of agreement stems from the observation by Padden (1990) that for transitive verbs such marking is ambiguous since it could be for the subject or the object. This is illustrated by (21), in which the ASL verb WANT is localized at different points in the signing space. The loci may be associated with the verb’s subject arguments or its object arguments, and the interpretation depends on the context. Since the marking of the argument is not systematic, Padden claims that this cannot be a case of agreement.

ASL (Padden 1990: 121)

- (21) WOMAN WANT_x WANT_y WANT_z
 ‘The women_{i,j,k} are each wanting.’
 ‘The woman wants this_i, and this_j, and this_k.’

²⁰ Later in the same article, Lillo-Martin & Meier state that “no verbs mark agreement with only the subject (indeed, intransitive verbs are not directional)” (2011: 126) thus identifying agreement with directional verbs.

However, following up observations made by Engberg-Pedersen (1993), Meir (1998b: 95) points out that the first reading of (21), in which the subject argument is marked by agreement, occurs in a specific discourse context, namely, when several referents in the discourse are being compared. Such contexts give rise to what Engberg-Pedersen calls pragmatic agreement, in which overriding pragmatic considerations indicate which argument is being identified by articulating the verb at a given locus. Outside this specific discourse context, Meir shows that (in ISL) single argument agreement marks the internal argument of the verb, i.e. the subject of intransitive verbs and the object of transitives, as shown in the examples in (22).

ISL (Meir 1998b: 94)

- (22) a. STICK IX_x CL(**break**)_x
 'The stick broke.'
- b. BOY IX_x GROW-UP_x
 'The boy grew up.'
- c. STICK IX_x IX₁ CL(**break**)_x
 'I broke the stick.'
- d. POLICEMAN IX_x THIEF IX_y CATCH_y
 'The policeman caught the thief.'

This refinement of the characterization of single argument agreement (by excluding the ambiguous cases due to specific discourse considerations) allows Meir to identify a mechanism that uses space to systematically mark arguments at the clausal rather than the discourse level.²¹ As such, these verbs that can be localized to mark an argument (and which clearly do not involve the DIR predicate postulated by Meir for agreeing verbs) will be considered as a possible manifestation of (spatial) agreement when looking at the LSE data in chapter 5 and when assessing agreement in chapters 6 and 7.

3.2.4. Summary

This section has looked at verbs in sign language that have been described as showing agreement by means of spatial inflection. Most attention in the literature has been given to directional agreeing verbs, which mark for two arguments by moving from the locus associated with one argument to that associated with another. A small subset of these verbs, backwards verbs,

²¹ Unfortunately, Meir does not analyse this construction in her work on agreement and expressly focuses on directional verbs.

shows the property of moving from the object to the subject locus, contrary to the prototypical movement from subject to object locus displayed by most agreeing verbs. These agreeing verbs have been the focus of a great deal of research since they display a series of unusual properties, many related to the distribution of agreement in sign languages: not all verbs can show such agreement, and those that can may omit agreement or have defective inflectional paradigms. Additionally, agreement has a very strong semantic flavour, since it commonly depicts transfer from a SOURCE to a GOAL. This sits uneasily with a characterization of agreement as occurring in a specific configurational or syntactic context. These facts lead Meir (1998b, 2002) to an analysis of agreeing verbs in ISL in terms of a specific spatial predicate, DIR, which shows agreement and fuses with semantically appropriate verbs (those that express transfer). As we have seen, this provides a syntactic framework for a semantically driven process, but may commit agreement to a limited semantic context that data from other sign languages suggest is too restrictive.

Finally, we have also looked at the phenomenon of single argument agreement, in which a verb is localized to mark just one of its arguments. This mechanism has been generally overlooked in the literature, but appears to show a systematic use of space to mark a verb's argument, in the same sense that (prototypical and backwards) agreeing verbs do. As such, it will be included in the possible list of candidates for agreement to be assessed in LSE.

The next section continues to look at verbal agreement, but in the context of verbal auxiliaries. The different auxiliaries that have been identified for different sign languages function principally to bear markers of agreement, and so are highly relevant to the issue under discussion. Furthermore, the interaction between lexical and auxiliary verbs provides important insight into the nature of the spatial agreement process in sign languages.


3.3. Agreement auxiliaries

In the previous chapter, section 2.2.3.1, we saw that auxiliary verbs are common targets for agreement. In spoken languages, auxiliary verbs generally serve to show information relating to tense, aspect, modality, negative polarity and voice, and the appearance of agreement on these elements is more of a syntactic "accident" (Steinbach & Pfau 2007). In sign languages, however, various elements have been identified that serve as a verbal auxiliary but with the main function of marking subject/object agreement when the lexical verb is not capable of doing so (i.e. when it is a plain verb). Consequently, these elements are referred to as agreement

auxiliaries or by the more specific term “subject object agreement” (SOA) auxiliaries, coined by Steinbach & Pfau (2007: 308). These elements occur together with a lexical verb (to form a monoclausal verb phrase) and perform the grammatical function of marking agreement, and as such they fall under the definition of a verbal auxiliary proposed by Anderson (2006: 5; see section 2.2.3.1 for details).

Agreement auxiliaries have been identified for various sign languages, and they can be categorized into three different types based on the interrelated criteria of form and origin. The first type, dealt with in section 3.3.1, normally glossed as *AUX*, is the most frequent cross-linguistically (based on current data) and consists of an indexical element that appears to be derived from concatenated pronominal forms. The second group of auxiliaries, described in section 3.3.2, is derived from full lexical verbs that have undergone semantic bleaching and taken on a more functional role within the clause. The third type of auxiliary (section 3.3.3), *PAM*, is similar in function to *AUX* but its use tends to be more restricted and it appears to have its origins in the nominal *PERSON*. This section provides an overview and description of each of these types of agreement auxiliary in turn. (For a more detailed overview of auxiliaries in sign languages see Sapountzaki (2012), and for a discussion of the sources from which they grammaticalize, see Steinbach & Pfau (2007)).

3.3.1. *AUX*

Many sign languages have an auxiliary element to mark verbal agreement that consists of signalling the location associated with the subject followed by the location associated with the object. In form, the hand adopts the  shape typically used for pointing and the auxiliary looks like two consecutive points joined by some sort of arced movement.

This *AUX* form was first described for TSL by Smith (1990), shown in figure 3.1, and has subsequently been identified for Argentine Sign Language (LSA) (Massone 1994; Massone & Curiel 2004), Japanese Sign Language (NS) (Fischer 1996), Libras (Quadros 1999; Quadros & Quer 2008), Indo-Pakistani Sign Language (IPSL) (Zeshan 2000a, 2003a), LSC (Quer et al. 2005) and Greek Sign Language (GSL) (Sapountzaki 2005).

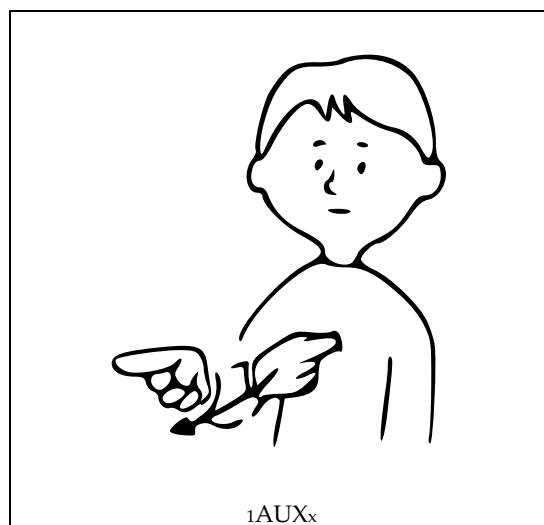


Figure 3.1 The indexical agreement auxiliary described for several sign languages, here showing movement from first person to a non-first person locus in TSL. (Image reproduced from Smith 1990: 217, with kind permission from University of Chicago Press.)

The details of the behaviour of *AUX* vary from language to language, but basically the auxiliary appears next to the lexical verb and marks the agreement for that verb, as shown in examples (23a) and (24). *AUX* frequently occurs with plain verbs and serves to express (spatial) agreement that the verb itself cannot inflect to show due to its phonological limitations. In some sign languages, such as GSL and NS, *AUX* can accompany only plain verbs or agreeing verbs that are uninflected for agreement, and double agreement (manifested on both the main verb and the auxiliary) is not possible, as exemplified by the ungrammatical NS sentence (23b), in which *AUX* appears together with the inflected agreeing verb *HIT*.

NS (adapted from Fischer 1996: 107)

(23) a. CHILD_x TEACHER_y LIKE *x*AUX_y
 'The child likes the teacher.'

b. *MOTHER FATHER *x*HIT_y *x*AUX_y

IPSL (adapted from Zeshan 2003a: 172)

(24) $\frac{\quad}{\quad} \text{q}$
 UNDERSTAND *x*AUX₁
 'Do you understand me?'

In contrast, some of the sign languages for which this auxiliary has been described do manifest double agreement by allowing the use of the AUX with inflected agreeing verbs, as shown in examples (25) and (26).²²

TSL (adapted from Smith 1990: 172)

- (25) $\frac{\text{top}}{\text{SEE MOVIE } \text{}_1\text{AUX}_x \text{ CHAO-CHIEN-MIN NOT-ALLOW}_x}$
 'I don't allow Chao Chien-min to see movies.'

LSA (adapted from Massone & Curiel 2004: 77)

- (26) $\frac{\text{q}}{\text{IX}_x \text{ SAY}_y \text{ }_x\text{AUX}_y \text{ WHAT}}$
 'What did you say to him/her?'

An interesting case is the behaviour of AUX in Libras: initially described as limited to appearing with plain verbs only (Quadros 1999), the distribution of AUX later turned out to be more complex, since it may appear with uninflected agreeing verbs in specific contexts (in ellipsis and verb focus structures), and with inflected verbs if the verb is backwards (Quadros & Quer 2008). Thus, example (27a) is ungrammatical as it features AUX with an inflected prototypical verb (TAKE-CARE), whereas (27b) is fine since the inflected verb TAKE is backwards.

Libras (adapted from Quadros & Quer 2008: 546, 548)

- (27) a. $*\text{GRAMMA}_x \text{ GRAMPA}_y \text{ }_x\text{AUX}_y \text{ }_x\text{TAKE-CARE}_y$
 b. $\text{CHILD}_x \text{ }_y\text{AUX}_x \text{ }_x\text{TAKE}$
 'Pick up the child!' (locus *y* is the position of the addressee)

The AUX element appears to be a pure verbal auxiliary in sign languages, largely due to the fact that it only functions to spell out subject and object agreement, but also because it is derived from pronominal or indexical forms and as such has minimal semantic import. The following two sections look at auxiliaries derived from lexical items (verbs and nominals, respectively) that

²² In both examples the main verb inflects for object only but this is most likely due to specific characteristics of each example. In (25) the subject is first person and so may not be explicitly marked or may be topic licensed by a null topic (other than the overt topic in the sentence). Alternatively, the verb NOT-ALLOW may be a verb which shows single argument agreement in TSL. In (26) the phonological specification of the initial location of the agreeing verb SAY bars it from showing subject agreement (see section 3.2.1.3). However, this does not take away from the fact that agreement can occur on both the main verb and the auxiliary.

have undergone a process of semantic bleaching to become functional elements.

3.3.2. *Auxiliaries derived from lexical verbs*

Cross-linguistically, a common source for auxiliary verbs is lexical verbs, as exemplified by the use of “going to” in English to express certain future meanings. This grammaticalization path also exists in sign languages. For some sign languages it has, for instance, been reported that the lexical verb FINISH may be used as a perfective marker, as occurs in ASL and BSL (Fischer & Gough 1972/1999; Sutton-Spence & Woll 1999). Additionally, some of these verbs mark agreement, and when they grammaticalize into an auxiliary, they continue to mark agreement. Indeed, for some of the resulting auxiliaries, marking agreement seems to be their only function. The degree of semantic bleaching differs from case to case: some auxiliaries lose all semantic content, whereas others maintain some meaning and act more like light verbs or part of a serial verb construction. Equally, the same verb may grammaticalize into quite different types of auxiliaries in different languages. This occurs with the verb GIVE, which has given rise to two very distinct auxiliaries in Flemish Sign Language (VGT), on the one hand, and GSL, LSC and ISL, on the other. Other lexical verbs that have given rise to auxiliaries in sign languages are SEE, MEET and GO, and each will be described in turn in this section.

An auxiliary that marks agreement in VGT has been described by Van Herreweghe & Vermeerbergen (Vermeerbergen 1996; Van Herreweghe & Vermeerbergen 2004; Van Herreweghe 2010). In form the auxiliary (which is glossed as GIVE-AUX) is similar to the lexical verb GIVE and appears together with a main verb in semantically reversible sentences in which the subject and object could feasibly be interchanged, as in example (28). The movement path of the auxiliary is towards the location associated with the object (MAN).²³ Although in this example GIVE-AUX appears spatially inflected for agreement, it more commonly appears uninflected and it always directly precedes the object/recipient. Consequently, sign order rather than spatial marking is more relevant, and this has led Van Herreweghe (2010) to claim that the auxiliary has grammaticalized into a preposition functioning as a recipient marker. Of interest in (28) is the fact that the inflected auxiliary appears together with an inflected agreeing verb (_xSHOOT_y), apparently making it redundant. However,

²³ The auxiliary starts at the location associated with the first person. There may be various reasons for this. The subject (RABBIT) was located at a central position in the signing space which is close to the location associated with the first person, i.e. the signer’s chest. Alternatively, the first person may be a default value for the subject of this auxiliary. Finally, there may be some interaction with role shift which has not been annotated in the glosses.

the anomalous meaning of the sentence (rabbits do not normally shoot men) suggests that the auxiliary is clarifying or emphasizing who is doing what to whom, or the “direction” of the action.

VGT (adapted from Devriendt 2009: 88)

- (28) IX_x RABBIT₁ GIVE-AUX_y MAN₂ xSHOOT_y
 ‘The rabbit shoots the man.’

The lexical verb GIVE has taken on a different function in other sign languages, namely GSL (Sapountzaki 2005, 2012), LSC (Quer & Frigola 2006, cited in Steinbach & Pfau 2007: 320) and ISL (Meir 1998b: 260-261). In these languages, the auxiliary appears with psych verbs or with predicates that describe mental or emotional states, and follows the scheme ‘X causes a psychological state in Y’ where X is the subject and Y the object marked on the auxiliary, as exemplified in (29)-(31). The examples show two characteristics of the GIVE-AUX in all three languages. Firstly, the auxiliary tends to appear with a first person argument in the object position, as is the case in both (29) and (30). Non first person objects may occur, as can be seen in the ISL example (31), but third person subject and object combinations are excluded in LSC. This distinguishes the auxiliary from the corresponding main lexical verb GIVE since its use is much more restricted. Secondly, the auxiliary does not necessarily occur with a main verb, but may appear with an adjective-like element, such as NERVOUS in (30). However, adjectives in sign languages are typically predicative in nature, and may have verbal characteristics, such as the ability to inflect for aspect (Klima & Bellugi, 1979), as hinted at by the gloss GET-OVERWHELMED in (29). Nevertheless, the fact that the auxiliary is not completely devoid of semantic content and includes a causative meaning (specific to psychological states) suggests that this element in GSL, LSC and ISL may be more akin to a light verb rather than a pure auxiliary.

GSL (adapted from Sapountzaki 2002: 213)



- (29) DEAF IN-GROUP_x SIGN-TOO-MUCH₁ xGIVE-AUX₁ GET-OVERWHELMED
 ‘Deaf who are too talkative make me bored and overwhelmed.’

LSC (adapted from Quer & Frigola 2006, cited in Steinbach & Pfau 2007: 320)

- (30) EXAM_x GIVE-AUX₁ NERVOUS
 ‘The exam makes me nervous.’

ISL (adapted from Meir 1998b: 261)

- (31) ₁GIVE-AUX₂ SURPRISE
 'I surprised him.'

TSL, in addition to the indexical auxiliary described in the previous section, has two other auxiliaries, each of which has the same form as (and thus appears to have grammaticalized from) the lexical verb SEE and MEET (Smith 1990). The auxiliary derived from SEE, glossed as AUX2, is a one-handed form that moves from the location associated with the subject to that associated with the object, as can be seen in example (32a). The MEET-based auxiliary, glossed as AUX11, is a two-handed form, with the dominant hand moving from the subject locus towards the non-dominant hand at the object locus, shown in (32b). As this sign is derived from a classifier construction, the handshape of each hand may be modified to mark (human) gender (male humans are represented by the  handshape and female humans by  in TSL) or number (limited to one, two, three, four and many, each with a different handshape). The dominant hand corresponds to the subject and the non-dominant hand to the object. Of interest with respect to the issue of semantic conditions on agreement in sign language mentioned above in section 3.2.1.3, example (32b) shows agreement with an inanimate object (VEGETABLE), providing further evidence that agreement in some sign languages is not restricted to [+animate] arguments. Smith (1990) reports that the three auxiliaries in TSL are syntactically and morphologically similar, and that the indexical AUX is the most frequently used, tending to occur with verbs with the common semantic notion of recognition (such as KNOW or REMEMBER). Moreover, when an auxiliary is present it is unusual for the main verb to mark agreement.

TSL (adapted from Smith 1990: 220, 222)²⁴

- (32) a. THAT FEMALE xAUX2₁ LIKE
 'That woman likes me.'
- _____ ^{top}
- b. THAT VEGETABLE IX₁ ₁AUX11_x NOT-LIKE
 'I don't like that dish.'

²⁴ It is possible that the sign glossed as THAT in both these examples is a spatially oriented indexical (i.e. a point) marking the locus associated with associated referent (the object VEGETABLE and the subject FEMALE, respectively) but no such indications are given in the original glosses or text.

The last instance of an agreement auxiliary derived from a lexical verb is the case of ACT-ON in NGT (Bos 1994). The auxiliary is manually similar to the verb GO-TO, using the bent extended index finger to move from the location associated with the subject to that of the object. As shown in example (33), the auxiliary tends to appear with uninflected verbs, although ACT-ON may appear with a main verb marked for agreement (Steinbach & Pfau 2007: 317). The fact that the handshape is so similar to the extended index finger used for indexical/pronominal reference could suggest that this auxiliary is of the indexical type described in the previous section. However, the orientation of the hand suggests otherwise: the finger is not oriented towards (i.e. does not point at) the subject locus at the beginning of the sign but faces the object locus throughout its entire articulation. This speaks against considering ACT-ON as derived from concatenated points or pronominals. Additionally, ACT-ON may mark only one argument, in which case the subject argument is omitted (Bos 1994: 40), similar to agreement marker omission described for agreeing verbs (Padden 1983/1988).

NGT (adapted from Bos 1994: 39)

- (33) $\frac{\text{top}}{\text{IX}_1 \text{ PARTNER } \text{IX}_x \text{ LOVE } \text{xACT-ON}_1}$
 'My boyfriend loves me.'

This section has described auxiliaries derived from lexical verbs in different sign languages. Of the five auxiliaries identified, four (GIVE-AUX in VGT; AUX2 and AUX11 in TSL; and ACT-ON in NGT) appear to be general agreement auxiliaries, whose main function is to mark agreement by the movement traced by the sign, although the VGT auxiliary may have further grammaticalized into an (inflectionless) marker. None of these auxiliaries have lexical meaning (despite their similarity in form to corresponding lexical verbs) and inflect spatially to show agreement with the verb's arguments, especially when spatial agreement is not possible on the main verb itself. In contrast, the GIVE-AUX forms in GSL, LSC and ISL retain some semantic import (i.e. causativity) and appear to behave more like light verbs. Although the forms inflect spatially to mark agreement, they are not agreement auxiliaries proper but auxiliary verbs that (happen to) agree.

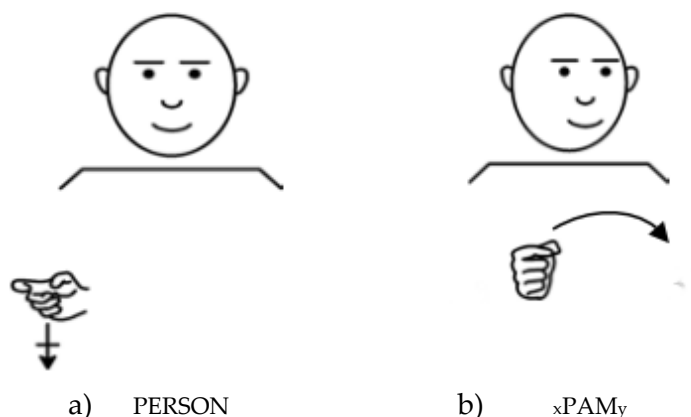
3.3.3. PAM

Another type of agreement auxiliary has been identified for German Sign Language (DGS, Rathmann 2000) (and subsequently for LSC by Quer & Frigola 2006, cited in Steinbach & Pfau 2007: 323). The auxiliary, glossed as PAM (person agreement marker), is similar in form to the lexical sign PERSON,

but its movement is modified slightly: while the nominal PERSON involves a downward movement alone, PAM moves in the horizontal plane from one point to another. This difference can be seen in (34).

DGS (adapted from Pfau & Steinbach 2006a: 32. Images reproduced with kind permission from the authors.)

(34)



This movement described by PAM is what achieves the marking of agreement. The sign starts at the locus associated with the subject and moves towards the locus associated with the object. The auxiliary appears with adjectival predicates (35a) and verbs, which may or may not bear agreement (contrast 35b and c).

DGS (adapted from Steinbach & Pfau 2007: 322-3)

(35) a. IX₁ POSS₁ BROTHER IX_x PROUD ₁PAM_x
 'I am proud of my brother.'

b. MOTHER IX_x NEIGHBOUR NEW IX_y LIKE _xPAM_y
 '(My) mother likes the new neighbour.'

c. IX₁ SON IX_x PROBLEM ₁EXPLAIN_x ₁PAM_x
 'I explain the problem to my son.'

As can be seen in the examples in (35), the arguments taken by PAM are limited to [+human] referents, an unsurprising restriction given that the auxiliary is derived from the sign PERSON. At the same time, this demonstrates that the auxiliary has not been completely bleached of its original semantic content, and it could be expected that further grammaticalization could convert PAM into a general marker of agreement that can be used for any type of argument. (For a syntactic account of the grammaticalization of PERSON into PAM in DGS, see Pfau & Steinbach 2013.)

Similar semantic restrictions apply to the PAM-like auxiliary described for LSC, and further morphosyntactic constraints apply in this case: the subject position must be first or second person (Quer & Frigola 2006, cited in Steinbach & Pfau 2007: 323). No such restriction applies in DGS, as can be seen in (35b).

Another functional element derived from the nominal PERSON has also been identified for Israeli Sign Language (ISL), glossed as PRO_[bC] (Meir 2003; 'bC' referring to the hand configuration, the 'babyC'). The element appears in situations similar to those reported for DGS: with adjectival predicates (36a); with uninflected verbs and third person subject (36b); and with inflected verbs (36c).

ISL (adapted from Meir 2003: 112, 115, 123)

- (36) a. IX₁ BE-IMPRESSED PRO_{[bC]x}
'I'm impressed with him.'
- b. TEACHER POSS₁ RECOMMEND PRO_{[bC]H} ROLE MAIN
'My teacher recommended me for the main role.'
- c. IX₁ SHOW-AFFECTION-TO PRO_{[bC]x}
'I showed affection towards him.'

This similarity in the distribution of the ISL form and the DGS/LSC auxiliaries could suggest that PRO_[bC] is also an agreement auxiliary but it differs from PAM in an important aspect: PRO_[bC] marks only one argument. Rather than move horizontally from one locus to another, as is the case for PAM, PRO_[bC] is articulated at a single locus. In this sense, it is much more similar in form to the original nominal sign PERSON, which may also be localized and appear at different locations in the signing space (Pfau & Steinbach 2013). However, Meir shows that despite the similarities in form, the distribution, meaning and function of PRO_[bC] and PERSON in ISL are very different (Meir 2003: 113-117). Given the notion of single argument agreement described in section 3.2.3, one possibility would be to treat the PRO_[bC] as an agreement auxiliary marking single argument agreement. However, Meir limits verbal agreement to agreement with two arguments, and so does not treat this form as a manifestation of agreement. Instead, she analyses PRO_[bC] as a case-marked pronoun based on two observations. Firstly, the PRO_[bC] element cannot co-occur with a co-referential NP in the same clause, as shown in (37), giving a strong indication that it is pronominal in nature; in contrast, the agreement auxiliaries described above commonly co-occur with NPs or pronominal

forms co-referential with the arguments agreed with (such as examples (23a), (25), (26), (27b), (28), (32) and (35)).

ISL (adapted from Meir 2003: 122)

(37) *IX₁ BE-IMPRESSED PRO_[bC]x STUDENT IX_x

Secondly, the verbs that can appear with PRO_[bC] have specific semantic properties since they require a [+human] subject and object, and frequently involve negative effect for the object (such as 'hate', 'pity', 'insult' or 'gossip about'). This leads Meir to draw parallels with spoken languages such as Hebrew or Latin in which several semantic characteristics are encoded by the same marker. Thus, Meir considers PRO_[bC] in ISL to be not an agreement marker but a case-marked pronoun. Additionally, PRO_[bC] tends to cliticize onto the verb, although sometimes intervening material may separate them; Meir (2003: 116) concludes that "PRO_[bC] seems to be in the process of becoming a bound morpheme, but has not yet reached the final stage of this process." If the pronoun analysis is right, it may be that this element is on the way to becoming an agreement marker, since, as we saw in section 2.2.3.3, a common grammaticalization path is pronoun > pronominal affix > agreement marker.

3.3.4. *Issue arising: what agreement auxiliaries tell us about agreement*

This section has looked at the various verbal auxiliary elements of diverse origins that have been described for a variety of sign languages. Those that act like a pure auxiliary, namely AUX, AUX2, AUX11, GIVE-AUX (in VGT), ACT-ON and PAM, seem to have the main function of carrying markers of agreement. This contrasts with verbal auxiliaries in spoken languages, which normally mark tense, aspect and mood. I now turn attention to three different aspects of these agreement auxiliaries in sign languages: the division of labour between the lexical verb and the auxiliary; the interaction between agreement auxiliaries and backwards verbs; and the tendency for auxiliaries to be marked for two arguments.

The taxonomy of auxiliary verbs (presented in section 2.2.3.1) based on how inflectional information is shared between the lexical and the auxiliary verb provides a means of characterizing these auxiliary elements. The auxiliaries described above move from the subject locus to the object locus and thus mark the agreement relationship of the lexical verb that they accompany. Frequently, the auxiliary appears precisely because the lexical verb cannot inflect for agreement itself, as is the case of plain verbs. In some sign languages, such as GSL or NS, if the auxiliary is present, no other agreement marking may appear. Yet, the lexical verb may inflect for aspect, which means that each element carries different inflectional information, and

these auxiliary verb constructions thus fall into the split type. In many sign languages, however, double agreement is possible, when the auxiliary appears with an agreeing verb inflected for agreement. It has frequently been pointed out that such double agreement achieves a sense of emphasis, similar to the emphatic function of the auxiliary *do* in English (Steinbach & Pfau 2007).

In addition to double agreement, some languages show double/split agreement. This pattern occurs when some markings are repeated on both the lexical and the auxiliary verb but one of the two carries more information than the other. This is attested for DGS, which may show agreement and aspectual marking on the lexical verb and agreement marking on PAM (Steinbach & Pfau 2007: 330). Conversely, in LSC, while both elements mark agreement, aspect may be marked on the auxiliary instead of on the main verb.²⁵ This marking of aspect on the auxiliary is relatively unusual (and has only been reported for AUX in LSC and GIVE-AUX in GSL) and is perhaps an indication that these verbs have more lexical weight and are more like light verbs rather than pure auxiliaries (Steinbach & Pfau 2007; Quadros & Quer 2008: 546fn).

The behaviour of auxiliaries when they accompany backwards verbs is of great relevance to the question of verbal agreement in sign languages and the interaction of auxiliaries with backwards verbs has been used to weigh in on the debate about how to characterize agreement (Steinbach 2011). Recall from section 3.2.2 that Meir's (1998b, 2002) analysis takes movement as the manifestation of agreement, whether this be in a prototypical or backwards verb, and that this agreement actually occurs on a specific predicate (DIR) that expresses motion (from SOURCE to GOAL). Firstly, the existence of agreement auxiliaries at all is somewhat problematic for Meir's account since agreement is restricted to the DIR predicate that fuses with the lexical verb. Given that Meir's analysis is for ISL and no auxiliary has been reported for ISL, this criticism cannot be charged against her analysis. However, it does critically affect the applicability of the model to other sign languages. Any attempt to allow DIR to appear autonomously (i.e. as an auxiliary) would predict that the direction of the movement would be from SOURCE to GOAL, i.e. in the same direction as the movement of the lexical verb. However, in languages such as Libras and LSC, which allow the auxiliary to appear with (backwards) agreeing verbs, the auxiliary moves in the opposite direction to

²⁵ A matter for further investigation is how different categories of information are distributed in auxiliary constructions: while many languages mark agreement doubly, it seems that aspect can appear on only one element.

that displayed by the backwards verb. Movement is from GOAL to SOURCE, or, in syntactic terms, from subject to object. This is shown for LSC in (38).

LSC (Quer 2011: 193)

(38) IX_x IX_y xAUX_y yTAKE_x
'She picked him up.'

Whatever AUX is doing, it is not merely copying the movement trajectory of the lexical verb, at least in the case of backwards verbs. This leads Quadros & Quer (2008) to treat backwards verbs separately, and they suggest that they are better considered as handling verbs that show locative agreement with their THEME object argument. Thus, prototypical agreeing verbs (and AUX) show agreement with arguments bearing person features, while spatial and backwards verbs show agreement with arguments bearing locative features. Ultimately, Quadros & Quer aspire to show that the agreement process is the same, but the type of argument is different. In many cases a given argument bears both types of features, and this explains why the distinction between spatial and agreeing verbs is so blurred, and why it is often difficult to categorize verbs when faced with real data, as mentioned above in section 3.2.1.4.

Finally, all the auxiliaries described here are two-place auxiliaries that show directional agreement of the type displayed by prototypical agreeing verbs. If we are to consider single argument agreement, as described in section 3.2.3, as a candidate for agreement, could we expect a corollary in the form of a one-place agreement auxiliary? Since such a form would "point out" a single R-locus, it seems apparent that it would be indistinguishable from a pronominal form. Indeed, the ISL form derived from the nominal PERSON is treated as a (case marking) pronoun rather than as an auxiliary. We return to the possibility of a one-place agreement auxiliary when examining the data for LSE (in section 5.3.3).

Auxiliaries provide a means external to the lexical verb of marking agreement in the signing space. The next section looks at another alternative mechanism for signalling spatial relations in the signing space: non-manual elements.

3.4. Non-manual agreement

Sign languages are not limited to the hands and, as was mentioned in section 1.1.1, non-manual markers play an important role at many linguistic levels (Pfau & Quer 2010). A non-manual feature, such as eye gaze or raised eyebrows, may be phonologically contrastive and lexically-specified; it may

operate as an adverbial morpheme, or may serve syntactic or discursive functions (see section 1.1.1 for details and examples). Given the importance of non-manual features, it is valid to ask whether they play a role in verbal agreement. We saw in section 3.1 that the pronominal reference mechanism, based on the association of referents with loci in the signing space, may make use of directional non-manual elements, such as head tilt and eye gaze, to signal loci. Since the verbal agreement mechanism described in the two previous sections relies on the same use of loci in space, it seems likely that such directional non-manuals also form part of the manifestation of verbal agreement in sign languages. Indeed, such a claim has been made for ASL (Bahan 1996). Additionally, as explained in section 3.1.2, role shift may be marked by non-manual elements, such as body tilt, head tilt and eye gaze. In the light of analyses that suggest that role shift should be considered a type of agreement relationship, this too is considered as a case of non-manual agreement.

Section 3.4.1 sets out the proposal for non-manual agreement in ASL by Bahan (1996), and includes background for the position developed by the Boston group regarding the role of non-manual features with respect to functional heads in the syntactic structure, central to Bahan's claims for non-manual agreement marking. Follow up studies tested this proposal empirically using eye-tracking data for both ASL and, in a smaller study, DGS, and this section also describes the outcome of this work. Section 3.4.2 examines verbal agreement in the context of role shift, and whether it is feasible to consider that the non-manual markers associated with role shift licence agreement. Finally, a summary is given in section 3.4.3 together with a discussion of the possible interaction and overlap between the two types of non-manual agreement described here.

3.4.1. Head tilt and eye gaze as markers of subject and object agreement

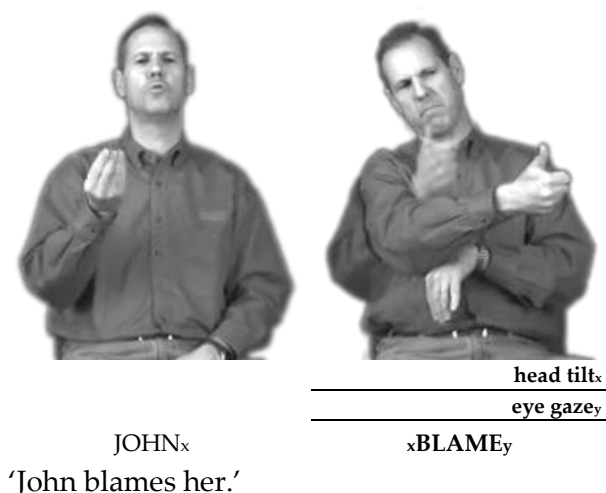
Based on work looking at the behaviour of negation and *wh*-questions, the Boston group (summarized in Neidle, Kegl, MacLaughlin, Bahan & Lee 2000) claims that the syntactic features of [neg] and [wh], present in the head of the corresponding projections in the syntactic structure, are explicitly realized non-manually (in ASL as a head shake in the case of negation, and as a brow lowering in the case of *wh*-questions). Support for this characterization of non-manual behaviour comes from the timing and scope of such non-manual elements: the intensity of the non-manual marking is greatest at the node associated with the feature in question; and if the non-manual marking spreads over the sentence, the extent of the spreading is conditioned by the c-command domain of the syntactic head that hosts the feature.

Bahan (1996) extends this characterization of syntactic features realized non-manually to the φ -features present in agreement: the head tilt and eye gaze that occur with verbs are a realization of the features present in the AgrS and AgrO heads, respectively. Thus, head tilt is towards the locus associated with the subject argument and eye gaze is towards the locus associated with the object argument. This non-manual marking can be seen in the production of the ASL agreeing verb BLAME, shown in (39a): the verb involves movement from the subject locus to the object locus, while the head tilt is towards the subject locus and the eye gaze is towards the object locus.

Importantly for Bahan's account, this type of non-manual behaviour also occurs with plain verbs. In (39b), the verb LOVE does not inflect to show agreement with either subject or object, and yet the head tilt towards the subject location and the eye gaze towards the object location are still present. As such, these non-manual markers do not depend upon the presence of manual agreement marking on the verb (namely, the spatial inflections of agreeing verbs), and represent an independent aspect of the agreement process. Although this non-manual marking is not always present, Bahan suggests that it is a correlate of the φ -features that take part in the syntactic process of agreement, regardless of the type of verb.

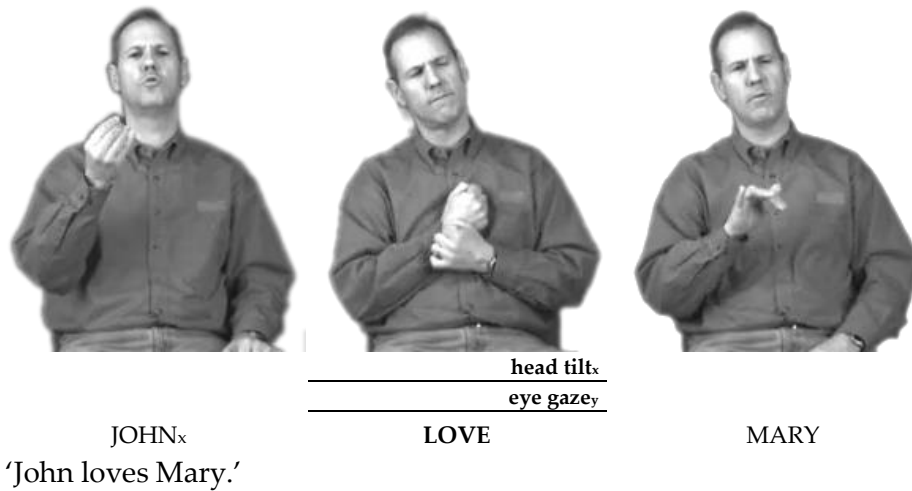
ASL (NCSLGR Corpus)²⁶

(39) a.



²⁶ Images taken from The National Center for Sign Language and Gesture Resources (NCSLGR) Corpus (Neidle & Vogler 2012), available at the following websites: <http://www.bu.edu/asllrp> and <http://secrets.rutgers.edu/dai/queryPages/>.

b.



Additionally, the relative order of these projections in the syntactic structure (AgrSP higher than AgrOP) is corroborated by the order in which the two types of manual marker appear: according to Bahan, careful examination of the data reveals that head tilt commences slightly prior to eye gaze. In the case of intransitive verbs, agreement may also take place, and may be marked by head tilt, eye gaze or both, since there is just one argument, as shown in (40).

ASL (Bahan 1996: 196)

- (40) a. head tilt_x
 ELLY_x FAINT
 'Elly is fainting.'
- b. eye gaze_x
 ELLY_x FAINT
 'Elly is fainting.'
- c. head tilt_x
eye gaze_x
 ELLY_x FAINT
 'Elly is fainting.'

While Bahan's analysis of non-manual behaviour associated with verbal agreement opened up an important dimension of the phenomenon and underlined the importance of paying greater attention to articulatory cues, there are various problems with the analysis. Firstly, the proposal is based on a syntactic model that has since been superseded: as we saw in section 2.3.3, minimalist syntax has done away with the AgrS and AgrO projections as unnecessary theoretical clutter. This requires re-examining the evidence from the distribution of non-manual marking as a reflection of the underlying syntactic structure. Although it might be possible to revise the proposal to

comply with minimalist requirements, the very reason that agreement projections were abandoned presents a fundamental problem for characterizing these non-manual markers as the φ -features hosted on functional heads: Agr projections (and the features they contain) are uninterpretable.²⁷

Even if the features are no longer hosted on a specific agreement projection, but on some other (core) functional head (such as T and *v*, as outlined in section 2.3.3), these features are unvalued. For this reason the head acts as a probe in the agreement process to find a goal with interpretable features whose values can be assigned to the probe's features. Once the probe's features have been valued, they are marked for deletion since they are still uninterpretable. The deletion does not occur until Spell-Out as the PF needs the information about the valued (but uninterpretable) features in order to provide the correct form of the agreeing element. Thus, the Boston group's claim that the non-manual behaviour is a *direct and independent* manifestation of the φ -features on the functional head seems to bypass the agreement process and the need for such uninterpretable features to be valued. On the contrary, these non-manual markers may be considered part of the morphophonological response to a given set of φ -feature values once the agreement process has taken place, along with any manual inflection of the verb. As such, non-manual marking is no more a "direct" reflex of the syntactic agreement process than manual inflection is.

In addition to this conceptual criticism of Bahan's claim, eye tracking work looking at eye gaze behaviour during the production of ASL verbs has provided counterevidence to the model. Thompson, Emmorey & Kluender (2006) analysed eye gaze behaviour with different types of ASL verbs and found that while eye gaze accompanying inflected agreeing verbs was generally directed at the locus associated with the object (over 70% of the time), this was not the case with plain verbs, for which eye gaze was rarely towards the object locus (only around 10% of the time). If, as the Boston group claims, non-manual marking shows evidence of an agreement mechanism that is part of the syntactic structure of ASL regardless of whether the verb can manually inflect for agreement, the proportion of object marking with eye gaze should be similarly high for plain verbs as for agreeing verbs. The data do not show this to be the case. A smaller study on eye gaze behaviour in DGS (Hosemann 2010) came up with more mixed results and greater

²⁷ Note that this is not the case for [neg] and [wh] features, which do contribute to the interpretation of the sentence, indicating that the Boston group's insight into other types of non-manual marking as syntactic features may hold true.

intersigner variability, but again failed to support the Boston group's model since eye gaze did not consistently mark agreement for different types of verbs. An alternative analysis in line with these data is that the non-manual marking is an additional facet of the agreement process (and thus forms a circumfix together with the manual marking) rather than an independent (and direct) manifestation of the ϕ -features (Thompson et al. 2006). Another option would be to consider the manual and non-manual marking separate manifestations of the agreement marking, and thus a case of multiple exponence as described in section 2.2.3.3.

Thompson and colleagues also noted that eye gaze with backwards agreeing verbs tended to be directed at the object location (and not the semantic GOAL), indicating that the non-manual behaviour is driven by syntactic (rather than semantic) considerations. The study also included spatial verbs and found that eye gaze was generally directed toward the locative argument in a similar proportion to eye gaze with agreeing verbs. This leads the authors of the study to provide a unified account of agreement for both spatial and agreeing verbs (the type of argument that is marked depends on an agreement hierarchy). Once more, we see that whenever space is used for reference, similar mechanisms come into play; in this instance the use of eye gaze is comparable for both agreeing and spatial verbs. Furthermore, in the context of intransitive spatial verbs, in which there is just one argument, eye gaze is directed toward the locus of that argument (Thompson et al. 2006). This provides further support for the idea presented in section 3.2.3 that agreement may occur with a single argument and does not need to be limited to transitive predicates.

This section has looked at the proposal that agreement may be marked non-manually, by eye gaze and head tilt. Although the original strong claims made by the Boston group are conceptually flawed and do not stand up against empirical data, the few studies to date provide evidence of non-manual marking of verbal arguments in sign languages. Non-manual behaviour is certainly relevant for agreement in sign languages, and must be taken into account when examining agreement-like phenomena. In section 5.5, I look at the possible role of non-manual marking in LSE agreement. The next section looks at non-manual agreement in the context of role shift.

3.4.2. *Non-manual agreement in role shift*

The mechanism of role shift, introduced in section 3.1.2, involves shifts in the referential system. Example (41) shows how both pronominal reference, IX_1 , and verbal agreement, ${}_1NURSE_x$, may take on first person forms, yet refer to a third person referent ('grandmother') in Belgian French Sign Language

(LSFB). Furthermore, the role shift is marked by a non-manual marker, in this case by a blink (and possibly also manual elements, such as the IX₁ pronominal form). What mechanism makes it possible to resolve the seeming inconsistencies in referent tracking during role shift, and what is the role of the non-manual marking in this process?

LSFB (adapted from Meurant 2008: 5)

- (41) $\frac{\text{gaze}_x}{\text{GRANDMOTHER IX}_x}$ $\frac{\text{GRANDFATHER SICK IX}_1}{\text{blink}}$ $\frac{\text{1NURSE}_x}{\text{gaze}_x}$
 ‘Grandmother nurses Grandfather, who is sick.’

Lillo-Martin (1995) analyses role shift as a point of view predicate that binds pronominal reference within its scope, similar to the way in which logophoric pronouns are triggered by certain complementizers in some spoken languages such as Ewe (Niger-Congo). This analysis formulates the relationship between the pronoun and its coreferential antecedent in terms of a syntactic configuration. Although antecedent-pronoun agreement is often relegated to the realm of semantic agreement since the pronoun must be free or unbound in its domain (see section 2.2.3.2), the case of role shift involves limiting the possible referents of the pronoun by means of a governing predicate that is co-indexed with the matrix subject. Furthermore, Quer (2005) proposes a model of role shift in terms of an operator (over contexts), thus creating an operator-variable relationship of the type shown in (42).

- (42) Every bishop_i believes he_i’s the snappiest dresser.

The relationship between a variable and the operator that binds it is agreement, although it is fundamentally different to the Agree relationship between a functional head and a DP controller since different syntactic conditions apply (Baker 2008: 122). However, in both cases, φ -features are matched. As such, role shift involves an agreement relationship that determines the interpretative properties of the role shift structure, and furthermore, the operator involved in this agreement relationship is expressed non-manually through eye gaze and head/body turns, as described in section 3.1.2. Recent analyses have characterized role shift as an agreement process (Herrmann & Steinbach 2012).²⁸ As such, the non-manual markers of role shift represent an instance of non-manual marking of an agreement process.

²⁸ This characterization of role shift as involving some sort of checking relationship seems to be captured in the concept of role prominence marker (Shepard-Kegl 1986), which marks the person from whose perspective an event is viewed and involves the signer shifting her body in the direction of a referent’s locus in order to indicate the most highly role-prominent

3.4.3. Summary

This section has looked at the role of non-manual markers in verbal agreement in sign languages. Since argument marking on sign language verbs makes use of the signing space, directional non-manuals, which can point out locations in space, could play a role in the process. Specifically for ASL, the Boston group claimed that head tilt and eye gaze play a fundamental role in the agreement process and are a direct manifestation of the syntactic features involved in agreement (Neidle et al. 2000). Although the proposal has its shortcomings, and data looking specifically at eye gaze behaviour do not support the claims it makes, it does seem to be the case that eye gaze is part of the argument marking process for sign language verbs.

A second domain in which non-manual markers interact with agreement is in the context of role shift. Not only do agreeing verbs (and any associated non-manual activity) undergo shifting reference – especially in the case of first person arguments – but the role shift mechanism itself can be characterized as an agreement relationship in terms of an operator-variable relationship.

It should be pointed out that the two mechanisms described here share some non-manual markers, particularly head tilt/turn and eye gaze. Consequently, (non-manual) agreement and role shift may not be two independent processes but rather form part of a larger continuum. Generally, role shift is taken to be a discourse level phenomenon (with perseveration of the associated non-manual features over several sentences), whereas agreement is taken to operate within a single clause. However, the analysis of role shift in terms of a syntactic operator brings the two mechanisms into the same domain, and suggests that they may have common properties.

Finally, without denying the valuable insight that non-manual behaviour can provide, a caveat must be made. Non-manual markers have multiple functions and are particularly important for prosody and for expressing emotion. At any given moment, various functions may compete for a specific articulator (such as the eyebrows) and it is not clear how these conflicts are resolved. This may go some way to explaining why it is difficult to find obligatory non-manual marking. As we shall see when examining the role of non-manual marking in LSE (section 5.5), the data suggest that directional markers, such as eye gaze and head tilts, may play a role, but it is

argument in a sentence. Although role prominence marking is implemented as a clitic (and not as syntactic agreement), the underlying motivation is also to account for the expression and linking of spatial reference by means of non-manual marking.

difficult to draw hard and fast conclusions given the multiple functions assumed by non-manuals.

The next section examines agreement in a different domain, the DP, for which parallels have been drawn with the verbal domain.

3.5. DP-internal agreement

Agreement is not limited to the verbal domain: we saw in section 2.2.3 that elements other than verbs may be the targets of agreement. The spoken language data show that adjectives, numerals, quantifiers, adpositions and nouns may be marked for agreement, and many of these elements belong to the nominal domain. Although the study of agreement is often limited to verbal agreement (and contrasted with “concord” in the nominal domain), in this thesis I consider other types of agreement for two reasons, as explained in the introductory chapter. Firstly, I am interested in looking at how space is used in LSE as a referential device and its inclusion in possible agreement mechanisms: as we shall see in chapter 5, spatial locations do not appear exclusively on verbs and if I fail to take these other manifestations into account, I run the risk of missing the bigger picture and failing to make useful generalizations. Secondly, in the search for generalizations, I wish to provide a unified account of agreement, along the lines of Baker’s (2008) proposal for agreement as a general process that operates on verbs, adjectives, determiners, and so on. This section, then, looks at previous work on agreement within the nominal domain in sign languages.

Various aspects of the internal structure of the nominal phrase have been studied for several sign languages. Much of this work has followed the seminal study by Abney (1987) and subsequent work on spoken languages (Ritter 1991; Longobardi 1994, 2001), which established that just as the clausal domain is dominated by functional structure, so too is the nominal domain. In the clausal domain this functional structure – in the shape of projections such as TP and *v*P (mentioned in section 2.3.1) – provides the syntactic scaffolding for agreement to take place (as described in section 2.3.3). Thus, a parallel or similar functional structure in the nominal domain could act as a host for agreement between elements associated with the noun phrase. In this section I refer to the nominal domain as the determiner phrase, DP, following Abney’s (1987) observation that nominal elements are contained within a functional projection headed by a determiner (in much the same way that the verbal phrase is dominated by the functional CP projection).

Work on the nominal domain of sign languages has concentrated on three main areas: pluralisation (Wilbur 1987; Pizzuto & Corazza 1996; Pfau &

Steinbach 2006b; for a comprehensive overview see Steinbach 2012), the role of pointing (Zimmer & Patschke 1990; MacLaughlin 1997; Engberg-Pedersen 2003; Bertone 2007; Pfau 2011) and the internal structure of DP (MacLaughlin 1997; Bertone 2007; Zhang 2007; Brunelli 2011). (For a broad overview of the nominal domain in ASL, see Neidle & Nash (2012).) From the point of view of agreement, each of these topics is relevant. Plurality is of interest because number is one of the features that participate in agreement. Pointing is important because, as we have seen throughout this chapter, the use of spatial locations is widespread in the agreement-like phenomena attested for different sign languages. Finally, the internal structure of DP requires our attention because it gives us an idea of how different elements are related to each other, and how agreement, a specific type of structural relation, may be instantiated. This section addresses these issues by looking first at number agreement within the DP, and then turning to the use of spatial localization for different elements within the DP.

Across different sign languages, plurality on nouns is commonly marked by some form of reduplication (Pfau & Steinbach 2006b). This marking is often optional, and plurality may be marked by other means, such as a numeral, a quantifier or a classifier construction. If several elements within a DP mark plurality (cf. Spanish *esas personas ricas* ['those rich people'] with plural marking '-s' on every element), this provides evidence of number agreement. Pfau & Steinbach (2005) point out that for DGS, plurality is marked just once in a DP, and this has also been observed for other sign languages, such as ASL (Wilbur 1987). This means that there is no overt evidence for number agreement within the DP. This pattern also occurs in spoken languages, such as Basque (cf. *pertsona aberats horiek* ['those rich people'], in which the plural marker *-k* appears just once, on the final element). In contrast, other sign languages may show plural marking on multiple elements within a noun phrase, suggesting that DP-internal number agreement is possible. This is the case for LIS (Pizzuto & Corazza 1996). In section 5.6 we shall see that the LSE data suggest that the language patterns like DGS and ASL; however, careful examination of the data reveals that a combination of number marking strategies, including spatial classifier constructions, may provide evidence of optional number agreement internal to the DP.

The description of verbal agreement in sign languages in section 3.2 made evident that locations may play an important role in marking the arguments of a verb, and are a clear candidate for being considered a manifestation of agreement in these languages. By the same token, do we find location used in the nominal domain? We have already seen that nouns may

be associated with a location in the signing space through the process of location assignment (section 3.1.1) and this often occurs by means of a point. The status of pointing signs has been widely debated, with different grammatical functions ascribed to these elements. It is generally accepted that points may serve the purpose of pronominal reference (see Cormier 2012 for a review), but here we are interested in the combination of a pointing sign together with (rather than substituting for) a nominal. In work on ASL, MacLaughlin (1997) distinguishes between prenominal and postnominal points, and claims that the former are definite determiners, the latter adverbial modifiers. Furthermore, an agreement relationship may hold between the nominal and the determiner, as shown in (43), in which both the index and the nominal are associated with the same point in the signing space.²⁹

ASL (adapted from MacLaughlin 1997: 144)

- (43) IX₁ LIKE IX_x HOUSE_x
'I like the/that house.'

Additionally, MacLaughlin argues that non-manual markers provide further evidence that that DP-internal agreement takes place. Based on Bahan's (1996) work on non-manual marking of verbal agreement in ASL (described above in section 3.4.1), MacLaughlin claims that the same directional non-manual markers, namely head tilt and eye gaze, may also express agreement in the nominal domain.³⁰

A more fine-grained classification of pointing signs in LIS and NGT is offered by Brunelli (2011), who distinguishes between demonstrative, locative, possessive and nominal indices. This last category consists of location assigning indices, of the type described in section 3.1.1. The idea that location assigning indices have a special status, and possibly occupy a specific part of the syntactic structure will be taken up later in section 7.2.1 when considering how the location enters into the agreement process in LSE.

²⁹ Subsequent work has questioned this analysis of the index as a determiner, suggesting that it is actually a demonstrative (Abner 2012), but in either case the marking of location occurs on two elements within the DP.

³⁰ Again, it should be pointed out that more recent work has questioned much of MacLaughlin's analysis of the possessive marker in ASL as a DP-internal mechanism, which is central to her claims about much of the functional structure of DP, in favour of a predicative account for possession (Abner 2012). Nevertheless, the claims for the non-manual expression of agreement between an NP and other types of modifiers within the DP remain intact.

Brunelli's examination of the DP is much concerned with the ordering of different elements that make up the nominal domain, such as adjectives, demonstratives and numerals (for a similar examination of TSL, see Zhang 2007). In order to account for the different ordering possibilities for these elements in the two sign languages he looks at, Brunelli makes use of pied-piping, a movement mechanism that operates on a fixed underlying syntactic structure (based on Kayne's (1994) theory of antisymmetry). Of interest here, the movement is made possible by the existence of functional agreement projections that dominate each of the lexical projections (for demonstratives, numerals and adjectives) within the DP. Thus, the structure proposed to account for different orderings in the nominal domain may also provide the necessary structure to account for agreement between a noun and an adjective, as shown in (43) for ASL.

ASL (adapted from MacLaughlin 1997: 209)

- (44) SUE BUY IX_x BLUE_x CAR_x
 'Sue bought the/that blue car.'

To summarize, various proposals for the internal structure of the nominal domain in different sign languages contemplate the possibility of agreement between the noun and other elements in the DP, such as determiners, numerals and adjectives. These possibilities will be examined for the LSE data (section 5.6) and this will raise the question of what features are available to DP-internal agreement. For spoken languages, DP-internal agreement is typically restricted to number and gender (Baker 2008); the fact that sign languages can make use of location – often considered to be a manifestation of person – for agreement in the nominal domain will need to be accommodated in the model of agreement in LSE.

3.6. Summary

This chapter has provided an overview of work already carried out on the phenomenon known as agreement in sign languages. Findings from various sign languages have been looked at, as well as different theories that attempt to characterize this phenomenon.

The agreement mechanism involves spatial modification of the target, typically verbs, but other elements, such as nouns, adjectives and indexical points, may also be spatially modified. This use of space is based on an association between a referent and a locus, and different strategies may be employed to assign a location to a given referent. One such strategy is localization, which consists of producing a sign directly at a specific location

in the signing space. Location assignment effectively adds a formal feature to the controller and this feature (the locus) is then exploited as the marking in the agreement process (and also for anaphoric reference by the pronominal system). The locations used in this reference system are strongly indexical in nature, but cannot be treated as pure indices due to breakdowns in the one-to-one mapping and interpretative ambiguities that a logical indexical does not allow for. The notion of an R-locus, an overt manifestation of an abstract index, provides a useful means of characterizing this use of space, and will provide the starting point for the analysis of LSE agreement presented in this thesis (in chapters 6 and 7).

The most obvious, and widely studied, use of this spatial agreement mechanism occurs in a subset of verbs, known as agreeing verbs. The start and end points of an agreeing verb adopt the locations associated with the verb's arguments. In the case of prototypical agreeing verbs, the start point is at the subject locus and the end point the object locus; for backwards agreeing verbs this correspondence is inverted. This spatial modification has been characterized as an expression of person and number agreement between the verb and its arguments and contrasted with spatial verbs (which use space isomorphically) and plain verbs (which show no inflection to mark arguments) (Padden 1983/1988). Agreeing verbs of this type present unusual properties, mainly to do with restrictions on where and when agreement can occur. Agreement is restricted to transitive (and ditransitive) verbs and even then is highly optional: the subject agreement marker can be omitted, and often no agreement marking at all appears on the verb. Additionally, the appearance of agreement is conditioned by semantic restrictions on the arguments, which must be [+human] or [+animate], although there appears to be cross-linguistic variability on this matter and some sign languages show agreement with inanimate arguments.

The existence of backwards verbs is problematic for a syntactic account of agreeing verbs in terms of subject and object due to the inversion of the subject and object positions on these verbs with respect to prototypical agreeing verbs. Padden's solution is to state that the lexical entry of each verb specifies the marker alignment. An alternative analysis involves giving a semantic account of these agreeing verbs: for both prototypical and backwards agreeing verbs, the movement is from the SOURCE argument to the GOAL argument. However, this fails to account for argument marker omission, in which the subject marking is omitted regardless of whether the agreeing verb is prototypical or backwards.

Meir (1998b, 2002) provides a hybrid syntactic and semantic account for these agreeing verbs that posits a separate agreement morpheme (DIR) that is

responsible for the agreement marking. This morpheme fuses with the lexical verb, which denotes transfer and thus has a SOURCE and a GOAL argument. The question of which marker fills which slot in the verb is resolved by means of a semantic matching process: the agreeing verb's arguments line up with the SOURCE and GOAL slots on the DIR morpheme. This ensures that backwards verbs have the correct surface form, but maintains the notion of subject and object. However, Meir's reliance on semantic considerations makes her model difficult to apply to certain agreeing verbs that do not seem to include the semantic notion of transfer or do not have a GOAL argument but nevertheless manifest spatial agreement.

Additionally, Meir's account (or any other that focuses exclusively on directional agreeing verbs) cannot account for spatial agreement with a single argument. In section 3.2.3, I presented a use of spatial modification via localization that could be a case of the verb agreeing with a single argument. Although other very similar-looking instances of verbal localization do not qualify as (syntactic) agreement (but rather as some sort of pragmatic agreement), these two different functions can be distinguished. Thus, I propose to include this phenomenon in the analysis of spatial agreement in LSE, and in section 5.2.3, I provide a detailed description of this mechanism as based on the LSE data.

Various agreement auxiliaries have been described for a number of different (and typologically unrelated) sign languages. The most common, AUX, is derived from indexical points and moves from the subject locus to the object locus. This direction of movement is maintained even when AUX combines with a backward verb, which shows movement in the opposite direction. This provides further evidence that syntactic considerations are central to this spatial process that we are considering to be agreement. Other auxiliaries that mark agreement include elements derived from lexical verbs (such as GIVE, SEE or MEET) or from a nominal (PERSON). Note that all these auxiliaries are directional and thus mark agreement with two arguments, another reflection of the focus in the literature on (two-place) agreeing verbs. In addition to looking for evidence of this type of auxiliary in the LSE data, I also broaden the search to elements that use spatial marking to refer to a single argument, as a corollary of the single argument agreement process mentioned in the previous paragraph.

Non-manual agreement markers have been identified in several sign languages, based on the use or co-occurrence of eye gaze and head tilts to mark a verb's arguments. A detailed analysis has been proposed for ASL (Bahan 1996) based on a more general model concerning the role of non-manual markers as direct representations of syntactic functional features.

Although the analysis does not sit well with current ideas about how unvalued features are spelled out as a result of the agreement process, and subsequent empirical work has weakened some of the original claims, the work makes clear that non-manuals play a role in marking spatial agreement in sign languages. As well as the non-manual markers that accompany agreeing verbs, I also considered those that mark role shift. Since the referential shifts created by role shift can be characterized as an operator-variable relationship, and thus as some sort of agreement relationship, the non-manual markers involved are also a reflex of spatial agreement.

Agreement is typically considered to belong to the verbal domain, but similar processes occur in other contexts. In spoken languages this is most clearly seen in the agreement between a noun and its adjectives, determiners, and so on. An examination of the nominal domain in sign languages shows that space is also used in this context to associate determiners, numerals and adjectives with nouns. The nominal domain will prove useful not only to look at spatial agreement beyond the verbal domain but also to provide details of how this spatial mechanism is implemented: returning to the beginning of this chapter, location assignment is achieved by associating a nominal with a locus, and the analysis developed in section 7.2.1 will show that it is precisely in the DP that this takes place.

This chapter concludes the theoretical and empirical background for this study. Chapter 2 looked at different frameworks for characterizing agreement in spoken languages, and at the breadth of the phenomenon across the world's languages. In this chapter, we have done the same based on the sign language literature. The following chapters lay out the contributions that LSE can provide to this field, starting with a description of the methodology used.

4. Methodology

The difficulties and pitfalls of collecting sign language data are well known in the field and have been documented (see, for example, Neidle et al. 2000: ch. 2). Most complications arise as a result of the sociolinguistic properties of signed languages. As was described for LSE in section 1.4.2, sign languages tend to be minority, non-standardized languages with a high degree of heterogeneity among the language users. As a result, a linguist working on a sign language has to be very conscious of the object of study, and constantly aware of possible influences of the dominant spoken language, a specific signer's language background and even the presence of non-signing or hearing individuals in a communicative setting. The Sign Language Linguistics Society provides brief basic guidelines about dealing with a variety of these issues.¹

This chapter outlines the methodology used in this study, giving details of the issues that are relevant to investigating LSE and the strategies and techniques employed to overcome problems. Section 4.1 describes the difficulty in finding native signers of LSE and the use of metadata to identify the most native-like signers, and the characteristics of the informants that participated in this study are given in section 4.2. The data collection techniques and materials are detailed in section 4.3, and the transcription and analysis methods are described in sections 4.4 and 4.5, respectively. The chapter concludes with a brief summary.

4.1. Methodological challenges: the elusive native signer

For linguistic research of the type conducted for this thesis, the usual approach is to use data (whether they be naturalistic data, elicited production or grammaticality judgements) from native users of the language. The assumption is that native use reflects the language in its most natural state, uncontaminated by complicating factors such as L2 learner effects. Unfortunately, finding native signers is not as straightforward as finding a native speaker of a language like German or Swahili due to the generational

¹ See <http://slls.eu/starting-guide/>

discontinuity in sign language communities (described in section 1.4.2 for the case of LSE). This lack of native signers led KHIT, the sign language research group of the Basque Country, to undertake a survey of the demographic situation of the Deaf signing population in the Basque Country. Although statistical resources relating to this population are extremely scant, drawing on various sources and estimates, we produced estimates ranging from 750 to 7,200 Deaf signers in the Basque Country (for details see Costello, Fernández & Landa 2008).

Given the oft-cited figure of 5-10% as the number of deaf children born to deaf families (Schein & Delk 1974; see Costello, Fernández & Landa 2008 for more references concerning this figure), and using the most conservative estimate of the Deaf signing population in the Basque Country, we expected to find a population of deaf-of-deaf signers in the region of 40-75 individuals. In reality, we had problems finding more than seven second-generation deaf signers.

This situation led us to a reflection on the notion of native user, and to assess the extent to which the concept could be useful or practical when working with a relatively small sign language population. In the face of having virtually no native signers available (bearing in mind that even second-generation signers have acquired their sign language from non-native models), we adopted a methodology that would allow us to meaningfully study the language, and even to exploit the heterogeneous nature of the signing community. Rather than aim for the unattainable gold-standard of the native signer, we would attempt to measure the degree of nativeness of a given signer. Normally in the study of language, native competence is defined internally to the language, by means of specific features of the language: "a native speaker would say this, this and this." However, in the case of sign language, and of LSE specifically, we do not have enough understanding of how the language works to be able to say what is and what is not native competence. In the field of sign language research we find ourselves defining native language competence in terms of language-external factors, that is, sociolinguistic characteristics of the individual: "this person is a native speaker because she is this, this and this." The characteristics usually given are of the following type: hearing status, family hearing status, age and length of exposure to sign language, level of use of sign language (see, for example, Mathur & Rathmann 2006).

Fortunately, there is some justification for this inside-out way of defining native competence, and for the sociolinguistic characteristics that are singled out as being relevant for defining native competence. The evidence comes from the findings of language acquisition (Mayberry 1993; Boudreault

& Mayberry 2006) and processing studies (Neville et al. 1997): an independent means of judging nativeness is the speed with which an individual processes language. Put crudely, native users are quick, non-native users are slower. Experimental work on grammaticality judgement reaction times in sign language has shown that your age of exposure to sign language is crucial to how quickly you processes the language. If you start acquiring sign language after the age of three, you are significantly slower (and less accurate) in detecting ungrammatical sentences than signers who began learning before age three (Boudreault & Mayberry 2006). This finding shows that the age of three is an important threshold that delimits the individual's final proficiency in the language. On the basis of this result, we use "age of exposure to sign language" as one of the characteristics that indicate the extent to which a person is a native user. We also include the related factors of ongoing contact with sign language and parents' hearing status.

Given the predicament – common among researchers of relatively small sign language populations – of having little access to gold-standard native signers, the data collection method included registering associated sociolinguistic data for each informant and each data collection session. Thus, although the data are not necessarily coming from native informants, we have as clear a picture as possible of where our data are coming from. Additionally, this allowed us to widen our informant base among the sign language users in the Basque Country and to glean a better idea of what being a native user might or might not mean. The sociolinguistic factors recorded were based on the IMDI database for sign language metadata, which was developed for the ECHO project (Crasborn & Hanke 2003). The IMDI standard comes with a viewer and editor that were developed at the Max Planck Institute for Psycholinguistics in Nijmegen, The Netherlands, and allow the information to be examined and manipulated.² The set of metadata for sign languages was established for the sign language section of the ECHO project, which was designed to establish a corpus of data for various European sign languages.³ The data relating to the informants are described in section 4.2.

By recording a sociolinguistic profile for each informant, it is possible to identify those that are most native-like. Furthermore, for those informants who are not native signers, the metadata provide an insight into the extent to which signers deviate from the prototypical native profile. This then allows us to examine language use as a function of nativeness and to specifically

² See <http://www.mpi.nl/imdi/>. The IMDI editor has since been superseded by the Arbil tool (<http://www.lat-mpi.eu/tools/arbil/>), also developed by the MPI Nijmegen, but the underlying IMDI metadata standard is the same.

³ See <http://sign-lang.ruhosting.nl/echo/>

address the concept of native use and language variation. The research group has done some work in this direction (Costello, Fernández & Landa 2008), but this issue will not be directly dealt with in this thesis. Rather, the methodology adopted allowed a selection of the most native-like signers as informants while providing a clear description of each informant's background.

4.2. Informants

This thesis reports on data collected from three informants, all deaf users of LSE. The research group worked with more informants for a broader selection of data, but these three informants were selected for this study as they showed the most native-like profiles. Recall that the criteria for native use were age of first exposure to sign language, ongoing contact with sign language and parents' hearing status. Native-like signers for this study were those who:

- were exposed to sign language before the age of three
- used sign language on a daily basis throughout their entire lives
- had a signing family environment.

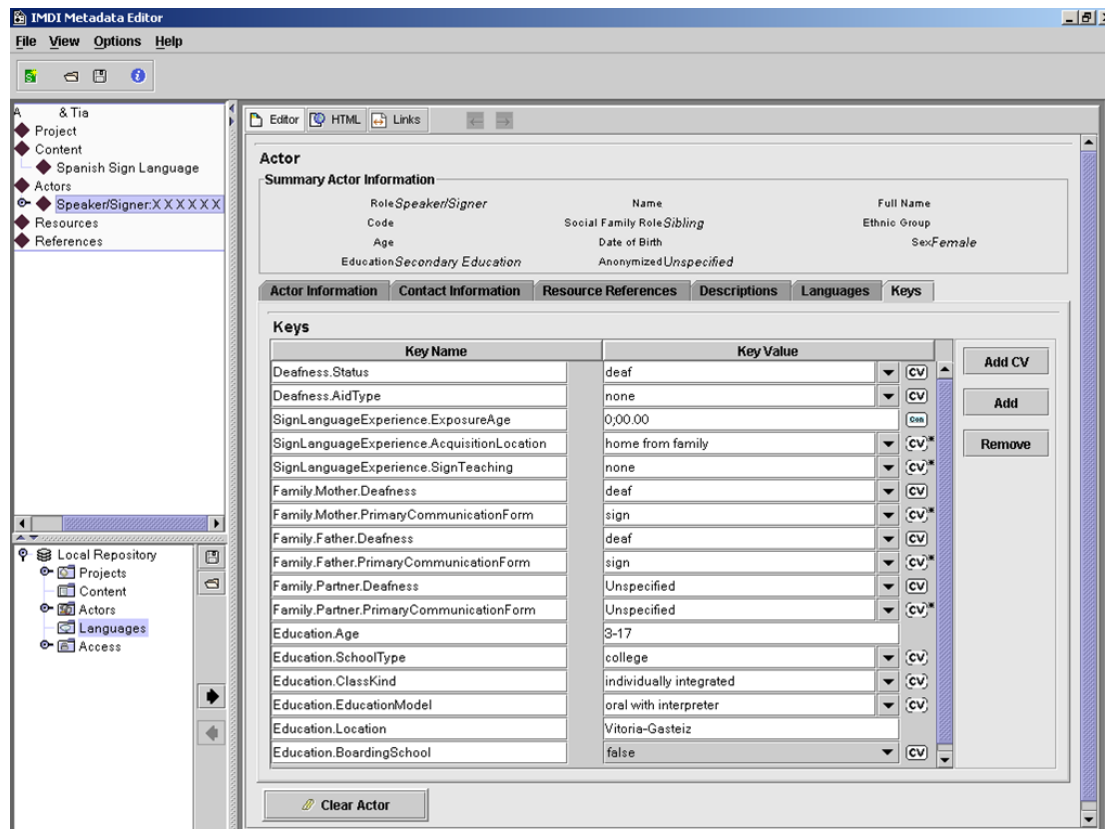


Figure 4.1. Screenshot of the IMDI editor program used to record the metadata for this study.

The metadata collected to draw up a sociolinguistic profile of each informant were:

- age, place of birth and gender
- hearing status, parents' hearing status, type of hearing aid used (if any)
- age of exposure to sign language
- place and context of sign language exposure
- primary language of communication within the family
- schooling (age, educational program, type of school)

These data were collected and stored using the IMDI editor, as shown in figure 4.1.

Informant	Ix	Ai	JM
Gender	f	f	m
Age	18	19	45
Age of exposure to LSE	0;0	0;0	3;0
Learnt LSE from	parents	parents	schoolmates
Schooling	Primary: co-enrolment Secondary: mainstream with interpreter	Primary/Secondary: mainstream with educational support	Deaf school (day pupil in boarding school)
Language preference	LSE	LSE	LSE
Daily language use	Both LSE and Spanish	Both LSE and Spanish	LSE and some Spanish
Family environment	immediate family (parents and sibling) deaf; some extended family members (e.g. aunts) also deaf	immediate family (parents and sibling) deaf; some extended family members (e.g. aunts) also deaf	immediate family (partner and children) deaf

Table 4.1 Characteristics of the signing informants who provided data for this study.

Table 4.1 gives a summary of the relevant characteristics of the three informants who provided data for this study. Two of the informants are second-generation signers and have grown up with deaf signing parents. The third informant is a deaf signer who attended a deaf school from the age of three (which was his first exposure to LSE since his parents were hearing) and

is heavily involved in the Deaf Community. He has used sign language as his main language on a daily basis for his entire life (his immediate family members – partner and children – are all deaf signers) and has had many years' experience as a sign language teacher (to hearing adults). From our knowledge and on-going relationship of working with the informants, all informants have a good understanding of the difference between LSE and Spanish. Furthermore, they have clear intuitions about their sign language use and a degree of metalinguistic knowledge that allows them to reflect upon their language.

Although the third informant's profile differs substantially from those of the other two informants, especially in terms of native acquisition of the language and age (see table 4.1), we feel confident that the language use across all three participants is comparable. All three move within the signing Deaf Community and interact with people of all ages. Although the signers of different ages may use different forms and styles, the Deaf Community in the Basque Country does not present a degree of age-based stratification that would give rise to such marked differences. Furthermore, all three informants come from deaf families with signers of different generations, and thus have daily contact with signers outside their own age group. Informants Ix and JM are from the same family and are daughter and father. Finally, we did not find any noticeable differences between the three signers in terms of the topic of interest for this study. It may well be that there are interesting differences between the informants' language use, but that would require a different study to this one, and, importantly, would not detract from the generalizations about agreement that can be made from their data.

Given the above justification for treating the three informants as comparable, the data will be collapsed and used to describe agreement processes in LSE, without drawing distinctions between the different signers. As mentioned in section 4.1 in the context of the discussion of native signers, we have carried out work looking at the differences across signers with more disparate profiles, but for this study I have narrowed the informants to those that are "as native-like as can be found" given the sociolinguistic situation for the LSE signing community in the Basque Country.

General information about the study, including the nature of the data collection and the general aim of documenting and describing LSE, was explained to the informants in LSE, and they gave consent for their participation. Additionally, they provided consent for images of the video recordings they participated in to be reproduced in this thesis.

4.3. Data collection and materials

A corpus is an ideal starting place for examining language data. Not surprisingly, very few sign languages have a corpus, although several are currently being developed (for an overview of sign language corpora see Konrad 2012). At the time of this data collection there was no established corpus of LSE.⁴ Nevertheless, various materials in LSE do exist, from dictionaries and material for language courses, and, in more recent years, video recordings on the web. The suitability of these materials is often questionable, as there is usually no guarantee of the type of language that is being used (a study of the English used in comments posted on YouTube might produce interesting results but as a first approximation about how the English language works, it would lead us well off the mark). Available materials may be directed at second language learners, or a given signer's language use may have strong influence from the spoken language. However, this language material may provide a starting point for developing hypotheses about the language, especially when exemplars come from a clear context (for example, a video created by the national Deaf People's association to provide information to the Deaf community).

In any case, any initial ideas about LSE and the use of space for the purpose of agreement need to be checked against and backed up by empirical data. These data were provided by the recordings of the informants. A variety of data collection techniques were used with the informants: spontaneous conversations, elicitation from stimulus material, controlled interviews and grammaticality judgements, each of which is described in the following paragraphs.

Spontaneous conversations were between the informant and another deaf signer; a topic was suggested to open the conversation but the interlocutors were allowed to talk about any topic they chose. The naturalness of spontaneous conversation is offset by the fact that the structure being investigated may not appear very frequently, if at all, and it may thus be necessary to search through a fair deal of material to find just a few examples.

This problem is obviated by the use of stimulus material that can direct the language production towards the target structure in question. For agreement structures, the recounting of narratives with various characters is known to elicit the use of agreeing verbs and structures. For this study, two

⁴ Although a small corpus has been under intermittent development at the University of Vigo (Álvarez et al. 2008), it is not yet complete or available for use (Ana Fernández Soneira, pc). The National Sign Language Centre (CNLSE – *Centro de Normalización Lingüística de la lengua de signos española*) is currently in the process of initiating a corpus project for LSE.

sets of stimulus materials were used. Firstly, the Aesop fable texts used in the ECHO sign language corpus project. The drawback of this material is that they are presented in written Spanish, and this may have an influence on the sign language produced. This effect was diminished by providing the informants with the text beforehand and then not having the text available during the recording session. Any doubts that the signers had about the meaning of the text were also discussed in LSE prior to the recording. The second set of stimulus materials consisted of cartoons and as such was language-free. The materials used were the Tweetie Pie cartoons that have been used extensively in studies on space, co-speech gesture and sign languages (Senghas, Özyürek & Kita 2002; Emmorey, Bornstein & Thompson 2005; Nyst 2007a; Perniss 2007; Fenlon, Johnston, Schembri & Cormier 2015). A cartoon from the Mr Kumar series was also used.⁵ Interestingly, the cartoon material did not provide as many exemplars of verbal agreement structures as expected, possibly due to the fact that there was little direct interaction between the characters in the cartoons used. Furthermore, the use of such visual stimulus material tends to encourage a greater degree of depiction and enactment in the form of constructed action (Cormier, Smith & Zwets 2013) in the retelling in LSE.

Controlled interviews provide an opportunity to explicitly target the structures of interest and to directly question informants' intuitions and acceptability judgements. This data collection technique involved asking informants about how they would sign certain concepts and ideas, and discussing how variations in the form and context could affect the meaning. Finally, explicit grammaticality judgements served to delimit the grammatical structure of LSE, particularly with respect to sign order. Informants considered various alternative ways of producing a given sequence of signs and decided on which forms were acceptable and which were not.

I myself carried out these interviews in LSE (in which I am fluent) and I took a great deal of care to make sure that informants were comfortable and confident in their decisions. If necessary, elicited sentences were played back so that the informant could confirm or reject a judgement. For cases of uncertainty, a structure produced by one informant could be judged by another to provide additional intuitions on the acceptability of the exemplar.

In all the data collection recording sessions, informants were asked to produce LSE as they would use it naturally with a signing friend or relative. Whenever possible, another deaf signer was present to provide a listening eye to make the communicative situation more natural (rather than just signing at

⁵ This material was generously provided by Judy Kegl.

a camera), but all three signers were comfortable with producing LSE for the camera.

A full list of the recordings used for this study is given in Table 4.2.

Text type	Signer			Total by text type
	Ix	Ai	JM	
bear_narration	1'01"	2'14"	2'06"	37'54"
lion_narration	1'25"	1'44"	3'00"	
dog_narration	-	1'34"	1'38"	
hare_narration	1'17"	-	2'30"	
wolf_narration	1'42"	-	3'13"	
mice_narration	-	-	1'42"	
tweety_narration	2'43"	7'02"	-	
kumar_narration	-	3'03"	-	
conversation	-	25'31"	-	25'31"
agr_cont-int	-	8'36"	-	26'20"
pro_cont-int	-	8'45"	-	
deix_cont-int	-	8'59"	-	
Total by informant	8'08"	67'28"	14'09"	89'45"

Table 4.2 The recordings used for this study with signer, type of recording and duration of recording.

4.4. Transcription

There are various transcription tools available that can be used with video recorded sign language data. ELAN (developed by the Max Plank Institute for Psycholinguistics at Nijmegen)⁶ is a program that allows annotations to be aligned to video material (Brugman & Russel 2004) and is the most commonly used tool in Europe (Crasborn & Sloetjes 2008).

The transcription conventions followed those set out for the ECHO project (Nonhebel, Crasborn & van der Kooij 2004). The ECHO project established a comprehensive set of tiers for transcription covering many aspects of phonetic, phonological and morphological form that are not relevant for this study. The tiers that were used for transcription were the following:

- Gloss
- Hand direction and location

⁶ See <http://tla.mpi.nl/tools/tla-tools/elan/>

- Role
- Non-manuals
 - o Brows
 - o Eye gaze
 - o Head
- Translation
- Comments

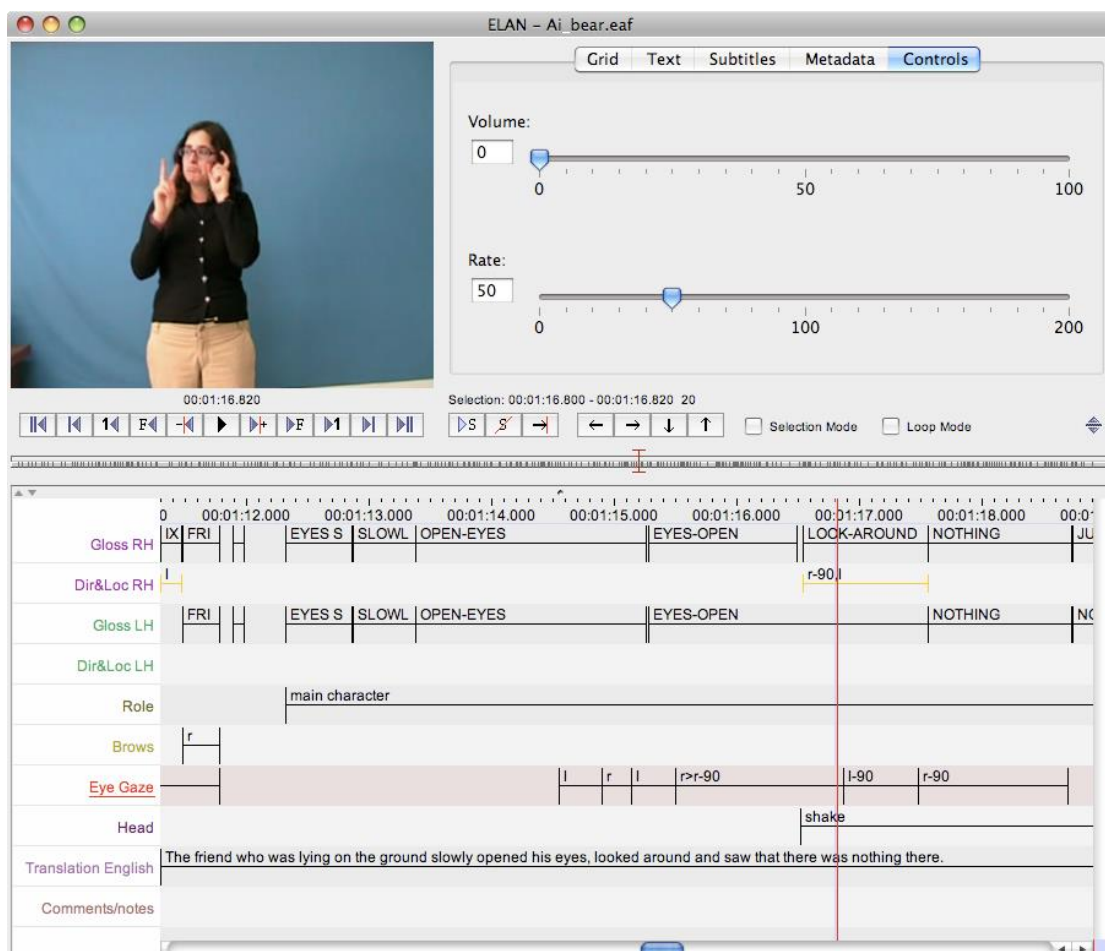


Figure 4.2 Screenshot of the ELAN transcription tool used in this study.

Figure 4.2 shows a screenshot of a transcribed section of one of the videos from this study. The transcription process was in part guided by my own command of LSE: as a qualified interpreter with experience working in the Deaf community, I am a competent user of the language. Obviously, I am not a native user and I do not have clear intuitions, but a good working knowledge of LSE has informed my research on the language as a linguist.

Examples from the data are presented in this thesis with stills from the video together with glosses to provide the necessary information with the aim

of making the examples as clear as possible. The glossing conventions are set out at the beginning of the thesis. Some of the stills, particularly those in the introductory sections of this thesis, are not taken from the original data but from other sources: this is normally done for clarity of exposition.⁷

4.5. Data analysis

Given that the data used in this study consist of a relatively small collection of recordings of different text types, the analysis is qualitative in nature. A quantitative study of this aspect of LSE would be possible with a suitably large data set, such as a corpus. However, as mentioned in section 4.3, no such corpus is currently available for LSE. Since the main objective of this thesis is to describe and analyse agreement in LSE, a qualitative analysis is suitable for this purpose.

The data were analysed in a progressive fashion, so that the initial stages of analysis (based mainly on freer, more naturalistic data elicited from stimulus material) informed subsequent data collection (and analysis) using more directed methods such as controlled interviews and grammaticality judgements. This made it possible to hone in on specific issues and questions that could be discussed with informants.

4.6. Summary

This chapter has described the methodology employed in this study, including the characteristics of the informants who provided the data, the means of collecting the data, and the transcription and analysis of the data. The specific challenges of working with a sign language – and especially a sign language with a small community of users – have a profound impact on many aspects of the methodology. I have discussed and justified the selection of the informants who provide the data for the study and have attempted to offer a clear description of the relevant characteristics of these informants in the context of the sociolinguistic setting. The data collection itself used a variety of different techniques in order to find a balance between the advantages offered by more naturalistic methods, such as spontaneous conversations, and those of more directed methods, such as controlled interviews. Where stimulus materials were used, these tended to be materials that had previously been used in other (sign language) studies, and so would

⁷ One such source is the Tecno Zeinu CD-ROM, created by the (now defunct) *Asociación de Personas Sordas de Bilbao y Bizkaia* [Bilbao and Biscay Deaf People's Association] (2004). Thanks are due to the association for permission to use this material in my research work.

provide data sets that are directly comparable to data from other sign languages. The transcription tool (ELAN) and conventions were also adopted from standards already well-established in the field, to make the data as accessible and comparable as possible.

The results of the data analysis – in the form of a description of the mechanisms of agreement in LSE – are presented in the next chapter

5. Agreement phenomena in LSE

We now turn to the data from LSE, Spanish Sign Language. The previous chapters have set the background to examine agreement-like phenomena in LSE, both from the point of view of agreement as a general attribute of language (chapter 2) and more specifically in the context of the sign linguistics tradition (chapter 3). This chapter presents those processes in LSE that appear to be a manifestation of agreement.





One of the main objectives of this thesis is to examine agreement in LSE (section 1.5): this involves characterizing phenomena that look like agreement, or have been generally accepted to be agreement as understood in the general linguistics tradition, and assessing the extent to which they conform to models of agreement. An obvious starting point is to examine those features already described as agreement in other sign languages, particularly under the received view of verbal agreement (as set out in section 3.2). However, given the disputed status of agreement phenomena in signed languages, it is necessary to cast a wider net and to look also at mechanisms that may not have been described as agreement in the literature to date. Since the overarching aim of this research is to scrutinise modality effects between signed and spoken languages, and specifically those related to the possibilities afforded by the use of space in signed languages, a guiding principle for identifying possible agreement-like relations in LSE shall be to consider other forms that make use of the same spatial mechanisms exploited by “standard” agreeing verbs.

These candidates for agreement in LSE are described in this chapter, which sets out to provide a broad survey of agreement-like phenomena in LSE that make use of the signing space. In the next chapter, these possible manifestations of agreement in LSE will be evaluated in terms of agreement as defined in the typological tradition of linguistics (set out in chapter 2).

The structure of this chapter closely follows that of chapter 3, which provided the background on agreement in sign languages in general. Section 5.1 deals with pronominal reference in LSE as this describes the spatial mechanism that underlies verbal agreement. Verbal agreement itself is the focus of much of the rest of the chapter: section 5.2 describes agreeing verbs, gives details of different classes of agreeing verbs in LSE and describes a

spatial inflection, single argument agreement, that also resembles agreement and occurs in the verbal and other domains; section 5.3 describes agreement auxiliaries present in LSE; section 5.4 gives details of the constraints that operate on verbal agreement at the semantic and phonological levels; and section 5.5 examines the evidence for non-manual marking of agreement in LSE. Agreement in the nominal domain is the topic of section 5.6, which looks at other structures in LSE that could also be considered a manifestation of agreement.

5.1. Pronominal reference

The general mechanism for pronominal reference in LSE is pointing towards a location that previously in the discourse has been associated with the referent in question, as described in section 3.1. On the whole, pointing in LSE is done with the extended index finger () , although the flat  handshape may be used in formal contexts to signal something or somebody politely. However, the flat  handshape is limited to cases where the designatum is present,¹ suggesting that this is some sort of deictic gesture, as might also be used to accompany spoken language. For non-present referents and anaphoric reference the  handshape is used. Occasionally, eye gaze alone may be used to signal a present or non-present referent but this usually occurs in certain marked discursive contexts. For example, informants report that eye gaze is employed when the signer wishes to be discrete – in the case of present referents – or to convey a sense of discretion in the case of non-present referents.

5.1.1. *Location assignment in LSE*

In section 3.1.1 we saw that location assignment – the process by which a referent is associated with a region of the signing space – may be achieved through three mechanisms: pointing, localization and classifiers.

In the case of pointing, a variety of orders are possible in LSE when the referent is associated with a location in signing space. The examples in (1) show (a) a point followed by a nominal for ‘my sister’, (b) a nominal followed by a point for ‘a cat’ and (c) a simultaneous point-nominal construction for ‘Sam’. (The relevant parts in each example are highlighted by a shaded background for the stills and bold typeface for the corresponding glosses.)

¹ There were no instances of the use of this handshape in the data collected. Consultation with the informants confirms that the use of such a handshape for a non-present referent would be highly marked.

LSE (TZ; JM_mice 0:07; Ai_conv 17:30)

(1) a.



IX_x IX_t SIBLING-FEMALE WORK LAWYER

'My sister is a lawyer.'

b.



ONE CAT IX_x TERRIBLE

'There was a terrible cat.'

c.



D hand SAM KNOW GROUP_y NO NOT-WANT
ND hand IX_x----- GROUP_y

'Sam doesn't want to get to know the group.'

Spatial modification occurs with signs that are articulated in the neutral space and do not involve contact with the body. An example is shown in (2), in which the signer refers to two different hotels, with the sign for each referent being placed at different locations in the signing space. The first mention of the sign HOTEL occurs on the signer's left (marked in the example by the subscript x), at a location already associated with characters in the narrative (i.e. this is the hotel where these people were staying); the next mention of HOTEL occurs on the signer's right (indicated in the gloss with subscript y), referring to the hotel where she stayed. Example (1c) also contains an instance of a localized sign, GROUP, articulated higher and to the right of the neutral location of the citation form. However, this is not in fact a case of location assignment as the referent had already been introduced (and assigned a

location) earlier in the discourse, shown in example (2b). In this case, the location assignment involves both localization and a point, which highlights the fact that different strategies may be used in combination to achieve location assignment.

LSE (Ai_conv 16:35; Ai_conv 17:26)

(2) a.



'I wasn't staying at their hotel but in another one, with friends.'

b.



'the group'

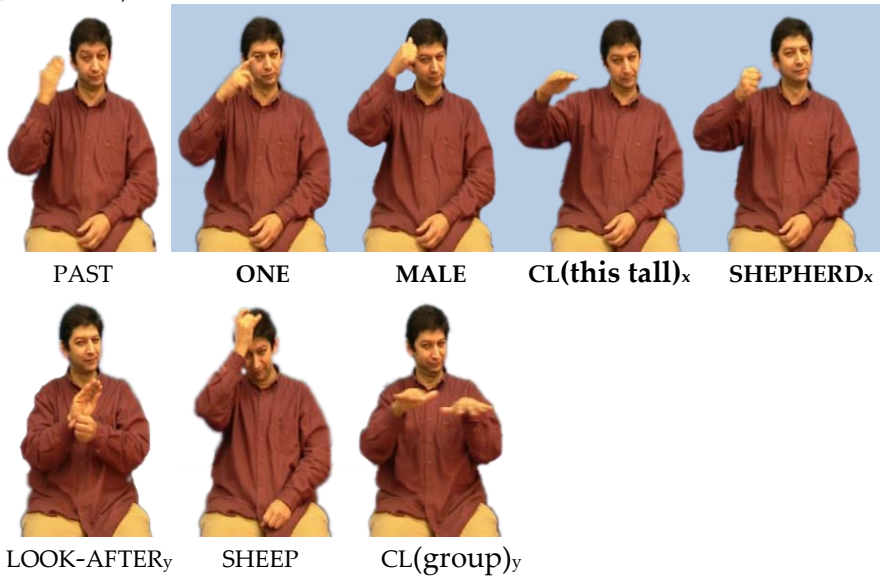
(Introduction of the referent 'group' in the discourse, prior to example (1c).)

As explained in section 3.1.1, the use of classifiers for location assignment may be considered a sub-case of localization, in which a classifier form rather than the nominal sign itself is articulated at a location in the signing space. This often happens with nominals that are body-anchored in form and thus cannot be displaced towards locations in the signing space. This can be seen in example (3), in which the sign MALE, articulated at the ipsilateral temple, is followed by a SASS (size and shape specifier) classifier that marks the height of the referent (thus indicating that he was a boy) and simultaneously

associating the referent with a point in the signing space. The following sign, SHEPHERD, is localized at the same point, indicating co-reference with the previous sign. Together with example (2b), this shows that location assignment may involve a combination of mechanisms, in this case, classifier and localization of a lexical sign.

LSE (JM_wolf 0:05)

(3)



‘Once upon a time there was a shepherd boy who looked after a herd of sheep.’

Furthermore, example (3) also makes evident that location assignment is not always a simple, explicit association between the referent and a region of the signing space. It may occur as part of a structure that is doing much more such that location assignment happens while other information is also being conveyed. Here we see two counts of this. Firstly, as we have just seen, the classifier structure establishes the height (and, by implication, the approximate age) of the person being referred to at the same time as establishing a location in the signing space. Secondly, the other referent in this example, the sheep, is assigned a location, *y*, which has already been introduced by the agreeing verb LOOK-AFTER_{*y*}. Furthermore, the localized sign CL(group)_{*y*}, which reasserts the referent’s location assignment, also provides information about number: the shepherd boy looked after a *herd* of sheep, not just a single sheep. This single sentence is representative of the multifunctional nature of the use of space in LSE, in which location assignment may be just one aspect of a given spatial structure.

With respect to the choice of location for a given referent in LSE, the data give no indication that there are strong rules that determine where a

referent should be placed in signing space. The location in signing space may have a locative value (i.e. it provides information about the location of the referent), particularly when classifiers are involved, in which case the choice of location is frequently motivated and isomorphically bound. Note, though, that the location may merely serve to differentiate between distinct referents (the two hotels in example (2a)), in which case the relative locations create a maximal contrast between different elements, so that two referents will be associated with opposite sides of the signing space. Alternatively, location may operate locatively in one dimension, but not in another. The vertical position of the classifier in (3) indicates height but the position in the horizontal plane merely serves to create an anchor to be referred back to in the rest of the discourse. However, the iconic, discursive and metaphorical conventions identified for other sign languages (Engberg-Pedersen 1993, described in section 3.1.1) do appear to hold. These conventions appear to operate at the level of discourse, and future research should identify what the relevant factors are and how they might interact with any morphosyntactic use of space.

LSE (Ai_conv 11:55)

(4)



D hand	ESTI	BOYFRIEND	COME	IX _{middle-finger}
ND hand	BUOY _{index}	BOYFRIEND	BUOY _{index+middle} -----	

'Esti's boyfriend is coming.'

As well as points in the signing space, LSE makes use of the non-dominant hand as the location for referents, as can be seen in example (4), which shows the use of a two-item list buoy (Liddell 2003) to refer to two referents (a friend and that friend's boyfriend). Location assignment with buoys may involve nominal-point combinations, but localization and classifiers are not generally used since the articulation of a sign or classifier at a given fingertip on the non-dominant hand is much less acceptable than at some point in the signing space. In some sense, the fingers of the non-dominant hand serve as a (restricted) type of classifier for the associated referents. An alternative strategy available to buoy assignment is the use of simultaneous structures in which the dominant hand articulates the nominal while the non-dominant

hand marks the finger with which the referent is to be associated. In example (4), the first buoy assignment is simultaneous, with the nominal name sign, ESTI, accompanied by the index finger buoy on the non-dominant hand; the second assignment is a nominal-point combination, with a verb intervening between the nominal BOYFRIEND and the point to the middle finger buoy. At several points later in the discourse, the signer uses the two finger buoys to refer back to these discourse referents.

Once location assignment has been established, pronominal reference is achieved by referring back to the location (or buoy) by means of pointing or eye gaze. Classifiers, agreeing verbs or any other spatial mechanism may also make use of the spatial locations set up in the discourse.

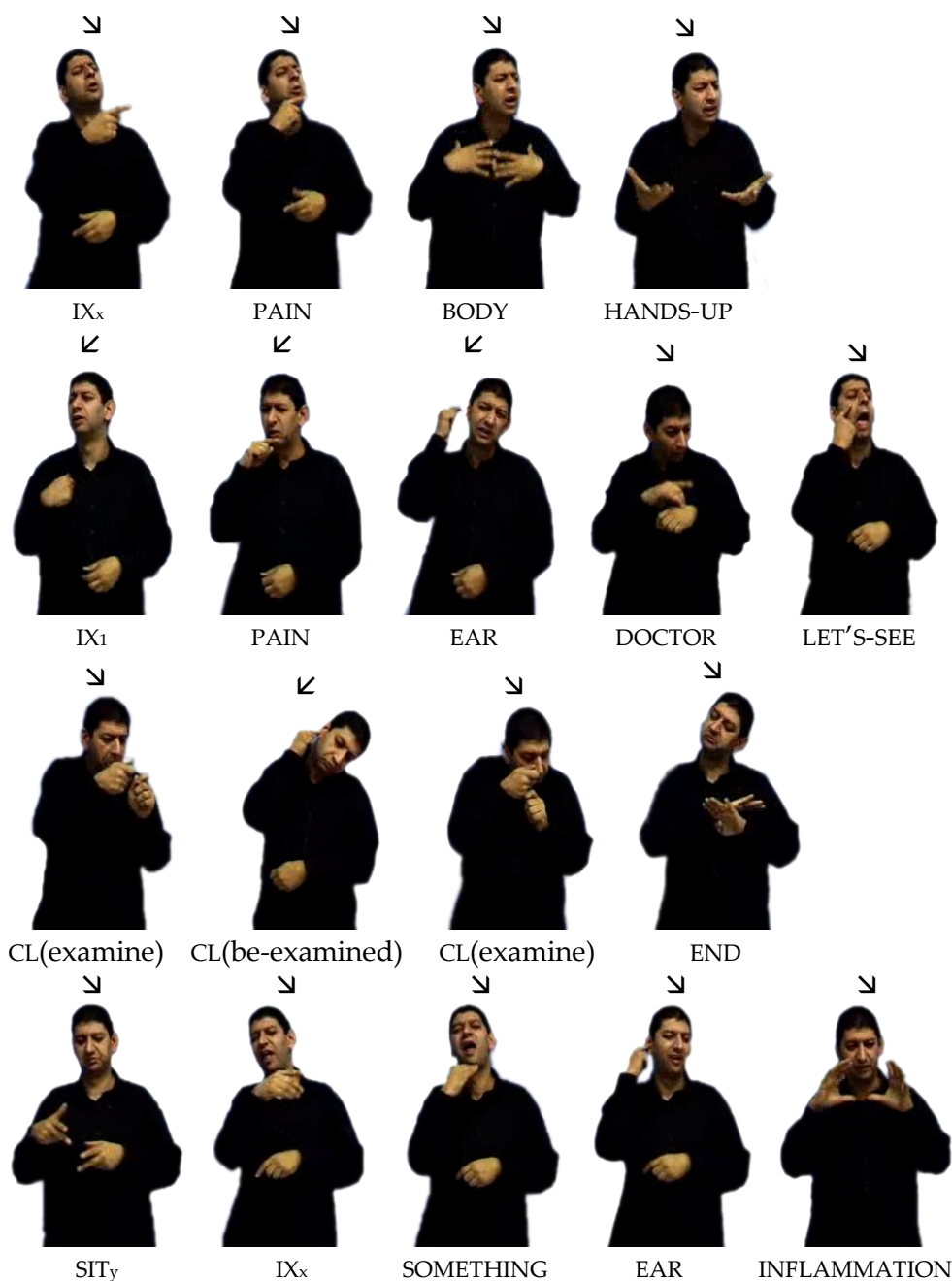
In summary, location assignment in LSE is achieved by associating the referent with part of the signing space through a spatial mechanism such as pointing, localization or classifier constructions. These different strategies for location assignment may be combined and show a fair degree of variation as far as the ordering of elements is concerned. Alternatively, location assignment may be achieved “on the fly” by a structure that serves another purpose (such as an agreeing verb). Referents may be associated with points in the signing space or on the non-dominant hand (buoys). In this respect, LSE uses location assignment mechanisms similar to those described for other signed languages such as SSL (Ahlgren 1990), NGT (Bos 1990) or LSC (Barberà 2012).

5.1.2. *Role shift in LSE*

Location assignment serves to create a spatial map in the signing space. This may then be manipulated and transformed by the use of role shift, as described in section 3.1.2. Role shift is highly prevalent in LSE, especially in discourse beyond the sentence level. This is particularly apparent in the data from the narrative genre (see section 4.3). A very short stretch of discourse may involve multiple role shifts between different referents with the resulting shift in the spatial map, as can be seen in example (5), in which the signer explains an interaction between himself and a doctor. The doctor is associated with a point on the signer’s right (labelled *y* in the glosses), whereas the signer himself (as a character in the story he is telling) occupies a location slightly left of centre (labelled *x* in the glosses). Whenever the signer assumes the role of one of the narrative characters, he shifts his body towards the space associated with that character and turns to “face” the other character (shown by means of the arrows above the still images, for the doctor and the signer).

LSE (TZ)

(5)




'[The doctor asked me] what was wrong with me and I said I'd a pain in my ear. The doctor examined my ear and then sat back down. "Something's caused an inflammation in your ear."'

In LSE, role shift may be marked by several means, with varying degrees of spatial exploitation. The most spatially motivated mechanism consists of a shifting of the signer's body towards the location associated with the referent whose viewpoint is being adopted. At the articulatory level, this involves any

combination of body lean, shoulder tilt, head nod or turn, and eye gaze, all of which can be seen in example (5).

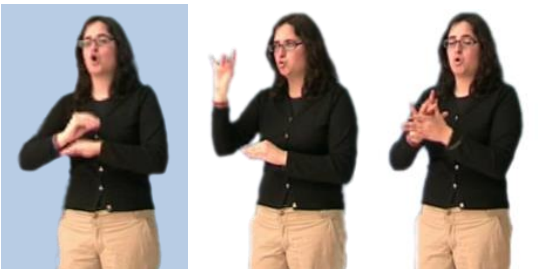
At the other end of the spectrum, the least spatial mechanism is to introduce role shift by means of a nominal that identifies the referent, almost like the script of a play, in which each character's intervention is introduced by an identifier for that character. Example (6) shows a combination of both spatial body lean (the area to the signer's right is associated with the lion and the area to her left with the mouse) and nominal identifiers (highlighted at the beginning of each line).

LSE (Ai_lion 01:16)

(6) a. 


LION PLEASE xHELP₁ ...

'The lion begged, "Please, help me!" ...'

b. 

MOUSE YES CALM

'The mouse replied that she would and told the lion to calm down.'

c. 

MOUSE CL(small animal moves) NET BITE ...

'The mouse set to gnawing through the ropes of the net...'

- d.

LION PRF CL(poke head out) ...

'So that the lion was able to get out of the net...'
- e.

LION SAY IX1 THANKS IX1 SORRY...

'The lion said, "Thank you so much. I'm sorry..."'
- f.

MOUSE YES THANKS

'The mouse agreed with the lion and thanked him.'

In the use of direct reported speech, the nominal is frequently followed by the sign *SAY* to provide direct quotation, as can be seen in example (6e). However, as pointed out in section 3.1.2, role shift encompasses much more than direct reported speech, and allows the signer to convey not only what the referent was saying and thinking, but also actions and events from a given perspective (Quer 2005). Much of this is achieved by the use of constructed action, by which the signer performs actions very similarly in form to how the assumed character would perform them (Lillo-Martin 2012). This can also be seen in the examples in (6): in (6c), the signer demonstrates how the mouse bit through the ropes of the net (represented by her hands), and in (6d) the signer enacts how the lion emerged through the hole in the net. Furthermore, constructed action may also be used to mark role shift by identifying the referent whose perspective is being assumed: rather than introduce the role shift with a

nominal, the signer adopts a posture associated with the assumed referent. This can also be seen in (5), when the signer tilts his head to adopt the position of somebody having his ear examined, and then nods his head downwards to shift to the role of the doctor looking into the patient's ear. Another type of constructed action commonly used to mark (or simultaneously layered upon other markers of) role shift is the use of affective facial expression: the signer adopts the facial expression associated with a referent to shift into the perspective of that referent.

The temptation to consider role shift as some sort of pantomime was already mentioned in section 3.1.2, and the distinction between the two was made based on evidence from LSC regarding the scope of the referential shift for certain deictic markers, and the integration of constructed action within sign language. Further evidence comes from LSE data that show that role shift does not always involve a topographically coherent use of space. In a pilot study of the use of role shift among different signers of LSE, Costello, Fernández & Landa (2008) found that the spatial map established by the signer was not always adhered to in role shift. So, for example, if the bad guy is associated with a location on the left, and the good guy on the right, during intense shifting between both roles, the association may be broken and the good guy may switch to the left. What seems to be important is not the absolute spatial map, but rather the role shift marker to signal a change in role. The study looked at different degrees of native-like competence in LSE (according to sociolinguistic factors: see sections 1.4.2 and 4.1) and found that this sort of disruptive mapping was produced by more native-like signers. Furthermore, it formed part of a general tendency to use space more abstractly and less transparently on the part of the more native-like signers.

As explained in section 3.1.2, role shift frequently involves a complex use of the signing space and cannot be reduced to a simplistic pantomimic representation. This also holds true for role shift in LSE. Again, the use and form of role shift broadly conform to what has been described for other sign languages such as DSGS (Boyes-Braem 1999), BSL (Sutton-Spence & Woll 1999) or LSC (Quer & Frigola 2006) and these shifts interact with the spatial map of established referents.

5.2. Agreeing verbs

The unmarked word order in LSE is SOV (Herrero Blanco 2009: 116). With a basic SOV word order, the grammatical role of a verb's arguments may be identified by paying attention to their position in the sentence. However, LSE allows a great deal of variation in word order (in contrast to English but

similar to Spanish, Basque, Catalan and Galician) and so verbal agreement provides a means of keeping track of the arguments throughout the discourse. This section deals with agreement marking on the verb itself; the next section (5.3) will focus on agreement auxiliaries, elements that may show agreement marking instead of (or as well as) the verb.

Verbal agreement in LSE appears to display the well-documented mechanisms described for other sign languages (see section 3.2 and Mathur & Rathmann 2012 for an overview). Much attention has been given to agreeing verbs – both prototypical and backwards – and these types of verbs will be described for LSE in the first two subsections. The third subsection addresses another type of agreement that may occur on the verb: single argument agreement. This phenomenon has not been so widely documented, and is often not treated as an instantiation of agreement. The mechanism of single argument agreement in LSE is described in detail in this chapter and in the next chapter I provide arguments that it should indeed be considered as much a manifestation of verbal agreement as agreeing verbs are.

5.2.1. *Prototypical agreeing verbs*

Agreeing verbs are one of three classes of verbs that form a taxonomy for sign language verbs first proposed by Padden (1983/1988) for ASL. It has since been found that nearly all sign languages that have been studied follow this pattern (with the exception of some “shared” sign languages, as mentioned in section 1.3). The distinction between the three groups of verbs is essentially morphological: **plain verbs** do not inflect for pronominal features; **spatial verbs** inflect for their arguments; and **agreeing verbs** inflect for person (and number) of the subject and object.

LSE (TZ) (7)	plain verb	spatial verb	agreeing verb
			
	a) WANT '[I] want.'	b) xPUT-OBJECT _y '[I] put the object onto my thumb.'	c) xTRICK ₁ 'He's tricking me.'

Examples of each type of verb in LSE are given in (7). The plain verb WANT has a fairly fixed form and thus cannot be inflected to show any features of its arguments (although it may be inflected to show aspect). The spatial verb PUT-

OBJECT marks the start and end point of the action so that the sign in (7b) would have the meaning '[I] put the object (from here) onto my thumb'. Agreeing verbs inflect to mark their subject and object, and in the example shown in (7c), the verb TRICK moves from a location associated with the subject to one associated with the object.

Agreeing verbs inflect to identify their arguments. As the example in (7c) shows, they may do this by modifying their start and end points. For most agreeing verbs this means that the verb begins at the locus associated with the subject and ends at the locus associated with the object as can be seen with the agreeing verbs CHALLENGE and E-MAIL in (8a) and (b).

LSE (Ix_hare 0:22; TZ; DILSE; JM_wolf 02:36) (Image for (c) taken from the *Diccionario normativo de la lengua de signos española* (Fundación CNSE 2008) with kind permission from the publisher.)

(8)



a) $\text{I}_{\text{CHALLENGE}}\text{x}$
'I challenge you.'



b) $\text{I}_{\text{E-MAIL}}\text{x}$
'I'll e-mail you.'



c) $\text{I}_{\text{EXAMINE}}\text{y}$
'I examine it.'



d) $\text{x}_{\text{IGNORE}}\text{y}$
'They ignored him.'

In addition to the movement path, many agreeing verbs also use the orientation of the hand(s) to mark the arguments. This is the case for CHALLENGE (8a): the hand is oriented towards the object argument. However, some verbs, like E-MAIL (8b), use only movement and the orientation of (the palm of) the hand does not change. Conversely, other agreeing verbs use orientation alone, such as EXAMINE (8c); the phonological representation of the sign already includes a fixed movement (in this case a vertical downward movement), so movement cannot be recruited for the expression of agreement. Finally, some agreeing verbs have no trajectory movement at all,

not even in the vertical plane, so orientation is the only means by which agreement can be expressed. Verbs such as *IGNORE* (8d) orient the palm towards the object and away from the subject.

As described in section 3.2.1, agreeing verbs are transitives or ditransitives but agreement may be unmarked for some, or even all, of the arguments. This may occur as a result of agreement marker omission (Padden 1983/1988; see examples in section 3.2.1.2), a general process affecting agreeing verbs in which subject agreement may optionally be omitted. Furthermore, agreeing verbs may appear completely uninflected in contexts where agreement is possible (de Beuzeville, Johnston & Schembri 2009 for Auslan; Schuit 2013 for Inuit SL). Apart from this general optionality of agreement, specific agreeing verbs may have a defective inflectional paradigm if one of the agreement slots is blocked by the verb's phonological matrix. This phonological blocking of agreement occurs if the verb has an obligatory contact with the body at its onset or offset, which prevents subject or object agreement respectively. Section 5.4.2.1 describes a specific set of agreeing verbs in LSE that maintain a full agreement paradigm even though they have body contact in their phonological form.

Verbs in sign language show a rich inflectional morphology for aspect and number (Klima & Bellugi 1979). From the point of view of aspect, LSE shows modifications similar to those described for other sign languages (see Morales López et al. (2000) and Herrero (2009: 296-302) for a descriptive overview of aspect in LSE). Plain verbs may inflect for aspect alone, but agreeing verbs may additionally express information about the argument, such as number, by modifying the movement of the verb.

In section 3.2.1.1 we saw that the expression of number on agreeing verbs is not limited to a simple singular/plural dichotomy: dual, exhaustive and multiple forms have been attested for different sign languages. These forms (shown in figure 5.1) also exist in LSE. It should be noted that plurality may also be marked by making use of both hands simultaneously: this is especially common for dual marking, in which a one-handed verb may be articulated by both hands (figure 5.1a). As argued in section 3.2.1.1, the dual and the exhaustive forms appear to mark the numerosity of the event rather than (or in addition to) numerosity of the argument. The distinction between verbal and nominal number will be examined more closely in section 6.4.2. As such, I consider that the generic plural (of the verbal argument) is expressed by means of the multiple marker, which involves an arcing movement (figure 5.1c). The plural marking is not obligatory, which reflects the widespread optionality of agreement marking mentioned above, and also the optionality of plurality marking generally since plural nouns frequently go unmarked

(see section 5.6, on the plural marking of nouns in LSE). This multiple marker will be used as a means to gain insight into the constraints on person and number combinations for agreeing verbs in section 5.4.2.2 below.

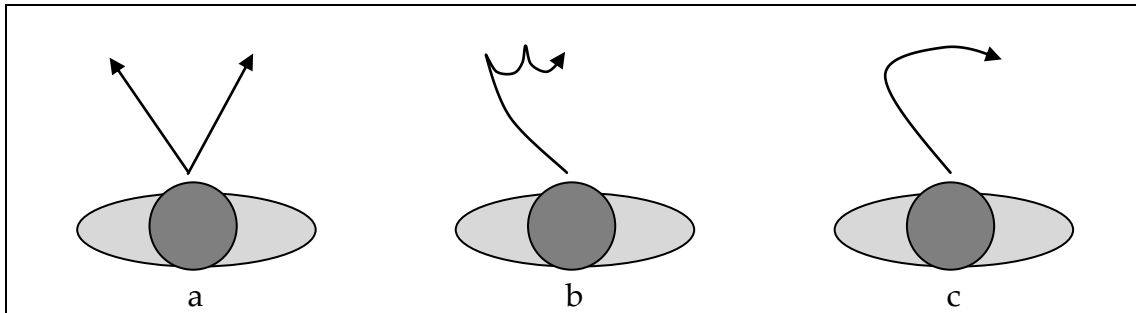


Figure 5.1 Inflectional forms for marking of plural objects in LSE, as seen from above: a) dual marking; b) exhaustive marking; c) multiple marking.

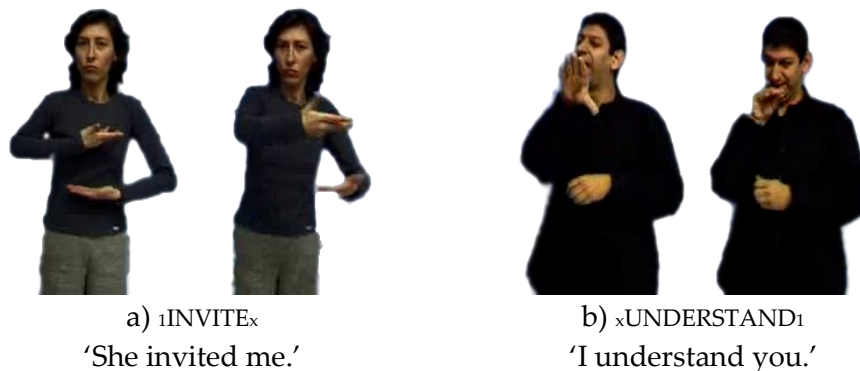
In summary, agreeing verbs in LSE mark for the subject and object by incorporating the locations associated with each at the beginning and end of the sign, respectively, or by orienting the sign to face away from the subject locus and toward the object locus. Additionally, plurality may be marked by including an arc movement at the locus of the corresponding argument. We now turn to a subset of agreeing verbs that invert the relative position of the subject and object locus in the inflected forms.

5.2.2. Backward agreeing verbs

In contrast to prototypical agreeing verbs, some verbs show an inverse correspondence between start-/end-point and grammatical role; that is to say, the verb begins at the point associated with the object and ends at the locus of the subject (see section 3.2.2).

LSE (TZ)

(9)



It appears to be the case that whenever a sign language has agreeing verbs, it also has a set of these backwards verbs of this type, and this holds true for

LSE. Verbs such as INVITE, UNDERSTAND or ATTRACT, illustrated in example (9), belong to this class. The fact that the sets of backwards verbs in different sign languages denote the same meanings lends support to Meir's (1998b, 2002) analysis of movement reflecting motion (either real or metaphorical) in the context of the semantic notion of transfer in sign language verbal agreement. However, a purely semantic account has difficulty explaining why certain verbs are backwards in some languages (UNDERSTAND in LSE and LSC) and not in others (UNDERSTAND in Libras) (Quadros & Quer 2008).

Backwards verbs provide a useful means of examining the spatial agreement mechanism in sign languages and of teasing apart the relationship between form and meaning. We return to backwards verbs later in this chapter, in section 5.4.2, when looking at the phonological constraints that operate on agreeing verbs

5.2.3. *Single argument agreement*

In contrast to the verbs described in the previous section, which use the start/end point of the movement or at least the orientation of the hand to mark the subject and object, there is another spatial mechanism that allows verbs to mark a single argument (see section 3.2.3). This is a phenomenon that is not normally the focus of studies on agreement in sign languages. Many verbs can be localized (i.e. articulated at a specific point in the signing space) in order to identify one of their arguments.² Normally, the argument has already been associated with a specific locus in the discourse; to establish the agreement relationship the verb is articulated at that locus. That is, rather than being articulated in neutral space, the verb is produced at some locus *x* that has been previously established in the discourse for a referent *i*. In example (10), the discourse referent 'exam' is produced at locus *x* (on the signer's left) and subsequently the verb PASS is articulated at that same location, indicating that the former is an argument of the latter.

² We have already seen the use of localization of nouns in order to achieve location assignment (section 5.1.1). Additionally, other lexical categories, such as numeral or adjectives, may also undergo localization. See section 5.6 for details of this phenomenon as a manifestation of agreement in the nominal domain.

LSE (Ai_conv 6:52)

(10)



Since this argument marking is achieved by articulating the verb at a (single) locus associated with a given argument, it is only possible to mark one argument. This contrasts with the ability of agreeing verbs to mark *two* arguments by moving between two different locations, each of which is associated with a different argument. Although an agreeing verb may optionally omit the agreement marking for one of its arguments (the process of agreement marker omission described in section 5.2.1), this is different to the phenomenon described here as single argument agreement. In this case, the verb may never inflect for two arguments and there is no optional omission of the marking for a second argument.

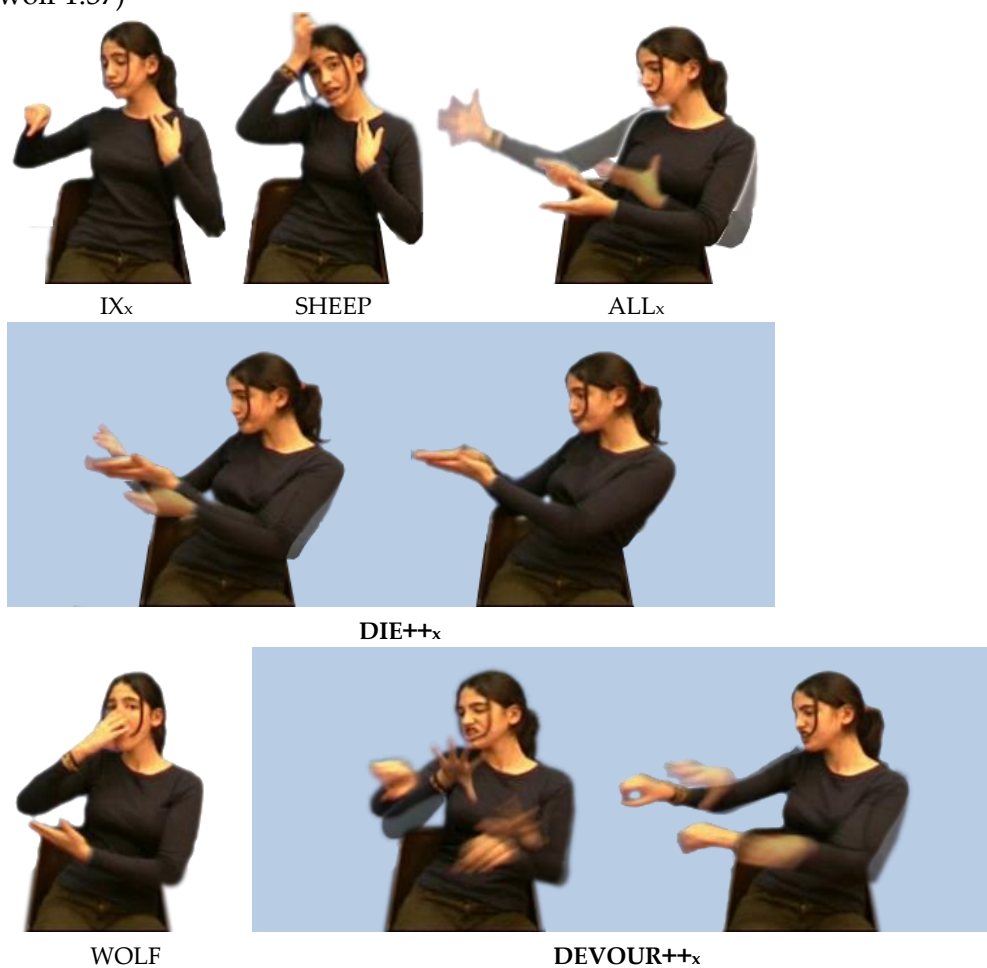
Single argument agreement of this type may occur with intransitive verbs or with transitive verbs, as shown in (11) with the verbs DIE and DEVOUR, respectively. This type of verbal modification is only possible with verbs for which the citation form is articulated in neutral space; body-anchored verbs (the phonological matrix of the sign specifies a position on the head, shoulders, chest or non-dominant arm) cannot be modified to mark this type of agreement. Nevertheless, this agreement strategy is widely used and is productive.

As we saw for prototypical agreeing verbs (section 5.2.1), there are various strategies for plural marking including articulation on both hands (dual), reduplication (exhaustive) and adding an arc movement (multiple). For single argument agreement, simultaneous articulation on both hands is possible (for one-handed signs) and reduplication is also used to mark

plurality. In contrast, the option of adding an arc movement is not available, possibly because the phonological form of verbs that display single argument agreement does not include a path movement that would allow the addition of an arc. However, as we shall see below, the plural marking through reduplication additionally involves adding an arced path movement.

LSE (Ix_wolf 1:37)

(11)



'The sheep all died. The wolf devoured them.'

In the case of reduplication, the sign is repeated in succession to indicate that the argument in question is plural in number. There is a three-way singular/dual/plural distinction: singular arguments show no reduplication; for dual arguments the verb is repeated once; and for 3+ plural the verb is repeated twice. However, the reduplication is not a mere repetition of the verb: during the reduplication, the hand(s) move(s) slightly so that each articulation of the verb occurs at a different locus. This sort of plural marking occurs in (11) above, although it is not visible in the video still: previously in the discourse, the signer has associated a herd of sheep at locus *x*, and then

articulates the verb at slightly different loci (x1, x2 and x3). This articulation may also be glossed as in example (12a) to make explicit that each reduplication of the verb occurs at a slightly different locus. On the surface, this looks very similar to (12b), made up of various coordinated VPs, leaving open the possibility that there is no morphological reduplication process at work here but rather a simple repetition of the VP.

LSE

- | | | |
|------|---|--|
| (12) | a) (SHEEP) DIE _{x1} DIE _{x2} DIE _{x3}
'The sheep died.' | b) (SHEEP) DIE _x DIE _y DIE _z
'This sheep died, and this sheep died and this sheep died.' |
| | _____ <u>neg</u> | _____ <u>neg</u> |
| | c) (SHEEP) DIE _{x1} DIE _{x2} DIE _{x3} NOT
'The sheep didn't die.' | d) (SHEEP) DIE _x DIE _y DIE _z NOT
'These (different) sheep didn't die.' |
| | _____ <u>neg</u> | _____ <u>neg</u> |
| | e) *(SHEEP) DIE _{x1} DIE _{x2} DIE _{x3} NOT
'Some sheep died and some didn't.' | f) (SHEEP) DIE _x DIE _y DIE _z NOT
'This sheep died, and this sheep died and this sheep didn't die.' |

However, there are important differences that suggest that the reduplication is a grammaticalized morphological process. Firstly, the reduction of all plurals greater than three to a unique form creates an abstract set of categories; the fact that there is a three-way distinction suggests that this is indeed a grammaticalized morphological process. Furthermore, even though each repetition of the verb must be articulated at different loci, as in (12a), the loci are bound by certain constraints: they cannot be distributed freely in the signing space but rather must be close together and lie within a (straight or slightly curved) axis. These differences are shown in figure 5.2. Also, there are phonological differences in the form of (12a) and (b): the reduplicated form shows reduction and shortening compared to a fuller articulation for coordinated VPs. Finally, it can be shown that the reduplicated form is a single syntactic constituent since negation and non-manual markers apply to all instances of the verb whereas coordinated VPs may be modified individually. Informants have confirmed that negating (12a) would lead to the sentence shown in (12c), with the associated non-manual marking spreading over the entire verbal material, while it is not possible to negate or have non-manual elements over only part of the reduplicated verb, as shown by their rejection of sentence (12e). In contrast, when the verb is fully repeated in independent loci as in (12b), all the predicates may be negated, as shown in

(12d), and additionally, a single instance of the verb may be negated, attested by (12f).

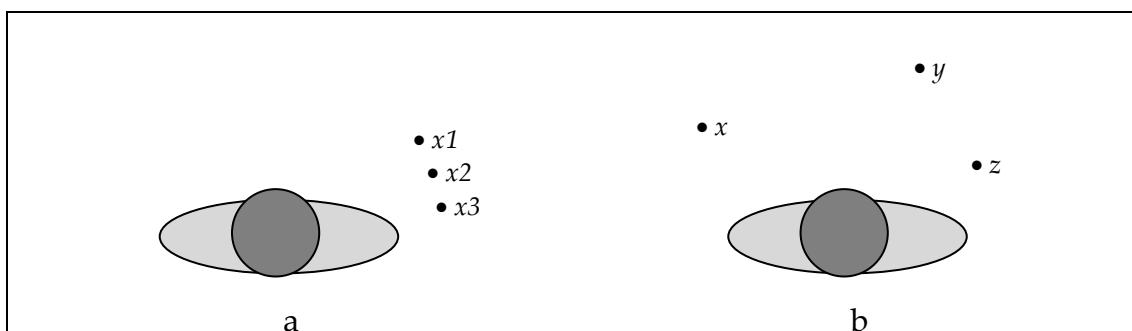
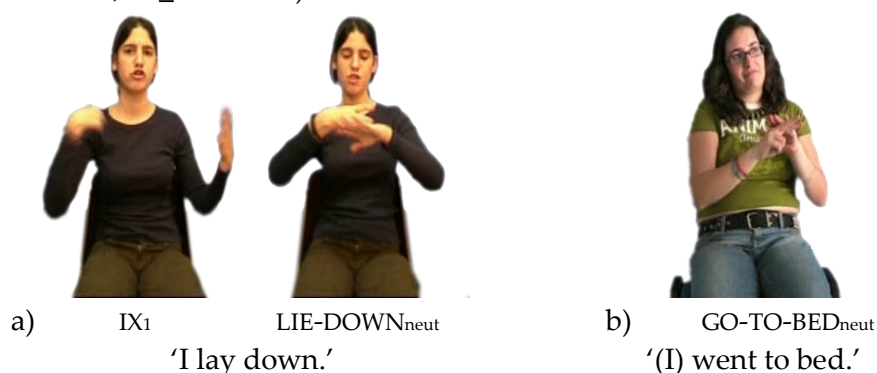


Figure 5.2 Plural marking in single argument agreement. Reduplication to mark plurality (a) places constraints on the loci. In contrast, for coordinated VPs (b) the distribution of the loci is freer.

A notable characteristic of single argument agreement in LSE is that first person agreement is barred. First person agreement is not marked and the sign is articulated in a neutral location in the signing space (that is, at a central location that has not been associated with a referent); the referent is identified by means of an overt pronoun, or alternatively a null argument may be licensed by a topic.³ (13a) shows the use of an overt first person pronoun preceding the verb LIE-DOWN, which may be localized to agree with the argument but in this case is articulated in neutral space. An example of the second type is shown in (13b), in which the topic (previously introduced in the discourse) is the signer, thus licensing the null argument for the verb GO-TO-BED.

LSE (Ix_bear 0:22; Ai_conv 3:45)

(13)



³ Lillo-Martin (1986) proposes that in the absence of agreement, null arguments – first person or otherwise – are licensed by topics, along the lines of Huang's (1984) analysis for Chinese.

The reason for this lack of first person marking in single argument agreement may be articulatory: if the locus associated with first person is located *within* the signer's chest (in contrast to all other loci that are positioned at some point in the signing space), this obviously makes it physically impossible to articulate a sign *at* that point (whereas other types of agreement/pronominal reference that direct a sign *towards* the first person locus are possible). Support for such a form-based constraint is provided by the fact that agreeing verbs are also subject to phonological constraints, as will be shown in section 5.4.1.⁴

The localization of verbs for single argument agreement in LSE is a widespread phenomenon. Not only is it seen frequently in signed discourse, but also a substantial number of LSE verbs permit localization: in a database derived from the most recent version of the LSE dictionary (Gutiérrez, Costello, Baus & Carrieras 2015), over a third of the verbs (217 out of 625) are classified as localizable. Due to the fact that this phenomenon has not traditionally been treated as agreement and has been sidelined in much work on sign languages, detailed descriptions of localized verbs are not available for other sign languages. However, explicit references to this type of verbal modification in various sign languages (for ASL, Fischer & Gough (1978: 22); for SSL, Bergman (1980); for ISL, Meir (1998b)) confirm that this mechanism is by no means unique to LSE. Although localized verbs do exist in other sign languages, identifying similarities or differences in how these verbs behave (such as plural marking or constraints on form) will depend on the appearance of more comprehensive cross-linguistic descriptions of the phenomenon.

The localization mechanism demonstrates a use of space to identify a verb's argument similar to what we have seen for agreeing verbs above. In section 3.2.3, I reviewed evidence to show that this mechanism is syntactically consistent (once it has been distinguished from pragmatic agreement, which looks similar but is structurally very different); in section 6.2.3, I present further evidence to show that single argument agreement should be treated on a par with agreeing verbs.

5.3. Agreement auxiliaries


Many sign languages – with the notable exceptions of ASL and BSL – have an element independent of the verb that marks verbal agreement. The agreement auxiliaries were described in section 3.3, where it was shown that their main

⁴ Alternatively, there may be some sort of language-internal restriction that is related to the fact that LSE (and other sign languages) make use of the body as a signifier (this is seen especially in the use of role shift) (Meir et al. 2007).

function is indeed to mark subject and/or object agreement and not tense, aspect, or modality, the inflectional categories usually associated with auxiliaries in spoken languages.

In the LSE data there are several types of auxiliaries or auxiliary-like structures. Here I will refer to them as agreement auxiliaries, but the reader should bear in mind that their status is still uncertain and will be evaluated in subsequent chapters. Section 5.3.1 describes *AUX*, a two-place agreement marker that operates similarly to agreeing verbs; this section also describes *KIN* and *RELN*, two elements very similar in form to *AUX*, which normally appear in the absence of a lexical verb and are thus less obviously auxiliaries. Two different forms derived from lexical verbs, *GIVE-AUX* and *BEAT-AUX*, used as a causative auxiliary for mental states and as a comparative marker, respectively, are discussed in section 5.3.2. Finally, section 5.3.3 describes *PERS*, a one-place marker that looks similar to an agreement auxiliary. This sign appears to have derived from the lexical item *PERSON* and has been described for other sign languages, but seems to be more like a case-marked pronoun also described in the literature.

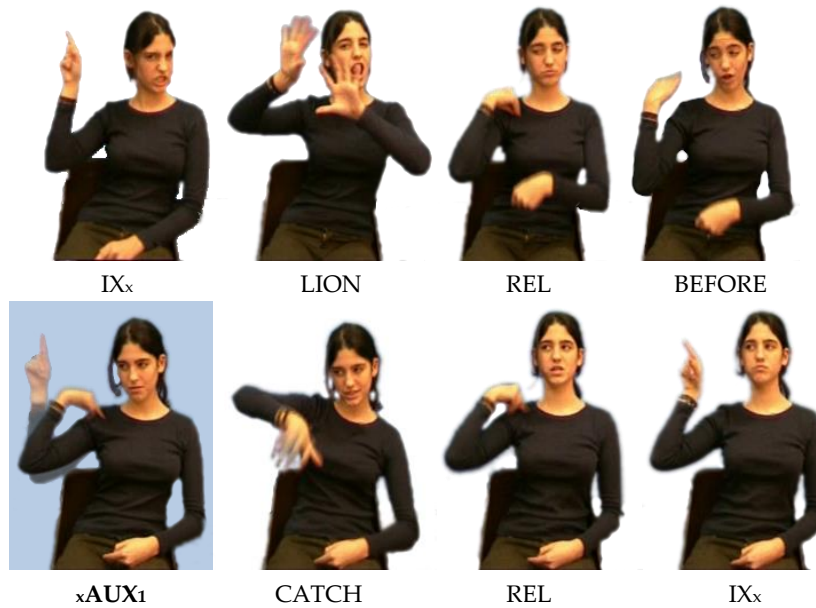
5.3.1. *AUX*

The main LSE agreement auxiliary, glossed as *AUX*, uses the unmarked pointing handshape (the  handshape) and starts out at the locus associated with the subject and moves towards the object locus. There is a certain amount of variation in the movement, which may be arced or straight, and also in the orientation of the hand, which may point towards each locus with the finger or may maintain the finger pointing upwards throughout the movement. In (14), *AUX* is made up of an initial point towards a locus associated with a referent (the lion) which then moves and is directed towards the first person, giving credence to the idea that this type of auxiliary is grammaticalized from concatenated pronouns (Steinbach & Pfau 2007). In LSE, *AUX* is normally adjacent to the verb, and may appear pre- or post-verbally.

A similar auxiliary has been described for a number of other sign languages (see section 3.3.1 and references therein for details). It is mostly used in conjunction with plain verbs, which cannot inflect to express agreement, but in some sign languages it may also combine with agreeing verbs (Quadros & Quer 2008), in which case it appears to focus either the subject or the object.

LSE (Ix_lion 1:00)

(14)



‘That’s the lion that caught me before.’

In LSE, AUX may indeed occur with both plain and agreeing verbs, and when it appears with an agreeing verb, the verb may either appear in an uninflected form or itself be inflected for agreement, thus giving rise to a construction involving double agreement. An example of AUX with an inflected agreeing verb is shown in (15).⁵

LSE (Ix_lion 0:18)

(15)



‘I haven’t done anything to annoy you.’

PU=palms up

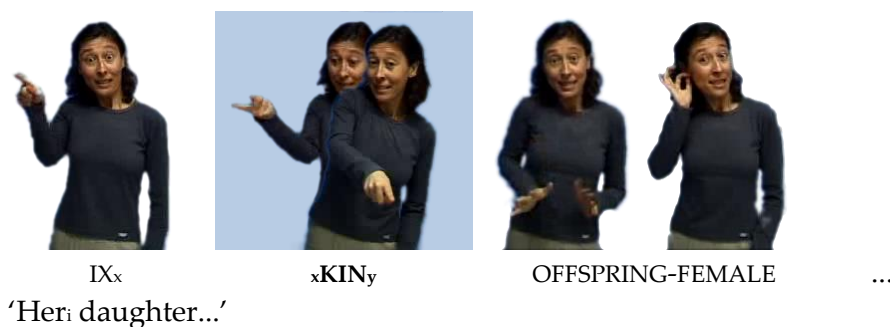
In addition to the use of AUX as an auxiliary, very similar forms exist in LSE that appear to serve as some sort of relational marker. In the data, these forms appear in two contexts: kinship terms and comparatives. Here they are

⁵ Note that the non-manual marking in this example seems to support the hypothesis that double agreement indeed serves an emphatic function.

glossed as KIN and RELN, respectively, although more detailed examination of both the form and function of these elements is required in order to elucidate their relationship to one another and to the general AUX auxiliary. Like AUX, both forms look like they may have evolved from concatenated pronouns or points. Neither use of these AUX-like forms has been described for other sign languages.

KIN is used to establish the family relationship between two referents (the first of which must already have been identified in the discourse; the second may be introduced with KIN). The sign moves from a locus associated with one referent (in (16) 'my sister') to a locus associated with another referent, and is followed by the kinship term for the latter with respect to the former.

LSE (TZ)
(16)



RELN is similar in form to KIN and AUX, but appears in contexts not related to kinship relations, and thus appears to be a more general relational marker. In the data in (17), it occurs with a comparative meaning to express the perceived superiority of another dog's bone. In section 5.3.2 we look at a specific auxiliary marker that is used exclusively for comparatives.

LSE (Ai_dog 0:45)

(17)



‘That bone’s really big and much better than mine.’

Examples (16) and (17) show that KIN and RELN differ in form from AUX: KIN and RELN involve the forearm pronating/supinating (as evidenced by a specific change in orientation of the hand during the articulation of the auxiliary) whereas AUX usually includes inflexion/extension of the wrist, as can be seen in both (14) and (15). Furthermore, with AUX the finger clearly points towards the associated loci and is aligned with the path movement.⁶

Additionally, it is not clear that either KIN or RELN truly are auxiliary verbs. In section 2.2.3.1 we saw that auxiliaries are defined as:

an element that in combination with a lexical verb forms a monoclausal verb phrase with some degree of (lexical) semantic bleaching that performs some more or less definable grammatical function. (Anderson 2006: 5).

In contrast, KIN appears in the absence of a lexical verb, as can be seen in (16), and the word order (sandwiched between two nominal elements) suggests that it is not even verbal in nature, given the canonical SOV word order in LSE. Furthermore, there is no evidence of semantic bleaching since KIN is not derived from a lexical form with semantic content. If anything, the element has become more specific since KIN has the meaning ‘to be a family relation of’.

RELN, in contrast, does appear to be verbal in nature since it occupies the sentence final position and could be considered to have a predicative function in sentence (17). Although the immediately preceding sign could also be

⁶ It is possible that this difference in form may be due to co-articulation effects related to the fact that KIN is more often used to describe relationships between two different third persons, and thus moves along the signer’s lateral (i.e. left-right) axis, whereas one of the arguments of AUX is often first person so the direction of movement is radial (i.e. toward-away from) with respect to the signer. However, in the case of RELN, example (17) includes a first person argument, and the pronation and unaligned finger are still present, suggesting that there is an underlying difference in form.

considered an adjectival predicate, it is not a typical lexical verb. Furthermore, there is no evidence that RELN has suffered a loss in meaning, so it seems unlikely to be an auxiliary verb. Given that these elements do not combine with a lexical verb and, furthermore, do not appear to have undergone a process of semantic bleaching, it is difficult to maintain that they are true auxiliaries.

Despite the differences between these elements and the general AUX auxiliary, in terms of both form and functional category, just like AUX both mechanisms make use of loci in signing space to establish relations between the referents associated with those loci. Although they might not be agreement auxiliaries, they certainly display spatial agreement. In the following section we look at two other candidates for verbal auxiliaries that are derived from lexical verbs.

5.3.2. *Auxiliaries derived from lexical verbs: GIVE-AUX and BEAT-AUX*

LSE has two auxiliaries that are derived from lexical verbs. Lexical verbs commonly undergo a process of semantic bleaching to become light verbs with weak lexical meaning and form part of serial verb constructions. The auxiliaries are similar in form to their corresponding lexical verbs, GIVE (18a) and BEAT (18b), both of which are agreeing verbs and thus may inflect to mark two arguments. Neither of these auxiliaries appears in the corpus data of this study; elicitation and discussion with the informants confirmed that the forms exist, and provided the examples for this section.

LSE
(18)



a) GIVE



b) BEAT

The GIVE-AUX is used as a causative and appears with predicative signs describing emotions or mental states. Recall that, as occurs in many sign languages, predicates in LSE can be nominal or adjectival in nature. Consequently, the sign accompanying GIVE-AUX may be a nominal, such as DISGUST (19a), or adjective-like, such as HAPPY (19b).

LSE

- (19) a. INSECT_x xGIVE-AUX₁ DISGUST
 'I find insects disgusting.' (lit. 'Insects make me disgusted.')
- b. HOME_x xGIVE-AUX₁ HAPPY
 'I feel happy at home.' (lit. 'Home makes me happy.')

In terms of position, GIVE-AUX appears immediately before the mental state predicate that it combines with to form the verbal complex. This auxiliary is also subject to two constraints with respect to the second argument it may select, both of which stem from the fact that semantically this argument undergoes a mental state. Firstly, the second argument, the EXPERIENCER, invariably appears in first person. This is related to the general tendency of sign language to embody experience from the perspective of the signer: combined with role shift, this allows non-first person reference to occur while using exclusively first person forms (see section 5.1.2). The second constraint is that the object argument must be human or human-like. There is, however, no such constraint on the argument marked as subject, as can be seen by the non-human argument INSECT in (19a) and the inanimate argument HOME in (19b).

A similar auxiliary derived from the verb GIVE has been described in some detail for GSL by Sapountzaki (2005) and has also been reported for LSC (Quer & Frigola 2006, cited in Steinbach & Pfau 2007: 320). The prevalence of the second argument to be first person is also observed for GSL (Sapountzaki 2012). Another GIVE auxiliary has been identified for VGT (Van Herreweghe & Vermeerbergen 2004) but it has a different semantic import and targets different verbs (such as 'hit' or 'caress', which are not mental states), thus selecting for a different set of arguments to those that appear with GIVE-AUX in GSL or LSE.

The second auxiliary derived from a lexical verb, BEAT-AUX, is used in LSE to mark comparatives⁷ and normally appears sentence finally. It may appear with nominal, adjectival or verbal elements as shown in (20a-c), respectively. The comparative meaning can be derived from the original meaning of the lexical verb BEAT, which, however, has been semantically bleached since the idea of superiority is not, on the whole, present with BEAT-AUX, as can be seen in (20b), in which the subject is semantically "inferior" to (i.e. clumsier than) the object.

⁷ Cross-linguistically, verbs with the meaning 'exceed' or 'pass' often become comparative markers in spoken languages (Heine & Kuteva 2002). For sign languages it has also been suggested that the verb GIVE can take on the function of marking comparatives (see Pfau & Steinbach 2013 for brief discussion and example).

LSE

- (20) a. SIBLING-FEMALE IX_x MONEY xBEAT-AUX₁
'My sister's got more money than me.'
- b. IOAR IX_x JEISON IX_y CLUMSY xBEAT-AUX_y
'Ioar is clumsier than Jeison.'
- c. SMOKE 1BEAT-AUX_x
'I smoke more than you.'

However, the notion of superiority may reappear with verbs with a suitable pragmatic context, such that if the verb SMOKE in (20c) is substituted for WRITE, the most apparent meaning would be 'I write better than you' (and not 'I write more than you'). This suggests that BEAT-AUX is only partially grammaticalized, and this is corroborated by the fact that the arguments are restricted to [+human] referents (or entities made up of humans, such as teams or countries). We already saw earlier, in section 5.3.1, that comparatives can also be marked with the RELN element, and that this element is attested in the data for comparisons between [-human] and even [-animate] referents (see example (17) above). The data suggest that these different elements are used in mutually exclusive contexts, with BEAT-AUX reserved for [+human] (or human-like) referents, while RELN may take any other type of argument. Further work is required to elucidate the exact distribution and limits of these comparative markers. (It should also be pointed out that LSE expresses the notion of comparison in a variety of ways, often with no use of an explicit comparative marker.) In contrast to GIVE-AUX, however, the object argument of BEAT-AUX is not restricted to first person (see 20b,c) since this argument is not necessarily an EXPERIENCER (of a mental state) and so does not have to be embodied by the signer. To our best knowledge, no such auxiliary has been described for any other sign language and informally consulting researchers of different sign languages has come up with a corollary in just one other sign language, ASL (Natasha Abner, pc).

Both BEAT-AUX and GIVE-AUX could be described as light verbs or partially grammaticalized auxiliaries, since they may often appear as the most verb-like element in a sentence. However, the flexibility of LSE nouns and adjectives to function as predicates adds support to the claim that these elements mark agreement as part of a large verbal complex. Once more, the mechanism for marking agreement is by use of spatial loci.

5.3.3. PERS

As explained in section 3.3.3, another type of auxiliary, derived from the noun PERSON rather than from pronouns or lexical verbs, has been described for DGS (Rathmann 2000) and also for LSC (Quer & Frigola 2006, cited in Steinbach & Pfau 2007: 323). The sign PERSON in LSE is very similar in form to its counterpart in DGS, and it also seems to have undergone or be undergoing some sort of grammaticalization process, since many uses of the sign are semantically bleached when articulated at a location associated with a referent in the discourse, as shown in example (21a). Furthermore, the sign may be associated with the first person, as in examples (21b,c), reinforcing the idea that it is acting in a functional role rather than as a (third person) lexical item. I gloss this grammaticalized LSE element derived from the sign PERSON as PERS (and not PAM, as the DGS auxiliary is glossed, since the two elements have divergent properties).

LSE (Ai_lion 0:25; Ai_conv 6:46; Ai_conv 16:06)

(21) a)



IX₁

SNIGGER

PERS_x

‘I treat him [that mouse] as a joke.’

b)



INFORMATION

LOSE

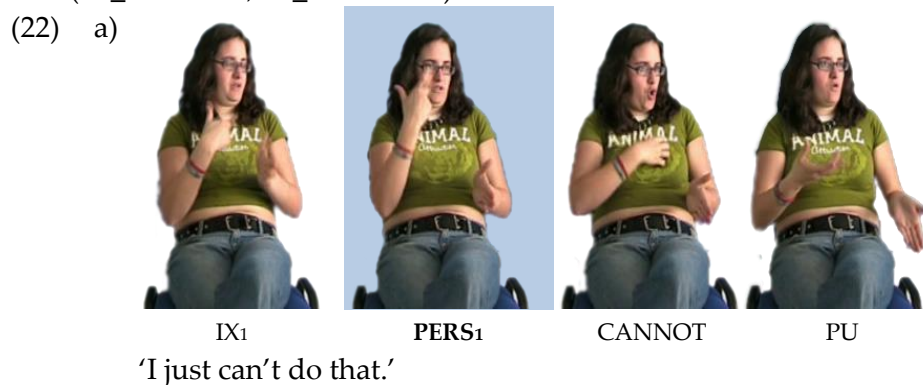
PERS₁

‘The information was lost on me.’



Crucially, in contrast to DGS PAM, PERS does not mark two arguments but can only be modified to indicate a single argument; in (21a), for instance, it does not move from the signer towards location *x* but rather is located at location *x*. Furthermore, the argument that is marked by PERS falls into the general semantic category of undergoer. This makes the situation for PERS in LSE very reminiscent of that described by Meir (2003) for a case-marked pronoun in ISL, PRO_[bC], as described in section 3.3.3. The examples in (21) coincide with Meir's findings for ISL: PERS does not occur with an explicit argument, and tends to mark a specific semantic category. This could suggest that this element is also better considered as some sort of (case-marked) pronoun than as an agreement auxiliary. However, a closer look at the LSE data reveals examples that make it difficult to maintain the ISL analysis for LSE. The examples in (22) show that the PERS element may occur with an explicit pronoun. This situation is not observed for ISL and substantially weakens the idea that PERS is a pronominal element. Furthermore, in (22b) the argument referenced by PERS does not fall into the typical semantic category of undergoer or affected party. Given the usual semantic import of PERS, one would expect (22b) to have a meaning like 'They were mistaken about me', rather than the actual meaning of 'I was mistaken'.

LSE (Ai_conv 7:24; Ai_conv 19:35)





I therefore suggest that PERS should be characterized as an agreement auxiliary. Previous work on sign language agreement has focused on two-place agreement that is directional in form (such as agreeing verbs); in this context, two-place agreement auxiliaries like AUX and PAM were identified for different sign languages. However, if the notion of agreement marking in sign languages is broadened to include single argument agreement (as described in section 5.2.3), then this opens up the possibility for auxiliaries that mark agreement with one argument, as PERS does. Notice that the behaviour of PERS mirrors that of single argument agreement: when there is just one argument, as in (22), PERS marks that argument; in the case of multiple arguments, as in (21), PERS marks the affected argument. The variability in the semantic import of PERS may be due to the fact that the element is still undergoing a process of semantic bleaching as part of its grammaticalization from a nominal to an agreement auxiliary.⁸

The PERS auxiliary in LSE shares properties with similar forms in DGS (PAM) and ISL (PRO_[bC]) as all three appear to have grammaticalized from the lexical nominal PERSON. Yet, there are clear differences in the properties of these elements: PERS marks only a single argument compared to the two marked by PAM; PERS is not pronominal in nature like PRO_[bC]. Nevertheless, these different elements all make use of spatial marking to identify referents (through agreement in the case of PERS and PAM, and through anaphoric reference in the case of PRO_[bC]) and possibly represent different phases of a larger grammaticalization process.

⁸ Interestingly, the semantic flavour of affectedness originally identified by Meir (2003) for the argument marked by PRO_[bC] in ISL holds not only for many arguments marked by PERS in LSE but also for the second argument marked PAM in DGS in many of the examples in the literature. This suggests a strong parallel between PERS and PAM, despite the difference in argument structure.

5.3.4. *Summary*

This section has looked at various agreement markers present in LSE, and has found several candidates, some of which may be better classified as light verbs or case-marked pronouns. The generic auxiliary, AUX, is the most attested auxiliary form cross-linguistically (Sapountzaki 2012), but includes some specific uses in LSE for describing kinship relations (KIN) and comparatives (RELN) that have not been described for other languages. LSE also has two auxiliaries derived from lexical verbs: GIVE-AUX, for the induction of mental states, which has been identified in two other sign languages; and BEAT-AUX, a comparative marker limited to [+human] referents, which has not been described for any other sign language. We also considered the PERS element, which is derived from the sign PERSON and looks like the case-marked pronoun described for ISL but may be considered a single argument version of the (two-place) PAM auxiliary described for DGS. Cross-linguistically, then, LSE appears fairly rich in auxiliaries, as most sign languages attest just one or two auxiliaries, and several have none at all.

The LSE data show that these auxiliaries do not occur as often as might be expected for elements that serve a function as fundamental as verbal agreement. This has also been attested in spontaneous data of other sign languages (GSL, Sapountzaki 2005) and appears to form part of a general trend in sign languages for agreement to be optional, which was mentioned earlier. Generally, alternative mechanisms, especially role shift and topic-related discourse strategies, may also be used to express the relationship between a verb and its arguments.

As has been emphasized throughout the section, all these auxiliaries or auxiliary-like elements display spatial agreement. Those that qualify as auxiliaries provide a means of looking at how the labour of agreement may be spread across different elements in the verbal domain and the extent to which agreement marking may be duplicated or optional. In this section we have seen that these auxiliaries are subject to certain constraints, most of which are semantic. The next section looks at constraints on verbal agreement in general, at the semantic level but especially in the phonological domain.

5.4. Constraints on verbal agreement

This section looks at the constraints that operate on verbal agreement in LSE. In section 2.2.6, in the description of agreement from a typological point of view, we introduced the notion of conditions and prerequisites for agreement. Conditions are factors that determine how (and if) agreement happens, but which are not realized by agreement itself. Thus, these are syntactic, semantic

or pragmatic considerations that influence the behaviour of agreement. An example of a semantic condition on agreement in LSE will be explored in section 5.4.1.

As discussed before, conditions may be contrasted with prerequisites, requirements that must be met for agreement to take place and that operate at the phonological or morphological level (see section 2.2.6). Section 5.4.2 describes two different types of phonological constraint for agreeing verbs in LSE. The first is a clear-cut case of a prerequisite since the phonological form of the verb (namely, whether or not it has contact with the body) determines whether or not agreement can take place. The second constraint relates to impossible number and person combinations in the verbal agreement paradigm in LSE and shows that these gaps are due to phonological constraints too. Still, this is not a prerequisite in the sense that the form of the verb itself blocks agreement, but rather specific combinations of agreement markers are illicit and agreement is not possible for certain person-number combinations of the verbal paradigm.

5.4.1. *Semantic constraints on agreeing verbs*

As we saw in section 3.2.1.3, there have been various claims about the degree of semantic restriction for agreeing verbs. Many authors have claimed that spatial agreement on agreeing verbs may only appear with [+human] or [+animate] arguments (e.g. Mathur & Rathmann 2006). However, counterexamples to this stipulation may be found in the literature on various sign languages (see section 3.2.1.3), and also occur among the LSE data. In example (23), the agreeing verb GIVE takes an inanimate subject, CD. A possible objection to this example is the fact that the agreeing verb GIVE may look identical in form to the spatial verb CARRY-BY-HAND (as pointed out in Padden 1983/1988). Thus, the verb in this example could be CARRY-BY-HAND, and as a spatial verb it tells us little about the semantic constraints on agreeing verbs. Nevertheless, there are various reasons for maintaining that the verb is GIVE and not CARRY-BY-HAND. Firstly, sentence (23) appears as part of an explanation of the contents of a CD with sign language material, and this discursive context suggests the first meaning rather than the second. With a spatial verb (CARRY-BY-HAND) taking locative arguments, the meaning would be something along the lines of 'What is handed from this CD to you?' – and this is certainly not what is implied. Furthermore, the semantics of CARRY-BY-HAND bring specific constraints, namely the fact that there has to be an agentive subject ('Who is handing something from the CD to the addressee?'). Such a subject is unavailable in the sentence or even in the previous discourse (were one to argue that a null topic could provide the

missing argument). As such, example (23) would be discursively, semantically and syntactically anomalous if the verb were CARRY-BY-HAND.

LSE (TZ)

(23)



'What does this CD offer you?'

A looser restriction on agreeing verbs is that their arguments must receive semantic roles usually assigned to animate referents, namely EXPERIENCER or RECIPIENT, so that the argument itself does not have to be [+animate] but must be able to bear a role that is typical of animate arguments (McDonnell 1995, cited in Saeed & Leeson 1999). This semantic portrayal of the agreement process is in line with Meir's (2002) analysis (see section 3.2.2.3), according to which sign language agreeing verbs entail a sense of transfer. As such, there is a semantic condition on the verbal arguments that they be potential possessors or, in other words, must be able to receive the semantic roles of SOURCE and GOAL. This condition is indeed met by the arguments in example (23), which could be characterized as SOURCE and GOAL/RECIPIENT, respectively.

These restrictions on the semantic roles associated with the arguments of agreeing verbs have been questioned by Quadros & Quer (2008). In the first place, it is not clear that all agreeing verbs involve the notion of transfer: Quadros & Quer mention pure transitive (as opposed to ditransitive) verbs, such as CHOOSE or SUMMON from LSB and LSC, in which the transfer meaning is not readily available. Similarly, in LSE agreeing verbs exist for such concepts as 'choose' and 'summon'. Secondly, they point out that the thematic role of the second argument may be that of THEME rather than GOAL, as evidenced by such agreeing verbs as PRESS or INVITE, both of which also exist in LSE as agreeing verbs (regular and backwards, respectively). In this sense, LSE contributes to the growing body of evidence that is problematic for a purely semantic characterization of agreeing verbs.

The above discussion has looked at semantic constraints on agreeing verbs and presented evidence that LSE does not conform to many of the

restrictions that have been proposed for agreeing verbs and their arguments in other sign languages. Obviously, it is possible that different constraints hold in different sign languages and that LSE has looser restrictions than those described for other sign languages. Even so, it also seems likely that many of these restrictions have been proposed due to the fact that (two-place) agreeing verbs in sign languages tend to be a certain type of verb, namely verbs that *on the whole* denote some sort of transfer from one referent to another. However, in at least some sign languages (of which LSE is one), agreeing verbs are not restricted to this class, and the underlying process is available to verbs that do not have these semantic properties. Furthermore, this highlights the fact that we are talking about semantic constraints on agreeing verbs. If spatial agreement is a more widespread phenomenon in sign languages, and we look beyond agreeing verbs to other agreement phenomena based on spatially-motivated mechanisms, such as single argument agreement (section 5.2.3) or auxiliaries (section 5.3), it becomes more difficult to identify a coherent semantic restriction that acts across the board on agreement *per se*.

5.4.2. *Phonological constraints on agreeing verbs*

From the description of the spatial marking that occurs on agreeing verbs (in section 5.2), it should be clear that LSE has a rich inflectional paradigm for this class of verbs. However, not all combinations of person and number are possible. This section uses data from LSE to examine the constraints on agreeing verbs and to discover whether any regularities can be found. Two types of phonological prerequisites will be looked at: firstly, agreeing verbs that have a fixed point of articulation; secondly, the interaction between person and number in the verbal agreement paradigm. Both sections make use of elicited data from participants, making it possible to discover which forms are acceptable and unacceptable in LSE.

5.4.2.1. *Defective agreeing verbs*

There are many verbs that cannot inflect for agreement because certain phonological features of the sign are lexically specified and so block the modification necessary for the expression of agreement (see section 3.2.1.3). An extreme case of this is a body-anchored sign, which is articulated in contact with the body at the beginning and end of the sign (effectively rendering the sign a plain verb). There are also verbs that are only partially anchored to the body, in the sense that only the start or end of the sign is specified for location. In LSE there is a particular class of verbs for which the initial place of articulation is defined. Many of these belong to the semantic

set of speech-act verbs such as SAY, WARN and TEASE, all of which are specified for a place of articulation at or near the mouth, as shown in (24).

LSE (JM_bear 1:48; Ai_agr 4:18 ; Ai_lion 0:20)

(24)



a) SAY



b) WARN



c) TEASE

For these verbs, movement is also defined but it is underspecified: the direction of the movement and the end point are not defined, such that in the uninflected citation form a default movement (away from the signer toward the middle of the signing space) is used (Sandler 1989). Hence, these verbs can inflect for object agreement by substituting the end point of the default movement with the locus associated with the object argument. Thus, (24a) is part of the sentence ‘What did the bear say to you?’, in which the verb SAY is directed toward the addressee to inflect for the object argument. Problems arise, however, to inflect for the subject argument since the initial location of the verb is already specified, or when the object argument is first person, since the movement of the verb is away from the signer.

In section 3.2.1.3, we saw that in ISL, such defective agreeing verbs have incomplete paradigms and tend not to show subject agreement. They may, however, show full agreement for first person object forms by including the phonologically specified location as a mid-point in the sign. Thus, the ISL sign ASK (specified near the mouth) would show the movement $x > \text{mouth} > \text{chest}$ for the meaning ‘He asks me.’ In contrast, in LSE, these verbs with a lexically specified location are not defective and do agree with two arguments in all person combinations. This is achieved by starting at the lexically specified location (at the chin for the LSE verb WARN), moving to the subject locus and then moving to the object locus, as shown in figure 5.3b. The result is a more complex movement, with an extra timing unit due to the initial movement from the specified location to the subject locus (except when the subject is first person, since in this case, the specified location and the subject locus coincide, see figure 5.3a). This may even mean that the verb doubles back on itself for a first person object (see figure 5.3c). Hence, the movement of such verbs may be defined as $\text{chin} > x > y$, where x is the locus associated with the subject, and y

that of the object. This pattern is also mentioned for ASL by Mathur and Rathmann (2010: 178).

The case of first person objects is especially interesting as LSE attests two different forms: one is the form shown in figure 5.3(c) (namely, chin>x>chest), and the other is that described above by Meir for ISL, shown in figure 5.3(d) (namely, x>chin>chest). The two forms coexist and for the time being I have not identified any factors that differentiate the distribution of each form. In section 7.3, these facts from LSE, which have not been reported for any other sign language as far as I know, will be used to provide a formal account for the constraints at play in the agreement process.

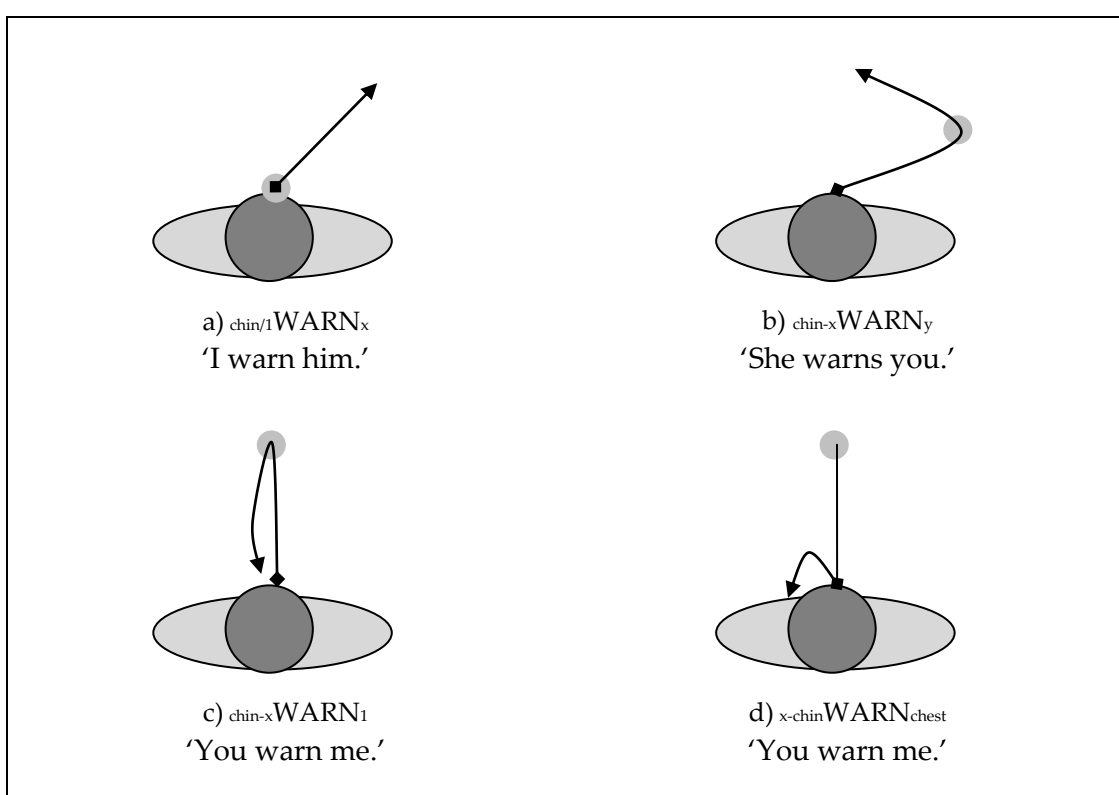


Figure 5.3 The expression of agreement for WARN in LSE. The square represents the lexically specified location for the sign (the chin), the grey circle shows the subject locus, and the arrow-head the object locus.

Defective agreement paradigms have been described for agreeing verbs with a lexically specified phonological matrix that blocks the expression of agreement for several sign languages, such as ISL and ASL. These verbs often include a specific location and such verbs also exist in LSE. In contrast to what has been described for other sign languages, in LSE these verbs are not defective and employ various strategies to mark agreement for both arguments. Furthermore, in certain circumstances, LSE may have more than

one form available, each of which is individually attested in other sign languages. The analysis of these facts in section 7.3 will show that this cross-linguistic diversity can be explained by slight variations in the same set of underlying rules that is common to the different languages.

5.4.2.2. *Constraints on person/number combinations*

Agreeing verbs inflect to mark person and number, and both features may combine to yield various person/number combinations. This section is based on a study that made use of elicited data from informants to discover what person and number combinations are possible for agreeing verbs in LSE. Informants were explicitly asked whether specific inflected verb forms were legitimate or not, using a methodology similar to that of Mathur & Rathmann (2001, 2006, described in detail in section 3.2.1.3). Basically, subjects were given a specific verb in its citation form and the inflection paradigm was elicited by asking for the form for each person/number combination. This was done by indicating whether the subject and object were first person or not, and singular or plural. If necessary, clarification was provided by the use of illustrative classifier constructions that indicated the person and numerosity of the arguments. Further clarification was given by providing suitable contexts in which the specific person-number combination could occur with a verb. In contrast to Mathur & Rathmann's study, elicitation was done for only a small sample of agreeing verbs, both prototypical (HELP, TEASE, SEND, AGGRAVATE, and WARN) and backwards (ATTRACT and UNDERSTAND), but for the full verbal paradigm (see table 5.1 below) rather than just a subset. This made it possible not only to confirm possible inflectional forms but also to collect negative evidence for those forms that are illegal in LSE. As a novel contribution, this study on LSE verbs included backwards verbs in order to distinguish between form- and function-based restrictions.

For this study, the interaction between person and number is limited to first person/non-first person and singular/multiple. This restriction was motivated by an attempt to simplify the domain of the study but also takes into account the phonological salience of the difference between contact with the body ("first person" like forms) and no such contact (non-first person forms).

The full paradigm for an agreeing verb in LSE should be something like the array of representations given in table 5.1. Recall that a prototypical agreeing verb moves from the locus associated with the subject to that associated with the object (see section 5.2.1). The locus for the first person is at the signer's body (normally on the chest), while the locus for non-first person referents is some point in the signing space (section 5.1). The plural is

indicated by means of an arc movement (section 5.2.1), which may be added at the beginning of the sign (for the subject argument), the end of the sign (for the object argument) or both (if both subject and object are plural). Neither reflexive nor reciprocal forms are included in this analysis; LSE has various mechanisms for expressing both reflexives and reciprocals, but these forms are beyond the scope of this thesis.⁹

			OBJECT			
			1P		XP	
			SG	PL	SG	PL
SUBJECT	1P	SG	/		1	2
		PL			3	4
	XP	SG	5	6	7	8
		PL	9	10	11	12

Table 5.1 The potential full paradigm of verbal inflection for person and number in LSE. The table shows the various possible combinations of verbal inflection for first/non-first person and singular/plural categories for typical agreeing verbs. Where both subject and object are non-first person, they are not co-referential (reciprocals and reflexives are not included in this study). 1P=first person; XP=non-first person; SG=singular; PL=plural (multiple).

Sign languages tend to have gaps in the agreement forms of verbs (Sandler & Lillo-Martin 2006); for example, in ASL forms like GIVE_{1PL} (first person plural object) are not possible (Mathur & Rathmann 2001). This tendency to have incomplete paradigms holds true for LSE also; some of the forms in table 5.1 are not possible in LSE and the actual paradigm is shown in table 5.2 (with the impossible forms shaded in grey).

The situation shown in table 5.2 can be characterized as follows: plural subjects are not possible with non-first person objects. Or alternatively, plural subjects are only possible for non-first person subjects and first person objects. This generalization is couched in terms of syntactic elements of subject and object, but it is possible that the restrictions are motivated by other factors, such as phonetics or phonology. In principle, from an articulatory point of view, there are no anatomical limitations that would prevent the illegal forms

⁹ For a phonological model of reciprocals in DGS, see Pfau & Steinbach (2003).

in table 5.2 from being produced. These are forms 3, 4, 11 and 12 in table 5.1, and they contain no movements that cannot be comfortably performed by the hands and arms. Note that two of the forms not acceptable to the informants contain complex movements due to both plural subject and object marking (an arcing movement is added at both the beginning and the end of the sign) but a legitimate form (10 in table 5.1) also contains such a movement.

			OBJECT			
			1P		XP	
			SG	PL	SG	PL
SUBJECT	1P	SG	/	/	✓	✓
		PL	/	/	x	x
	XP	SG	✓	✓	✓	✓
		PL	✓	✓	x	x

Table 5.2 The attested paradigm for prototypical agreeing verbs in LSE (grey = not attested).

The possibility that the restriction on these forms is phonological in nature may be checked by looking at the case of backwards verbs. While restrictions on the realization of agreement have been identified in previous studies (particularly Mathur & Rathmann, 2001, which this study took as a starting point), to the best of my knowledge, to date no attempts have been made to look into these constraints by including backwards verbs as a contrastive condition. Recall that for backwards verbs, the relationship between the direction of movement and the subject/object marking is inverted. As such, the full potential paradigm of backward verb forms for different person/number combinations would be as shown in table 5.3.

If the restriction we are looking at is syntactic (or even semantic) in nature, then backwards verbs should exclude the same person/number combinations as prototypical agreeing verbs did in table 5.2, that is, the forms 6, 8, 10 and 12 in table 5.3. If, on the other hand, the restriction is phonological, the excluded combinations should have the same form as those excluded for prototypical agreeing verbs (i.e. 3, 4, 11 and 12 in table 5.1 and table 5.3). The actual verbal agreement paradigm for backward agreeing verbs is given in table 5.4.

			OBJECT			
			1P		XP	
			SG	PL	SG	PL
SUBJECT	1P	SG			5	9
		PL			6	10
	XP	SG	1	3	7	11
		PL	2	4	8	12

Table 5.3 The potential full paradigm for backwards verbal agreement in LSE. (The labels for each form reflect those used in table 5.1.)

We immediately see that the restrictions do not fall on the same person/number combinations, but rather coincide with three of the four forms that are barred for prototypical agreeing verbs, namely forms 3, 4 and 12 (as shown in table 5.3).¹⁰ This clearly indicates that the restrictions operating on person/number combinations must be described in phonological terms in order to capture the uniformity of restrictions between prototypical and backwards agreeing verbs in LSE.

			OBJECT			
			1P		XP	
			SG	PL	SG	PL
SUBJECT	1P	SG			✓	✓
		PL			✓	✓
	XP	SG	✓	✗	✓	✓
		PL	✓	✗	✓	✗

Table 5.4 The attested paradigm for backwards agreeing verbs in LSE (grey = not attested).

Previous work on a set of four different sign languages (ASL, DGS, BSL and Auslan) revealed that the restrictions on agreement forms across the different languages were systematic and could be accounted for in terms of

¹⁰ I currently have no explanation for why form 11 is possible in the backwards verb paradigm but not in the prototypical paradigm. Possibly, examining a wider range of backwards verbs would shed light on this discrepancy.

phonological constraints (Mathur & Rathmann 2001, 2006). The study focused on the differences between types of agreeing verbs according to their phonological make-up (for example, those with a specified orientation, or with internal movement), whereas I have exploited the contrast between prototypical and backwards agreeing verbs to contrast phonological form and syntactic function. This means that the results are not directly comparable. Nevertheless, the findings of the LSE study fit in well with the previous findings in the sense that the constraints for the LSE forms also appear to be phonologically driven.

This section has looked at the gaps in the person-number inflection paradigms of agreeing verbs in LSE and has shown that the constraints are best described in terms of the phonological form. This finding will be relevant when characterizing the features that play a role in agreement in LSE in section 6.4, especially with respect to the person feature. We now turn to the manifestation of agreement by means of non-manual articulators.

5.5. Non-manual agreement

As we saw in section 3.4, the possible role of non-manual elements in agreement has been examined for (some) sign languages, and specific claims have been made about the function of various non-manuals, especially eye gaze. Given that the spatial agreement mechanisms that we are examining here are closely related to the pronominal reference system (section 5.1), which involves pointing or signalling in some given direction, non-manual behaviours that can mark directionality are clear candidates for expressing spatial agreement. As pointed out in section 5.1, eye gaze is active in pronominal reference (and in certain circumstances may be the only means used to indicate a locus in the signing space). Another way of marking and manipulating directionality is by means of role shift (section 5.1.2), which also makes use of non-manual markers such as body lean, shoulder tilt, head nod and eye gaze. These non-manual elements clearly interact with the spatial agreement mechanisms of LSE, but to what extent can they be considered part of the agreement process?

Section 3.4 outlined specific claims about the relationship between non-manual elements and syntactic structure. According to this theory, a non-manual feature may be an explicit manifestation of a syntactic feature (Neidle et al. 2000). More specifically, the articulatory scope of the non-manual feature is directly conditioned by (the c-command domain of) the functional head that hosts it. Thus, for ASL, head tilt and eye gaze have been associated with verbal agreement, specifically with the AgrS and AgrO heads, which are

present whether or not the verb is agreeing (Bahan 1996). I raised conceptual objections to this model in section 3.4, and studies of eye gaze behaviour using eye tracking equipment failed to support the original claims (Thompson, Emmorey & Kluender 2006; Hosemann 2010). Yet, the eye tracking data did show that eye gaze is consistently used in ASL verbal agreement for agreeing verbs (but not for plain verbs, as the original proposal maintained) (Thompson 2006).

The description of the spatial agreement mechanisms of LSE given in this chapter, with the closely related pronominal reference system and spatial mappings that can be transformed via role shift, suggests that non-manuals such as eye gaze and body tilt may be relevant to verbal agreement in LSE. Indeed, other authors have suggested that eye gaze is a marker of agreement in LSE (Herrero Blanco et al. 2005) and the data for this study certainly show that eye gaze may form part of, or at least interact with, the agreement system. One of the main confounding factors is that spatial agreement is often expressed at the same time as role shift. Role shift makes use of eye gaze, head tilt and other directional non-manuals, and may also involve its own agreement mechanism (see section 3.4.2). As a result, this makes it difficult to tease apart when these non-manuals are marking agreement or which instance of agreement (verbal agreement or “role shift agreement”) is being marked at a given moment. Since many of the recordings used for this study were narratives, and this genre makes extensive use of role shift, these data are not suitable for analysing the role of non-manuals in agreement.

LSE (Ai_conv 19:05)



(25)



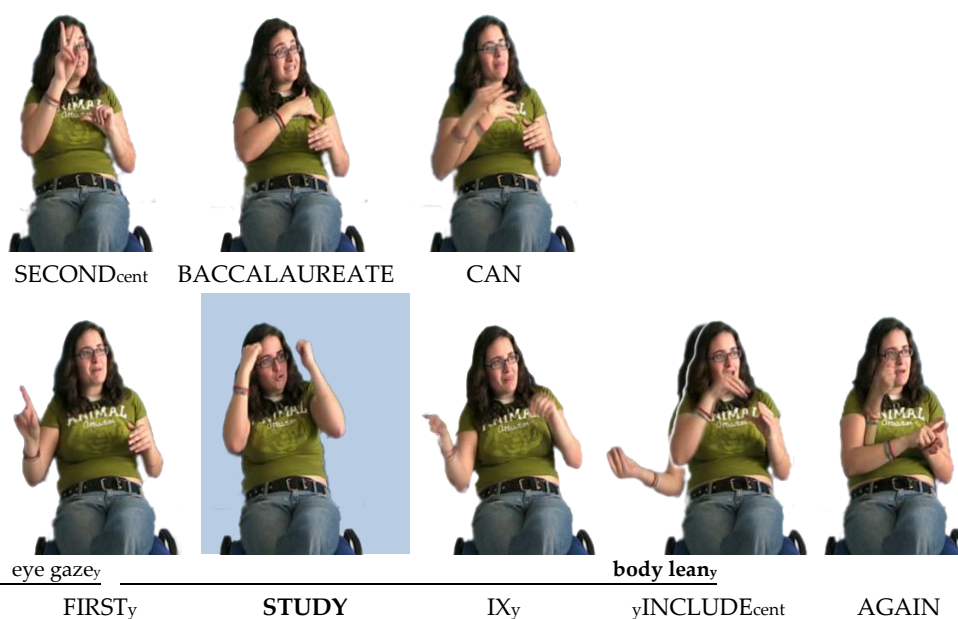
iSUPPORT_x

‘I support her.’

Example (25) is taken from the conversation recording, in which much less role shift was used, and additionally, the signer had an interlocutor, which meant that the baseline eye gaze direction – towards the interlocutor – was more natural and clearly identifiable. The example shows the signer’s eye gaze relative to the production of an inflected agreeing verb (the stills for the beginning and the end of the verb appear below the image of the corresponding eye gaze). The eye gaze is briefly directed toward the location associated with the object argument of the verb, but at the very beginning of the articulation of the verb. The data contain several such examples of eye gaze directed towards the location associated with the object argument of verbs, but there were more instances where no such eye gaze appears. As such, it is not clear when eye gaze can or must accompany verbal agreement.

LSE (Ai_conv 6:30)

(26)



‘You can take the first year (subjects) of the Baccalaureate again in the second year.’

Non-manual behaviour also occurs in the case of single argument agreement. A body-anchored verb, such as *STUDY*, cannot be articulated at a locus in the signing space, and thus cannot use localization in order to inflect for single argument agreement. However, this limitation may be compensated by means of non-manual markers: example (26) demonstrates how such a verb may be accompanied by a body lean to achieve single argument agreement with the nominal *FIRST*. Note that the body lean is preserved for the following point sign and also for the beginning of the subsequent agreeing verb

INCLUDE. The body lean ends when INCLUDE agrees with its second argument ('the second year', associated with the centre of the signing space).

In summary, the present study can shed no more light on the matter of non-manual agreement. Firstly, the qualitative nature of the analysis does not make it possible to quantify the eye gaze behaviour of the signers. Secondly, the nature of the data makes it difficult to draw hard and fast conclusions about the role of eye gaze or other non-manuals in agreement. Non-manuals have a variety of functions, both linguistically and paralinguistically, and may appear simultaneously as a multilayered signal (see section 1.1.1), making it difficult to isolate a specific function for a specific non-manual marker. Given that a large proportion of the data used for this study is narrative and relatively naturalistic ("data are messy"), they do not lend themselves to an analysis of the contribution of eye gaze to agreement. The issue of the role of non-manual markers in agreement in LSE must be left to future studies.

5.6. DP-internal agreement

The previous sections have looked at verbal agreement in LSE, and now we will examine the phenomenon of agreement in a different context. Just as agreement may exist within the verbal domain between the verb and one or more of its arguments, a parallel process is also found in the nominal domain, most typically with the noun controlling agreement on an adjective or determiner (see sections 2.2.2-2.2.6). Based on work on spoken languages, according to which the internal structure of DP (the determiner phrase that contains the nominal) mirrors the internal structure of CP (the clause), similar claims have been made for some sign languages, arguing that agreement occurs within the DP (see section 3.5). This section addresses possible agreement relationships within DP in LSE and assesses to what extent there is evidence for agreement in this domain. I will look at three different types of elements that can appear with nominals to see whether they show signs of entering into an agreement relationship with the nominal: numerals, points and adjectives.

As we saw in section 3.5, many sign languages make use of noun reduplication to mark numerosity. In the presence of a numeral, the marking of numerosity is considered to be an agreement relationship involving a [plural] feature on the numeral and the noun. In LSE numerosity can be marked by means of nominal reduplication, as can be seen by the repetition of the noun PROBLEM in example (27). Reduplication does not simply involve repetition of the sign, but makes use of space since each articulation of the

sign takes place at a slightly different location (denoted in example (27) by the subindices x2 and x3).

In LSE when a numeral occurs with a noun, this reduplication of the noun is not obligatory, and in the data for this study, there are no instances of numeral plus plural-marked noun. In this sense, LSE appears to pattern like other sign languages that mark plurality only once within the DP (such as DGS and ASL, see section 3.5). However, even though LSE tends to use bare nouns (unmarked for number) when plurality is marked elsewhere in the DP, there are some nouns that may reduplicate to show number marking, even in the presence of a number-marking element such as a numeral (e.g. THREE) or a quantifier (e.g. ALL). This has been reported for ASL by Neidle & Nash (2012), who suggest that such nouns are intrinsically singular whereas (most) other nouns are neutral with respect to number interpretation. Interestingly, the nouns in LSE that show this effect are similar to those reported for ASL (e.g. PERSON++, CHILD++), and it seems relevant that these are lexicalized classifiers.

LSE (Ai_conv 17:38)
(27)



‘[She] doesn’t want those problems to affect her.’

Alternatively, a numeral and bare noun combination may be followed by a classifier construction that associates the referents with a particular location. The examples in (28) show different types of classifier construction that may follow the nominal phrase ‘two men’ or ‘two friends’. As the examples show, the classifiers are localized in space and as such, space is utilized in order to

create an index for the DP which may be used later in the discourse in agreement-like relationships.

LSE (JM_bear 0:13; Ai_bear 0:06; Ix_bear 0:06)

(28) a.



eyebrow raise
TWO **MAN** **CL(person)_{y1}** **CL(person)_{y2}** **WALK++**
 'Two men were walking along.'

b.



eyebrow raise
WOOD **TWO** **FRIEND** **CL(two-advancing)** **WALK++**
 'Two friends were walking along together through the woods.'

c.



D hand **TWO** **FRIEND** **CL(walk)++_y**
 ND hand **FRIEND** **CL(walk)++_x**
 'Two friends were walking along side by side.'

Whether or not this use of space constitutes a manifestation of agreement *within* the DP is a non-trivial question. The fact that this use of space occurs during the process of location assignment opens the possibility that the structure is not a mere DP, since the spatial element (in this case the classifier structure) could be operating predicatively. Indeed, in example (28c), the location assigning classifier structure is also the verbal predicate of the

sentence, and thus represents a case of verbal agreement. For examples (28a,b), the location assigning classifier structure could be either internal to the DP (possibly as a relative clause), or a coordinated verbal predicate. The difference is crucial since if the classifier structure is subordinate to the DP, this provides evidence of a DP internal relationship; if, on the other hand, the classifier is one of several predicates, the agreement relationship is between the DP and the verb.

A good indicator of the structural status of these localized elements is the presence and distribution of non-manual elements. In (28a), eyebrow raise is present across the numeral, the nominal and the classifier construction, indicating that this forms a single unit, and thus that the classifiers are part of the DP. In contrast, eyebrow raise in (28b) is limited to the numeral-nominal complex, which suggests that in this case, the classifier structure is a separate predicate (as is the lexical verb WALK).

To summarize the evidence from numerals, the most relevant example here is (28a), since it shows that a DP may have internal structure, within which an agreement relationship can occur. Additionally, the existence of some nouns that reduplicate in the presence of a numeral provides evidence of DP-internal agreement.

Another element that may combine with and share the location specification of a nominal is the point. Points have been identified as determiners or demonstratives for different sign languages (section 3.5), each of which may occur together with a noun within the scope of a DP. The use of a point with a nominal element was identified as one of the strategies for location assignment, described in section 5.1.1. Given our interest in finding agreement within the nominal domain, two clarifications are necessary. Firstly, instances of location assignment are problematic since, as we saw above when looking at noun-numeral combinations, location assignment is often predicative in nature, and may thus involve a relationship outside the DP, not within it. Therefore, evidence for agreement must be looked for once location assignment has been realized and the referent-locus mapping is already established.

Secondly, the most apparent manifestation of an agreement relationship would be the combination of a localized nominal with a point targeting the same locus (or, as we will see later, with another localized element, such as an adjective or classifier structure), so that both elements have shared (spatial) features. In the LSE data for this study, any combinations of point and

localized nominals occur in the context of location assignment, such as example (2b), reproduced here as (29).¹¹

LSE (Ai_conv 17:26)

(29)



IX.PL_y

GROUP_y

‘the group’

(Introduction of the referent ‘group’ in the discourse.)

However, there are instances in the data of points in space occurring with nominal elements, but in the context of more complex spatial constructions. The example shown in (30) involves the use of a classifier structure that is backgrounded on the non-dominant hand.

The signer is talking about a dog looking at its own reflection in a river, and includes a point to the classifier maintained on the non-dominant hand, which represents the “other” dog (i.e. its reflection). In this case, we have a simultaneous combination of a point and a localized sign at a given location in space: two elements manifesting the same spatial location. Even so, it is not clear that the domain is restricted to the DP, since accounting for the status of the classifier handshape (and the fact that it perseveres over most of the sentence, including the matrix verb SEE) requires formal apparatus beyond our present scope (see Kimmelman 2014).

¹¹ Even the absence of shared location features in a point-nominal combination could provide evidence of DP-internal agreement. Once a nominal has already been associated with a given locus, even if it is not produced at the corresponding locus (as may occur with a body-anchored sign), the point is agreeing via the noun’s locus. However, in the data these point-nominal combinations also appear in location assignment contexts, or reassignment contexts, in which the referent is re-introduced into the discourse or assigned a new location in space (normally due to a transformation of the spatial map caused by role shift or some other spatial mechanism).

LSE (Ai_dog 0:52)

(30)



D hand 1SEEx IXx ALSO WANT CL(animal head)_y
 ND hand CL(animal head)_x-----



D hand yFIGHTx CL(animal head)_y
 ND hand yFIGHTx CL(animal head)_x

'[The dog] saw that the other dog also wanted to fight.'

LSE (Ix_hare 0:06)

(31)



HARE LAUGH-AT_x TORTOISE_x IX_x



TORTOISE_x SLOW_x LAUGH-AT_x

'The hare would laugh at the tortoise for being so slow.'

Turning to noun-adjective combinations, the clear-cut case of having both elements articulated at the same location would provide evidence for (spatial) agreement within the DP domain. Obviously, this requires for both the noun and the adjective to be spatially modifiable, and very few instances of this come up in the LSE data. One such example is given in (31), where the adjective *SLOW* is articulated at the same locus x at which the immediately preceding nominal *TORTOISE* is produced. (The point in this sentence occurs with the first mention of the tortoise in the discourse, and thus fulfils a location assigning function, which, as mentioned above, makes it problematic to claim that it forms part of a structure limited to a DP, so I focus on the nominal-adjective pair.)

More commonly than adjectives, classifier constructions are used in sign languages to give additional information about referents, and as spatially motivated elements they may be localized more readily than lexical adjectives. Example (32a) includes the combination of the nominal complex *NOTE* and *MONEY* with a classifier construction denoting a thick object: the first noun and the classifier construction are articulated at the same (midcentral) location. In example (32b), the noun *ANGEL* is not spatially modifiable due to its phonological form, but two other elements associated with the nominal are located in the signing space: a point and a classifier.

In the same example, something similar happens with the nominal *DEVIL*, but instead of a manual point, the directional signalling is achieved through non-manual articulation (head turn, eye gaze and body lean directed toward the location associated with *DEVIL*).

As mentioned earlier when examining the case of the point plus a classifier construction in example (30), the status of a classifier construction with respect to a nominal or to a DP is not clear, so if we wish to argue that cases such as (32) constitute evidence for DP-internal agreement, we need to be able to show that the classifier is limited to the domain of the DP. This is difficult on two counts: firstly, classifiers frequently make use of both manual articulators and occur in simultaneous constructions. This means that they co-occur with other sentential elements, making it hard to isolate what may be due to the classifier constructions and what may be possible due to structure made available by other parts of the sentence, such as the verb. Secondly, classifier constructions are generally predicative in nature (see section 1.2) and, just as we saw for location assigning structures in (28), it is necessary to ascertain whether the structure is subordinate (i.e. internal) to the DP or belongs to a different part of the sentence.

LSE (Ai_money 0:35; Ai_money 2:07)

(32) a.



brow low



brow raise

NOTE_{emidcent} MONEY CL(thick)_{midcent} CL_{midright}(thick-move)_{lowright}
 'A thick wad of notes fell out [of her purse].'

b.



(ht+eg)_x



ANGEL

ANGEL



(ht+eg+bl)_y

CL(person)_y

CL(person)_x



bly

DEVIL

DEVIL

D hand CL(person)_y
 ND hand CL(person)_x-----



D hand CL(person)_y
 ND hand CL(person)_x



yFIGHT_{cent}

xFIGHT_{cent}

'The angel and the devil set to fighting each other.'

ht=head turn; eg=eye gaze; bl=body lean

Once more, non-manual elements provide a good indication of whether or not these localized elements are part of the DP or not. If we assume that prosody is a reflection of the underlying structure, this offers a means to decide where these spatially modified elements lie in the structure. Thus, in (32a), the sustained behaviour of the eyebrows (lowered versus raised) distinguishes between the nominals and the first classifier construction, on the one hand, and the second classifier construction, on the other. This gives an indication that the first classifier forms part of the DP, and the shared location with one of the nominals (NOTE) can thus be considered a DP-internal manifestation of

agreement.¹² The second classifier is the main sentential predicate, and careful attention to the spatial locations also sets this apart from the nominal part of the sentence: the first (DP-internal) classifier is articulated at a midcentral location (coinciding with the nominal NOTE), whereas the second classifier starts from a slightly different location (that associated with the location of the purse, introduced earlier in the discourse). In contrast, for example (32b), the non-manuals provide no motivation for treating the localized structures as subordinate to the DP, and the sentence might be better translated as ‘There was the angel on one side, and on the other the devil, and they set to fighting each other.’

This section has looked at the nominal domain for evidence of DP-internal agreement, focusing on the combination of nominals with numerals, with points and with adjectives. Although the LSE data do not provide straightforward instances of agreement in this domain, careful examination of more complex cases – often involving classifier structures – supports the claim that DP-internal spatial agreement operates in LSE. In this sense, LSE shows a similar use of space to other sign languages such as ASL, LIS or NGT, which show spatial agreement internal to the DP (see section 3.5). The details for each language are different, such as how and when multiple plural marking may occur, but the process of DP-internal spatial agreement is present in these different sign languages. Worth remarking for the specific case of LSE is the fact that agreement in this domain is extremely infrequent, and when it does happen it is often by means of classifier structures.

5.7. Discussion and conclusions

This chapter has described phenomena in LSE that could qualify as manifestations of agreement, focusing on spatially grounded strategies that establish a relationship between different linguistic elements. In broad strokes, the use of space in LSE is similar to what has been described for other sign languages, with an underlying spatial reference system that involves assigning a locus in signing space to a referent (described in section 5.1). An ongoing debate in the sign language literature on agreement concerns the nature of these spatial markers and this question will be taken up in section 6.2.3.

This use of space is exploited by various verbs, which inflect to identify their arguments. This is most clearly observed (and most widely accepted in

¹² The syntactic status of the classifier remains unclear. It might function as an adjective or constitute a (reduced) relative clause (as suggested for certain classifiers in DGS by Glück (2005)).

the sign language literature) in the case of two-argument agreeing verbs (and their backwards counterparts), described in sections 5.2.1 and 5.2.2. I have suggested that verbs that inflect spatially for just one argument show single argument agreement (section 5.2.3) since the underlying spatial mechanism is the same. As was pointed out in section 3.2.3, various authors have excluded this phenomenon from the realm of agreement, and in section 5.2.3 I provided a detailed description of this mechanism in LSE including an account of plural marking for single argument agreement as a grammaticalized morphological process. This plural marking taken together with the presence of phonological constraints on the manifestation of single argument agreement make this spatial process comparable to the use of space by two-argument agreeing verbs. In section 6.2.3 I provide further arguments for treating both phenomena as instances of the same spatial agreement mechanism.

This study has identified a relatively rich set of auxiliary verbs for LSE. The auxiliaries described are similar to auxiliaries observed in various other sign languages, with the exception of the comparative auxiliary BEAT-AUX, which has not yet been described for any other sign language. This also makes the set of auxiliary verbs in LSE unique, although there are similarities to both GSL (which has both generic AUX and an auxiliary derived from the lexical verb GIVE) and LSC (which additionally has the PAM marker, not present in LSE). These auxiliary verbs in LSE all permit the manifestation of spatial agreement, and the more general AUX form will be useful for examining the agreement mechanism more carefully by looking at the distribution of agreement between the main lexical verb and the auxiliary.

In the case of the lexically derived auxiliaries, GIVE-AUX and BEAT-AUX, the suggestion was made that these elements are currently undergoing a grammaticalization process (this may also be true for the PERS element, which currently only takes a single argument, but may evolve into a two-place marker similar to the PAM auxiliary described for DGS or LSC). This lack of stability may be characteristic of the spatial agreement process generally. It is a common observation in various sign languages that, diachronically, plain verbs may evolve into agreeing verbs by inflecting for their arguments (e.g. Engberg-Pedersen 1993) and the existence of single argument agreement (described in section 5.2.3) also makes the boundary between agreeing and non-agreeing verbs more permeable. Furthermore, research on sign languages that have only existed for several generations and thus may be considered relatively young show that spatial agreement develops over time (Padden,

Meir, Aronoff & Sandler 2010).¹³ In addition to diachronic change, synchronic variation in spatial agreement is also present, with different signers using agreement to different degrees. This study has focused on the production of native or near-native LSE signers from the Basque Country, and further work looking at the variety of agreement use in the signing community could provide greater insight into the possibilities and the extent of this phenomenon.

The constraints that agreeing verbs in LSE must conform to have also been described for other sign languages. The LSE data show that agreeing verbs in this language are not restricted to [+human] or [+animate] arguments, and although these arguments do tend to be potential possessors, in line with the portrayal of agreeing verbs as involving the notion of transfer, the meaning of some LSE verbs is problematic for such a semantic account of agreement (as has already been pointed out based on Libras and LSC data, see section 5.4.1). Previous work on the constraints on the form of agreeing verbs had identified a group of verbs with lexically defined locations that show a defective agreement paradigm (in ISL, see section 5.4.2.1). In LSE, similar verbs exist but they maintain a full paradigm by adding an extra movement segment to the sign: the mechanism involved in this phonological modification will be analysed in section 7.3. The possible number and person combinations for agreeing verbs have also been looked at in previous work (on four different sign languages, see section 5.4.2.2) and this study builds on this research in order to identify the possible agreement forms in LSE. This study adds backwards verbs as a critical condition to distinguish between form- and function-driven constraints, and shows that in LSE the restrictions on specific person-number combinations are phonological in nature.

There is no clear evidence for non-manual agreement in LSE, although non-manual elements certainly interact in the agreement process, particularly eye gaze, which is directional and thus may play a similar role to the spatial modification of manual signs in signalling locations in space. Various claims for non-manual agreement have been made for other sign languages, particularly ASL (see section 3.4.1), but the exact function of non-manual elements such as eye gaze and head tilt is not clear, and the data are inconclusive. This study does not resolve this issue, and further work on the role of non-manuals in spatial agreement is required.

¹³ Although some younger sign languages such as ISL and Al-Sayyid Bedouin Sign Language (ABSL) show less developed use of space and spatial agreement mechanisms, this is not necessarily the case. Indeed, another sign language whose recent genesis has been well documented, Nicaraguan Sign Language, shows evidence of exploiting space after just a couple of generations of evolution (Senghas & Coppola 2001).

Looking at agreement outside the verbal domain gives an opportunity to see whether agreement is a more generalized phenomenon in the language. In the nominal domain, there is some evidence for agreement in LSE (see section 5.6). As was apparent throughout the discussion of DP-internal agreement, there is an issue related to predication that crops up whenever locations in space are used: not only are classifier structures taken to act as predicates, but it is also possible that localized signs themselves take on a predicative function. This was hinted at when we excluded location assignment as evidence for DP-internal agreement since location assignment could be predicative, and thus possibly clausal, in nature.

From a purely pragmatic point of view, referents are assigned a location in space either to be able to refer back to them later in the discourse, in which case they are something “to be talked about”, and/or to distinguish them from other referents, which may be located at other locations. In this sense, each use of the location associated with a given referent reinforces its identity (i.e. its differences from other discourse elements) and the fact that something is being said about it. Since predication is the basic mechanism for saying something about a given referent, it is unsurprising that localized structures (points, localized lexical items and classifier structures) are often predicative in nature. On a speculative note, this tendency toward using predicates that involve structurally simple clauses rather than a complex “heavy” clause with subordinated structures may be a parallel at the sentential level of the tendency at the word level for sign languages to have monosyllabic rather than “heavy” polysyllabic signs.

At this point we are in a position to give an answer to the first of the research questions set out in chapter 1: *What mechanisms does LSE use for agreement, and to what extent are they the same as or different to agreement mechanisms employed by other sign languages?* This chapter has provided a comprehensive overview of spatial agreement phenomena in LSE, and has compared those mechanisms with what has been described for other sign languages, based on the literature review provided in chapter 3. The analysis of the LSE data has revealed many cross-linguistic similarities in various aspects of agreement: agreeing verbs, backwards agreeing verbs, agreement auxiliaries such as AUX, non-manual agreement markers and DP-internal agreement. The data also reveal various characteristics of agreement in LSE that appear to be unique or not yet attested for other sign languages: specific uses of AUX (or something that looks very much like it) as a kinship or relational marker, an agreeing auxiliary (or light verb) for comparatives, a one-place auxiliary derived from the lexical item PERSON, and alternate forms for “defective” agreeing verbs that manage to express agreement for both

arguments in spite of a potential phonological conflict. Even in the face of these differences, this chapter has revealed that the spatial mechanisms of LSE show a strong degree of similarity with those of other sign languages at a deeper level, whether that be the semantic constraints on the arguments of the PERS/PAM/PRO_[bc] markers or the phonological constraints that agreeing verb forms are subject to. Time after time, we have seen that the details may differ from sign language to sign language, but the variation is guided by common principles.

This description of the LSE data proposes a significant contribution to the characterization of spatial agreement in sign language by considering localization, the marking of a single argument, as a case of agreement. This is motivated by the wish to investigate the use of space as a formal marker to create a conceptual connection between different elements, and space is thus exploited by both agreeing verbs and single argument agreement. In this sense, the answer to the first research question is still preliminary since the phenomena and mechanisms described here are still pending evaluation regarding how well they qualify as agreement. Throughout the chapter I have referred to these mechanisms as agreement, but it is important to recall that this has been stylistic shorthand for “agreement-like structures”. The next chapter sets out to evaluate these mechanisms to see to what extent they fit in with the concept of agreement based on cross-linguistic spoken language data (developed in section 2.2), and, if so, how canonical they are as agreement.

6. LSE agreement from a cross-modal typological perspective

The mechanisms typically characterized as agreement in sign languages and those attested in the LSE data for this study have been described in chapters 3 and 5, respectively. One of the objectives of this study is to assess how agreement-like these mechanisms are. In much of the sign language literature, these spatially motivated strategies for marking arguments are taken to be a manifestation of agreement, and few attempts have been made to provide typological comparison/embedding that would allow an evaluation of the canonicity of the phenomenon (Mathur & Rathmann 2010 and Lillo-Martin & Meier 2011 being noteworthy exceptions). This chapter looks at LSE agreement from a typological point of view, focusing on the different elements and concepts that have been developed to describe agreement in spoken languages (and which were introduced in chapter 2).

The agreement relation holds between a controller and a target, and each of these elements is examined in sections 6.1 and 6.2, respectively. In both sections, the corresponding LSE features are compared against the various options that have been described for spoken languages, and any important differences are also highlighted. The section on targets includes not only the types of elements that can be targets but also addresses how targets are marked for agreement, i.e. the means of exponence, including the issue of multiple exponence. This includes a review of the differences between agreement markers, pronominal affixes and clitics, distinctions that are critical for the decision as to whether a covariance is considered agreement or something else. Section 6.2 also assesses single argument agreement: this provides a broader range of targets for the agreement process and also requires revisiting debates in the literature concerning the status of such markers. Section 6.3 examines the domain of agreement, and attempts to reconcile the unusual tendency of LSE to mark objects more than subjects, or indirect objects more than direct objects. Here we also look at agreement beyond the verb's argument structure with the aim of making a distinction between a structure-based agreement process and a discourse-level mechanism, both of which involve a similar use of space. Section 6.4 considers the features – and their values – that participate in agreement in LSE. For

number, a distinction may be drawn between nominal and verbal number; for person, or location, fundamental differences between the referential systems of signed and spoken languages have important consequences for how agreement works in each type of language. Conditions on LSE agreement are reviewed in section 6.5, and again the notion of single argument agreement provides an alternative view on how restricted agreement is in LSE. The notion of canonicity developed by Corbett (2003b, 2006) offers a means of assessing all the above components involved in the agreement process, using a series of criteria based on considerations of prototypical agreement. These criteria are applied to LSE in section 6.6 to gauge the degree to which agreement in this language is canonical. Section 6.7 concludes the chapter with a summary and highlights important issues when considering LSE agreement from a cross-linguistic perspective.

6.1. Controllers

As was described in section 2.2.2, controllers are typically nominal, usually being nouns or noun phrases, and they may be non-overt, as occurs in pro-drop languages such as Spanish. This is also the case in LSE: a noun that is the argument of a verb may be associated with a specific location in the signing space and this location is used as the formal marker on the verb itself. Some nouns can be associated with a location by means of localization (i.e. articulating the sign directly at a given location), but other location assignment strategies (described in sections 3.1.1 and 5.1.1) such as pointing make it possible to associate body-anchored signs with a location. Furthermore, less typical nominal elements, such as entire clauses, which also appear as controllers in spoken languages, may also be associated with a location in space and thus serve as a controller in the agreement process.

Two important peculiarities of controllers in LSE agreement should be pointed out. Firstly, while controllers in spoken languages most often have a prototypical semantic role such as AGENT, GOAL or THEME, controllers in LSE appear to admit a wider variety of semantic roles, most notably in the case of locative arguments for spatial verbs. Although we saw cases of locative agreement in a spoken language like Chicheŵa in section 2.2.2, this is clearly a rarity in spoken languages. Secondly, in spoken languages, the formal or semantic property of the controller which is reflected in the form of the target tends to be some integral aspect of the controller. In contrast, in sign languages, the formal property of the controller that shows up in the agreement relationship, namely the location, is not part of the controller's lexical entry (as gender or phonological form are), but, as we have seen, is

assigned (via location assignment) during the discourse. We return to this difference when looking at means of exponence in the next section.

6.2. Targets

Agreement in spoken languages is attested on a wide range of targets, taking in verbs, auxiliary verbs, adjectives, pronouns, numerals, quantifiers, adpositions and nouns (see section 2.2.3). For sign languages, the traditional three-way distinction between plain, spatial and agreeing verbs (Padden 1983/1988; see section 3.2) identifies agreement as a process that takes place on just one class of verbs. A slightly modified version of this view, such as Quadros (1999), considers agreement to be present on all inflecting verbs (both spatial and agreeing under Padden's classification). Additionally, for those languages, like LSE, that have an agreement auxiliary, agreement may also appear on the auxiliary. This section looks at the types of targets that exhibit the spatial agreement process in LSE, both verbal (section 6.2.1) and otherwise (section 6.2.2), and how the marking that appears on those targets should be characterized (section 6.2.3), including the possibility of multiple exponence (section 6.2.4).

6.2.1. *Verbs and auxiliaries*

Before looking beyond the verbal domain to see if there might be more types of targets for agreement in LSE, it is worth looking at the distribution of grammatical information between lexical and auxiliary verb in LSE. The data in section 2.2.3.1 demonstrated that spoken languages divide the inflectional markers between the lexical and the auxiliary verb in a variety of ways.

In LSE, the agreement information is always on the auxiliary (whenever the auxiliary appears), but as we saw in section 5.3.1 the agreement marking may be doubled on the lexical verb. However, in LSE additional inflectional material, most importantly aspectual inflection, may only appear on the lexical verb. The data do not include instances in which the agreement auxiliary inflects for aspect, but discussion with informants confirmed that this is impossible and that aspectual marking is restricted to the lexical verb. This suggests that when considering all inflectional material, LSE is of the split/doubled type according to Anderson's (2006) classification: the lexical verb may carry aspectual and agreement marking while the auxiliary carries agreement marking only. An example of a spoken language with split/doubled distribution, Burushaski, is reproduced here as (1). In this language, the split in the inflectional information is between the subject, which appears on both verbal elements, and the object, which is marked on the lexical verb alone.

Burushaski (Berger 1998: 162, 161, cited in Anderson & Eggert 2001: 240, 242)

- (1) *ǰáa* *a-yúgusanc* ***moó-y-a*** ***bá-a***
 I.GEN 1-daughter.PL **2PL-give-1** **AUX-1**
 'I herewith am giving you my daughters.'

As pointed out in section 2.2.3.1, the split/doubled types pattern like Burushaski, in distinguishing between subject and object marking, or the distinction may contrast subject/object marking on one hand and TAM marking on the other. This second pattern is seen in Ciyao, a Bantu language spoken in Tanzania, Malawi and Mozambique. Ciyao has an auxiliary verb construction that shows agreement marking (in this case only for the subject) on both auxiliary and lexical verb, with aspect (and tense) marking on the lexical verb. The example in (2) shows first person marking on both the auxiliary *-li* and the lexical verb *-mas-*, while the TAM marking (*-a-* for past tense and *-ilé* for perfect aspect) appears only on the lexical verb.

Ciyao (Botne 1986: 305 and Whitely 1966: 214, cited in Anderson 2011: 46)

- (2) *ngá-li* *juvávéeceeté* *sooní* *pélé-po* ***tu-li*** ***tw-a-más-ilé*** *góná*
 not-AUX REL:3:speak:ASP again that.time **1PL-AUX** **1PL-PST-finish-ASP** sleep
 'No one spoke again, that was after we had gone to sleep.'

This example from Ciyao also demonstrates that sign languages are not alone in reserving the auxiliary for agreement marking. As was noted when discussing agreement auxiliaries in sign languages (sections 3.3 and 5.3), the specific information on the LSE auxiliary is different to what tends to happen in spoken languages: while spoken language auxiliaries generally include information relating to tense, aspect, modality, negative polarity and voice, LSE (and other sign language) auxiliaries only carry subject and object agreement. Here we see that Ciyao patterns more like sign languages since the TAM information is carried by the lexical verb and not the auxiliary. Nevertheless, this is typologically unusual in spoken languages and the reverse pattern (agreement marking on both auxiliary and lexical verb, TAM marking on auxiliary verb) is seen in many other languages, such as Xhosa (Bantu) (Anderson 2011). Consequently, for sign languages the auxiliary seems to be a particularly important target for agreement (and indeed that is its sole function), especially as it provides a means of expressing agreement in space when the lexical verb is phonologically barred from doing so.

As pointed out in section 5.2.3, in addition to the two-place directional verbs that make up the class of agreeing verbs, spatial modification appears on other types of verbs to mark a single argument. Additionally, in LSE this

type of localization is not restricted to verbs and may appear on other elements, which are described in the next section.

6.2.2. *Other targets of agreement*

In LSE, single argument agreement, in which a sign is articulated at a location in the signing space, may occur with adjectives, nouns, numerals and quantifiers, and on nearly any lexical item for which the phonological matrix does not include a location on the body, thus allowing it to be articulated at a location in space. This greatly expands the range of targets in LSE agreement, but not beyond those attested for spoken languages, since all these elements were shown to be possible targets in section 2.2.3. Even basic pronominal reference involving pointing at a location in space may be a manifestation of this agreement mechanism. (Again, this sits well with the spoken language data since many languages, such as Spanish or Tamil, have agreement on pronouns.) This captures an underlying idea that there is a basic spatial agreement mechanism in LSE, and highlights the fact that it is a location and not a pronoun that forms the means of exponence for agreement. I shall argue below that a pronoun agrees with its antecedent by means of a location, and the pronoun cannot be reduced to the location itself.

6.2.3. *Means of exponence*

We are interested in the expression of agreement in LSE through the use of space, and have seen above that this occurs not only on verbs but also on other parts of speech. This spatial marking has been characterized in different ways, and, as pointed out in section 2.2.3.3, a given characterization has consequences for whether or not the marking should be considered agreement. The fact that the inflection of agreeing verbs makes use of space in a very similar fashion to pronominal forms has led to proposals that the agreement markers on the verb are some form of incorporated pronouns. Indeed, early analyses of verbs in ASL characterized these inflected forms as pronoun affixes (Woodward 1970, cited in Liddell 2000: 307) or cliticized pronouns (Fischer 1975). Similarly, the spatial marking on localized verbs – which I am calling single argument agreement – was characterized by Padden (1990) as a pronominal clitic (and thus contrasted with the marking on two-place directional verbs, which Padden considered to show agreement proper). I will first address the singling out of single argument agreement as a cliticized pronoun before looking at the issue for spatially marked agreement more generally.

The characterization of localized verbs as containing a cliticized pronoun was based on Padden's observation that such verbs may be

accompanied by pronominal forms on the non-dominant hand. As such, the verb form includes an incorporated or cliticized pronoun. This is supported by the fact that such marking shows some properties typical of clitics (identified by Zwicky & Pullum 1983). Firstly, the marking shows a low degree of selection with respect to its host, since it may attach to verbs, nouns and adjectives, and secondly, the marking shows phonological restrictions since body-anchored signs cannot be localized. On the first count, agreement affixes may also appear on different word types, such as verbs, nouns and adjectives, so the ability to combine with different word classes does not necessarily make the location a clitic. On the second count, the phonological restrictions that apply to localized verbs equally apply to standard directional agreeing verbs: the LSE verb HATE is articulated on the chin and cannot inflect to show either subject or object agreement. Thus, the presence of phonological restrictions affects the use of location on any verb (or sign), and not just single argument agreement. In section 3.2.3, I argued that single argument agreement should be considered together with agreeing verbs from a syntactic point of view. Additionally, there are no morphophonological grounds for distinguishing between agreeing verbs and single argument agreement.

	agreement marker	pronominal affix
1 case roles	typically index just one argument (subject or absolutive)	typically index all main arguments
2 degree of referentiality	indifferent to referential status	frequently referential
3 descriptive content	have grammatical meaning	tend to have descriptive lexical content
4 balance of information	typically match information on the noun target	often give more information or mark more features than the full noun phrase
5 multirepresentation	generally co-occur with other elements indexing the same referent	often appear as the only element indexing the argument

Table 6.1 Properties that distinguish agreement markers from pronominal affixes, based on Corbett (2003c).

Turning to the more general issue of whether the use of a spatial agreement mechanism should be considered a form of incorporated pronoun, we saw in section 2.2.3.3 that pronominal affixes on the verb may index the verb's

arguments. Indeed, this may be a step on the grammaticalization path from free pronoun to agreement affix (Heine & Kuteva 2002). The diagnostics described by Corbett (2003c) based on spoken language data to distinguish between pronominal affixes and agreement markers proper (summarized in table 6.1) provide a means to evaluate the inflectional marking on LSE verbs.

Spatial marking (in the context of single argument agreement) indexes a single argument, which, as shown in section 5.2.3, is the verb's internal argument. Although LSE does not appear to mark case, this patterning would correspond to the absolutive argument (i.e., the subject of intransitive verbs and the object of transitive verbs). The issue of agreeing verbs is slightly different, since two arguments are indexed; even so, this marking is generally for the subject and indirect object, and not all arguments are marked, as would be expected for a pronominal affix. In terms of descriptive content, localization merely serves as a formal abstract marker and has little or no descriptive content. The fact that localization can give rise to (locative) descriptive content in certain contexts is a typical situation for agreement markers (Corbett 2003c: 175). Further support for treating spatial marking as an agreement marker is provided by considerations of multirepresentation: the inflected verb can appear with co-referential elements, such as an NP, as shown by the presence of the NP TORTOISE in (3a), or even a free pronoun, as can be seen in (3b), suggesting that the marking is not simply an incorporation of (a pronominal version of) the argument into the verb.

LSE (Ix_hare 0:06; Ix_lion 1:11)

- (3) a. HARE LAUGH-AT_x TORTOISE_x
 'The hare would laugh at the tortoise.'
- b. IX_i IHELP_x
 'I'll help you.'

It might still be argued that in examples like (3) the marker on the verb is a (cliticized) resumptive pronoun that appears together with a coreferential full NP (or another, free pronoun), but further evidence that this is indeed agreement is furnished by the fact that the marking may appear on multiple targets. For LSE we have seen that both the lexical verb and the auxiliary may simultaneously show agreement marking. Thus, the spatial marker behaves more like an agreement marker than a pronominal affix on several of the properties. Taken together, three of the criteria in table 6.1 (1, 3 and 5) point in the direction of an agreement analysis. However, the remaining two criteria (2 and 4) are not so clear.

Regarding the balance of information between the marker and a full NP, spatial marking in LSE generally provides as much information as the noun. However, it is possible for the noun to be unmarked for number and for the location marking to provide this information. As such, this criterion categorizes spatial marking as a pronominal affix. The issue of number marking requires further investigation, with greater attention to the difference between verbal and nominal number (see section 6.4.2 below).

Degree of referentiality also supports the idea of treating the spatial marking on agreeing verbs as a pronominal affix: agreement markers are expected to have a low degree of referentiality and to agree indiscriminately with definite, indefinite or negative expressions. Localization tends to unambiguously refer to some entity, more like a pronoun. This may be a modality effect, due to the strongly indexical use of space. However, recent work looking at the semantics of reference in sign languages suggests that locations in signing space may be used for unspecific referents (in the context of impersonal reference) and that verbs may avail of these locations to mark agreement (Costello 2015). Thus, spatially marked agreement in sign language may well admit much more than specific referents. The interaction of the use of space for indefinite or non-specific reference (as described by Barberà (2012) for LSC) with verbs inflected for agreement could provide interesting insight into this issue and requires further investigation. Thus, using these five criteria based on spoken language data, which to my best knowledge have not been applied to sign language data before, indicates that most of the properties of the spatial marking of verbs in LSE coincide with those described for agreement markers cross-linguistically, and not with those that characterize some sort of (incorporated or cliticized) pronominal affix.

More fundamentally, as mentioned above, the idea that the marking on agreeing verbs has developed from pronouns seems to depend on a conflation of the verbal marker with a pronoun. Pronominal reference makes use of space, and, in the guise of indexical pointing, does so in a minimal manner in the sense that the accompanying phonological material (handshape, initial location, orientation) tends to be unmarked. However, these pronominal forms cannot be reduced to or equated with the use of space. As well as the movement/facing towards a location, a pronoun also consists of a handshape and possibly other movement specifications that can distinguish between personal, possessive and reflexive pronouns, among others (Pfau 2011; Cormier 2012). Thus, the spatial marking that appears on agreeing verbs should be treated as spatial inflection: it is the same spatial marking that pronouns also exhibit, but the form is not an actual pronoun. To provide an analogy, the marking on the Portuguese adjective *vermelho* ('red') in the

phrases *os garfos vermelhos* ('the red forks') or *as facas vermelhas* ('the red knives') is very similar in form to the definite articles *os/as* but this does not mean that the marking involves incorporation of the article into the adjective; rather, both forms make use of same underlying agreement mechanism. This boils down to a distinction between the exponence and the target of agreement, but also requires an analysis of space as the referent marking system at work in sign languages.

Essentially, there are two issues at stake here. Firstly, whether or not the marking is some sort of pronoun, and secondly, what the nature of the marking is, an affix or a clitic. The foregoing discussion has shown that that spatial marking behaves quite differently to a pronominal form. A further observation is germane to both issues: location in itself does not constitute independent phonological material. As mentioned above, a location is *not* a pronoun, but rather a part of a pronoun. By the same token, a location cannot cliticize or form an affix with a verb as it does not have enough phonological material to exist independently.

LSE (Ix_lion 1:11)

(4)



D hand	transition(IX₁)	IX₁	iHELP_x
ND hand	transition(iHELP _x)	iHELP _x -----	

'I'll help you.'

Cliticized pronouns have certainly been observed in sign languages and two different mechanisms that result in cliticized pronouns have been described (Sandler & Lillo-Martin 2006). In the case of assimilation, the pronoun adopts the handshape of the neighbouring verb; coalescence, on the other hand, involves the production of the pronoun before or after a two-handed sign. The LSE data present both types of cliticized pronoun. Example (4) shows a coalesced pronoun, visible on the dominant hand during the prior transition and the first hold of the bimanual verb HELP as indicated by the handshape (with the index finger selected), demonstrating that the pronoun is clearly

reduced but still present. In contrast, when verbs are spatially marked, no pronoun (or remains of a pronoun) is visible.

More recent work has continued to argue that the spatial agreement marking in sign languages behaves more like a pronominal clitic (Keller 2001), drawing on evidence from its syntagmatic properties, distribution, optionality, inventory and realization (Nevins 2011). On the other hand, the evidence presented above – both Corbett’s diagnostics and the argument that the marking does not constitute enough independent phonological material – suggests that the marking is not derived from a pronominal form. While spoken languages commonly use pronouns as agreement affixes, the gestural modality makes available the use of space for referencing and this is recruited for the agreement. In both cases, a referential mechanism becomes part of the reference-marking system on verbs. However, while spoken languages tend to do this with affixes, the form of marking in sign languages is different.

The means of exponence for spatial marking in LSE, that is to say, the incorporation of a location or locations in a sign, appears not to involve the addition of phonological material, as is the case with affixes, but rather a stem alternation (Mathur 2000). Phonological models proposed for sign languages include location slots that can be assigned a given value. The spatial agreement process, then, involves assigning a specific value to one of the location slots in the phonological matrix (one in the case of single argument agreement; two for agreeing verbs). However, it should be pointed out that the distinctions in location within the signing space (where location assignment occurs) are not normally relevant as far as the phonology of lexical items is concerned. Most phonologically contrastive locations occur on (or near to) the body. As such, the agreement system makes use of distinctions in form that are not relevant for the phonological system. On a speculative note, it is possible that locations that are not anchored to some point on the body are not specific enough (and therefore perhaps not stable enough) for the phonological contrasts needed by the lexicon. As such, sign language phonologies make use of location but in a restricted domain. However, the spatial medium offers a far greater number of locations. Locations in the signing space can be exploited isomorphically for spatial descriptions, but also offer the possibility of creating a reference tracking mechanism. One can imagine that motivated spatial locations gave way to abstract indexing, by means of a grammaticalization process involving the semantic bleaching of the locative meaning of points in signing space or some basic locative verb BE-AT (Wilbur 1999). Such ideas hark back to seminal work by Shepard-Kegl (1985) on space and locatives in ASL, but we have no historical data from LSE to support this speculation. However, evidence from an evolving language

system, Nicaraguan Sign Language, suggests that, at least in the case of manual pointing, locative uses are present at early stages of the language and only later do more abstract, nominal uses of pointing appear (Senghas & Coppola 2011). Furthermore, this use of space for both locative and nominal reference ties in well with the fact that the distinction between spatial and agreeing verbs is often blurred, as mentioned in section 3.2.1.4. It also helps to explain why a referential locus can regain its spatial meaning when that information becomes relevant. This is demonstrated by Liddell's (2000) notorious examples of the type 'I asked a (tall) man', in which the sign ASK moves upwards in the signing space to indicate the (relative) height of the person referred to (for a formal semantic characterization of this role of spatial iconicity in sign languages see Schlenker 2011). I return to examples of this type and to the distinction between spatial and agreeing verbs in the discussion of conditions in section 6.5.

A unique property of the means of exponence of spatial marking on sign language verbs is related to a property mentioned above in the section on controllers (6.1). The form made manifest on the target is not some feature of the controller per se, such as gender, or even part of the form of the controller, as occurs with radical alliterative agreement (described in section 2.2.3.3). Rather, the target displays a stem alternation based on a form that has been assigned to the controller. In some senses, this is more similar to the type of alliterative agreement seen in Bantu languages, in which a gender marker on the controller appears on the target of the agreement process, as shown in example (5).

Swahili (Welmers 1973: 171, cited in Corbett 2006: 87)

- (5) **ki**-kapu **ki**-kubwa **ki**-moja **ki**-li-anguka
 SG-basket(G7/8) G7-large G7-one G7-PST-fall
 'One large basket fell.'

G=gender class

There are, of course, important differences. Firstly, the gender prefix *ki-* in Swahili is a reflex of part of the lexical entry for the noun, and whenever the noun appears, its gender is part and parcel of the syntactic element. In LSE, in contrast, a noun may appear without being localized in space, and only in certain situations, which appear to be discourse dependent, will a location be assigned. Furthermore, in LSE a noun may be assigned one location in a certain stretch of discourse and a different location in another. Secondly, in LSE, not all controllers can admit the form of the marker: body-anchored signs cannot be localized and the association between the sign and the locus

must be achieved by some other means, often by pointing (as described in sections 3.1.1 and 5.1.1). This makes it apparent that the target does not copy directly from the form of the controller, as appears to happen in radical alliterative agreement (see section 2.2.3.3), but rather from some feature that has been associated with the controller. Finally, the form of the marker is affixal in Swahili and a stem alternation in LSE.

6.2.4. *Multiple exponence*

Before closing this section on targets and the way in which they express agreement, I return to the issue of multiple exponence. We have already mentioned multiple exponence earlier in this section as evidence for considering spatial marking a manifestation of agreement rather than some sort of incorporated pronoun. In that case, I referred to the appearance of spatial marking on different elements, namely, the lexical verb and the auxiliary. Another type of multiple exponence occurs when a single target has more than one marker for a given argument. Although the data for LSE are scant in this respect, the possibility that spatial locations are marked not only by the manual component of a sign but also by non-manual features, such as eye gaze or head tilts (as described in sections 3.4 and 5.5), opens up the possibility for such multiple exponence. Given that the multiple articulators allow for simultaneous multiple exponence, this may provide a modality-specific characteristic of agreement in sign languages, and deserves greater investigation.¹

6.2.5. *Summary*

This section has assessed the targets of agreement in LSE and how agreement is manifest on those targets. The LSE data show that the spatial marking we are considering as agreement, both on agreeing verbs and other elements (under the guise of single argument agreement), occurs on a range of elements that have also been attested for spoken languages. In the verbal domain, the distribution of information between the lexical and auxiliary verb can be characterized as the split/double type, although, in contrast to what is seen in most spoken languages, the auxiliary seems to be specialized for carrying agreement information since it does not inflect for aspect. The means of exponence of this agreement mechanism in LSE is not a form of cliticized

¹ An alternative characterization of (manual and non-manual) multiple marking is as a circumfix (Thompson, Emmorey & Kluender 2006). While this reflects the fact that the same information is manifest as two identifiably different parts, the notion of a circumfix (a prefix and suffix) is difficult to reconcile with the manual marking as a stem alternation (and not an affix), and fails to capture the simultaneous nature of the marking.

pronoun, contra what has been suggested for other sign languages, but rather a stem alternation through the specification of a phonological feature associated with the controller. This agreement mechanism relies upon a specific use of (locations in) the signing space and does not appear to have an exact parallel in any spoken language, although I have pointed out similarities (and differences) with alliterative agreement. The use of spatial locations is a strongly indexical referencing mechanism that pervades the language well beyond a restricted class of verbs.

6.3. Domains

A useful division to make in different domains of verbal agreement is between clause-internal agreement, in which the controller and target are within the same clause, and agreement beyond the clause, as set out in section 2.2.4. We will assess the LSE data within the context of each in turn. Within the clause, LSE creates agreement relationships between the verb and its arguments as has been attested for spoken languages, but also shows agreement marking with various atypical elements, notably with locative arguments, a phenomenon that has been reported for some spoken languages but is nonetheless a rarity. Beyond the clause, LSE displays spatial marking for “pragmatic agreement”, as previously described for other sign languages, and for pronouns, although each appears to involve a slightly different use of the signing space.

6.3.1. Clause-internal agreement

In the context of clause-internal agreement, verbs generally agree with their arguments, with a greater tendency to agree with more prototypical arguments, such as subject and object, rather than indirect object or oblique arguments. As we saw in section 2.2.4, the Accessibility Hierarchy (reproduced here in (6)) establishes the types of agreement domain that are prerequisites for others to be present in a language.

- (6) *subject > direct object > indirect object > oblique > genitive > object of comparison*

The Accessibility Hierarchy (Keenan & Comrie 1977: 66)

LSE obeys this hierarchy since it expresses agreement spatially with subject, direct object and indirect object. (The use of localization with spatial verbs could be considered a case of oblique agreement.) Interestingly, agreement for both genitives (possessives) and objects of comparison occurs with the generic agreement auxiliary AUX, as described in section 5.3.1.

Although the data suggest that LSE follows the same patterns that have emerged from cross-linguistic comparisons as far as agreement domains available to the language are concerned, there are some anomalies. Firstly, ditransitive verbs in LSE tend to agree with indirect objects rather than direct objects. However, this tendency has also been reported for many spoken languages, which are said to distinguish between primary and secondary objects rather than direct and indirect objects (see section 2.2.4 for details), and so fits in with established typological patterns. Conversely, a trait common among sign languages, but unusual in spoken languages, is the fact that the object argument seems to be much more salient than the subject argument. This is reflected in the frequency of agreement marker omission for the subject, while the object argument marking is maintained. This issue will be examined further in the context of optionality in section 6.5.

Remaining within the clause, agreement in spoken languages has also been described between the verb and non-typical elements, exemplified in section 2.2.4 by possessor raising and copying-to-object formations, in which an argument not central to the verb's argument structure is marked as if it were such an argument. The data do not reveal that LSE has anything like possessor raising, but a parallel may be found in the ambiguity involved in using space for reference. The examples in (7) show how the same verb may agree with an object/locative, as in (a), or with a person, as shown in (b). (Note that the verb STEAL is a backwards verb, so the object is marked by the first subindex.)

LSE

- (7) a. BIKE_x DISAPPEAR_x _xSTEAL_y
'The bike's been stolen (from there).'
- b. BIKE_x ₁STEAL_y
'The bike's been stolen (from me).'

Furthermore, in the case of spatial verbs in LSE, the verb agrees with a locative element. In section 2.2.2, we saw an example from Chicheŵa, a Bantu language that admits locative arguments as the controller of verb agreement, and data of this sort led Thompson, Emmorey & Kluender (2006) to propose that ASL has locative agreement, and that locatives are arguments (rather than adjuncts) of spatial verbs in sign languages.

Continuing with agreement with non-typical elements, spatial marking may also be used to connect semantically or pragmatically related concepts for which it is difficult to characterize a specific syntactic relationship. Engberg-Pedersen (1994) identified this type of "pragmatic agreement" for

DTS, as mentioned in section 3.2.3, and this also occurs in the LSE data. For example, in a stretch of discourse describing her schooling, a signer uses the space on her left to refer to her school, and the central signing space to refer to high school. Thus, articulating a sign such as FOURTH-YEAR in the left-hand space means '(in) fourth grade at school'. In this sense, space is exploited to associate related concepts or ideas, and generally involves the use of broad regions, rather than locations, in the signing space. An explanation of pragmatic agreement will be offered in section 7.2.3 within the formal analysis of spatial agreement proposed in the next chapter. This sort of use of space may stretch over a length of discourse, and thus brings us to domains beyond the confines of a single clause.

6.3.2. *Agreement beyond the clause*

A clear candidate for agreement beyond the clause, already mentioned for spoken languages in section 2.2.3, is pronouns, which display the same features (of the antecedent) that typically show up on agreement markers. That (clause-internal) agreement and antecedent-anaphora employ common underlying mechanisms certainly appears to be the case in LSE, which makes use of the same spatial marking for both. In contrast to the pragmatic agreement mentioned in the previous section, which uses broader, less defined areas of the signing space, pronominal reference relies on more specific points in the space in the same way that localization of verbs does. Thus, any hopes of characterizing clause-internal agreement marking as a clearly demarcated use of space and beyond the clause relations as a more vague use of space (as evidenced by pragmatic agreement) are dashed by the existence of the locus-based spatial marking on pronouns.²

Furthermore, even when the domain of agreement marking is restricted to a single clause, the process has a strong discourse flavour since markers are assigned for a given stretch of discourse, and not identified in the lexicon. This contrasts with the situation for agreement in spoken languages, such as the gender marking in Bantu languages seen above in example (5), for which the markers depend upon lexically defined features. In the discussion of agreement domains in spoken languages in section 2.2.4, it was mentioned that many of the instances of agreement with non-arguments have been used to show that agreement is conditioned by discourse-level considerations related to highlighting salient animate referents, or even that agreement is essentially a discourse phenomenon. In the case of LSE, spatial marking

² A determining factor in this respect, which is starting to be investigated in various (Western) sign languages, is the role of specificity in reference. Neidle et al. (2000) compare definite and indefinite reference; Barberà (2014) looks specifically at specificity.

appears to operate at both levels, and serves to mark clause-internal arguments as well as discourse-level relations. It is important to bear in mind that the same formal mechanism may have different functions. Agreement within a specific syntactic configuration may employ marking that is also used for discourse level referencing, and the latter may not be subject to the same restrictions.

A final type of agreement relation that has caused much interest in the spoken language literature is long distance agreement (described in section 2.2.4), in which a verb agrees with an argument not in the same clause. With the current LSE data, I have found no examples that could contribute to the debate. Furthermore, since spatial marking can be both intraclausal and interclausal, finding a clear example of long distance agreement in LSE would require showing that a spatially modified verb agrees with a referent from another clause (which is not present in the verb's clause either as a null topic or a null argument, both of which are possibilities), and that the spatial modification is not some discourse-level mechanism. I leave this arduous task to future research.

In summary, the spatial marking used in LSE operates both within and beyond the clausal level, and is conditioned by discourse in the sense that the markers used are created for a given stretch of discourse. Although some uses of space at the discourse level (such as pragmatic agreement) are characterized by a less fine-grained division of the signing space, others, notably pronouns, use space in just the same way as verbs mark their arguments. Nevertheless, form and function should not be conflated, and it may be the case that the same spatial marking is used for various functions, at times syntactically determined and at times governed by broader discourse considerations. The next section looks at the features that are involved in LSE agreement.

6.4. Features and values

The type of information, or features, displayed in agreement processes generally falls into three categories: gender, number and person. Grammatical gender is not encoded in all languages, but number and person are taken to be linguistic universals (although some exceptional cases do exist, as explained in section 2.2.5). Additionally, there are other features that have been considered to take part in the agreement process, namely respect and case. In this section, we look at whether each of these features is present in LSE, and if so, how it is encoded.

6.4.1. Gender

At first sight, LSE does not appear to code the notion of gender in the verbal agreement process, at least certainly not sex-based gender common to Indo-European languages. The different hand configurations used by classifier constructions, which categorize the referent according to its physical properties, could be considered a type of gender system and proposals have been made for classifiers as an agreement mechanism in DGS (Glück & Pfau 1998) and specifically as gender agreement in NGT (Zwitserslood 2003).

Such a mechanism would be more similar to the Bantu-style gender agreement mentioned in section 6.2.3 above, in the sense that the gender marker (i.e. the classifier hand configuration) depends upon the semantics of the referent. In terms of the criteria for the gender distinction, these are purely semantic, since the phonological form of a given noun does not affect the class it is assigned to. However, in contrast to the semantic criteria for gender systems in spoken languages, which tend to be based on either sex-based categorization or on animacy, sign languages pay attention to the physical (and mainly visual) properties of the referents of nouns to classify them.

Although such an analysis could be applied to LSE (which also makes use of classifier constructions, as described in sections 1.1 and 1.2), our focus here is on the use of spatial marking. This gender system, in contrast, is limited to modifications to the hand configuration, so I shall not pursue an analysis of gender agreement in order to concentrate on spatial marking.

6.4.2. Number

Another feature of nominal elements that may enter into the agreement process is number. The most common distinction is between singular and plural, although some languages further distinguish between different degrees of plurality (dual, paucal, etc.). As we saw in section 5.2.1, agreeing verbs in LSE may inflect for number to differentiate between dual, exhaustive and multiple marking, shown in figure 6.1.

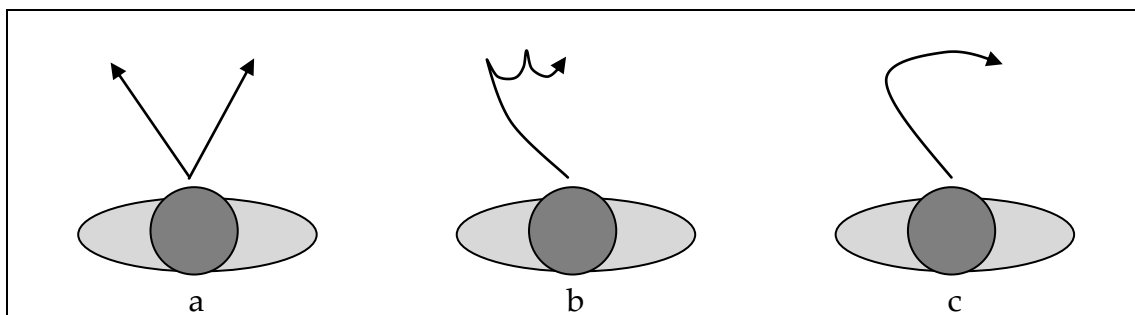


Figure 6.1 Inflectional forms for marking of plural objects in LSE, as seen from above: a) dual marking; b) exhaustive marking; c) multiple marking.

Additionally, single argument agreement marks number by means of bimanual articulation or reduplication, somewhat similarly to the dual and exhaustive forms of directional agreeing verbs.

An important distinction must be made here between verbal and nominal number. In section 2.2.5, we saw that number marking on the verb may reflect both the event semantics of the verb (event number) and the participants (participant number), and as such it overlaps and interacts with both aspect and nominal number as reflected in agreement. In contrast to the expression of (nominal) number in agreement, which displays the value of the number feature of the verb's argument(s) on the verb, verbal number is inherent to the verb itself and does not involve agreement with anything else. Thus, it is important to try to tease apart verbal and nominal number as expressed on the verb, as only the latter is an instantiation of agreement.

Of the markers identified for LSE, which ones reflect verbal number, and which nominal number via agreement? Intuitively, the dual and the exhaustive forms seem to affect the event structure of the verb as they imply at least one iteration of the event, as already alluded to in the discussion of number marking in section 3.2.1.1 based on Wilbur's Event Visibility Hypothesis. For a lack of rigorous semantic tests to confirm or refute these intuitions, let us turn to the diagnostics suggested by Durie (1986: 357-62), described in section 2.2.5.2, for distinguishing verbal number from agreement markers:

- i) verbal number operates on an ergative basis, reflecting the number of the most directly affected participant, which is the subject of intransitive sentences (S) or the object of transitive sentences (P), and this may contrast with other marking on the verb (e.g. subject marking, which agrees with S and A).

Single argument agreement shows an ergative patterning, since the verb agrees with the internal argument (S or P) and the fact that number marking does not occur for A is not revealing. Directional agreeing verbs, on the other hand, are not intransitive, so it is difficult to make use of the S-P distinction for them. However, considering the A argument (i.e. subject of transitive verbs), there seems to be a clear distinction between, on the one hand, the dual and multiple forms, which may mark A plurality, and exhaustive marking, which cannot. This suggests that the exhaustive may be verbal number since it appears to be limited to S and P arguments.

- ii) verbal number may mark different values to those marked by agreement, especially when verbal agreement is restricted by some condition.

Generally verbal and nominal number coincide in value, making it difficult to tease the two apart. Additionally, there are no known restrictions on verbal agreement that might allow us to isolate verbal number marking. A possible situation in which verbal number is marked as plural and nominal number is singular (and therefore unmarked) is the use of reduplication for iterative aspect. In this case, the sign is repeated (denoting plural event number) but at/towards the same location (and thus for a singular argument). Again, this points towards considering reduplication as marking verbal number.

- iii) verbal number may have a different set of values to nominal number; although rare, it is possible for verbal number to include a value (such as dual) that is not marked by nominal number in the same language, or vice versa.

Dual number marking has been reported for many sign languages (Supalla & Newport 1978 – ASL; Pizzuto & Corazza 1996 – LIS; Miljan 2003 – ESL) and there are a limited number of dual forms in LSE (Fernández Soneira 2004). Nevertheless, such forms do not constitute a clear dual value and number marking in nominals in LSE shows a singular-plural distinction (Herrero Blanco 2009). If the bimanual dual form is marking verbal number, this would indicate that verbal number encodes the dual value but nominal number does not,³ thus supporting a distinction between verbal and nominal number marking. However, given that sign languages show such a range of possibilities for quantification and number marking (classifiers, dual articulators, non-manual components: see Fernández Soneira (2004: ch.2) for an overview) a greater understanding of number is needed before drawing any conclusions on the basis of this criterion.

- iv) verbal number is retained in contexts where agreement is absent, namely non-finite forms that lack agreement morphology such as control constructions, imperatives and attributive usage.

This criterion depends upon identifying non-finite verbal forms in LSE, no straightforward task. LSE verbs do not inflect for tense and there is no distinction between infinitival and tensed forms, as has been observed for DGS and LSC by Pfau & Quer (2007), making it

³ Note, however, that the dual form also clearly marks that the nominal argument is dual in number, suggesting the agreement marking distinguishes more values than nominal marking on the DP, which is limited to a singular/plural distinction.

difficult to identify non-finite forms. Of the possible non-finite candidates suggested by Durie (1986: 361), very little is known about either imperative or attributive forms. For control structures, Aarons (1994) claims that in ASL they may take non-finite or finite forms, and motivates the distinction by the fact that the former allows topic extraction whereas a topic cannot be extracted from a finite complement. Applying such a test to LSE did not prove useful, and so this criterion offers little insight into the matter.

- v) verbal number is preserved in derivational word formation, but agreement inflection for (nominal) number is not.

This criterion would involve finding a form such as a nominalised verb (for example 'Tricking them was part of my plan'), on which verbal number is still marked but inflectional agreement with the arguments is not. Again, the matter of derivational word formation is poorly understood for LSE, and for sign languages generally. Nominalization processes for sign languages often involve reduplication processes (see Abner 2012 for ASL). This presents an additional challenge since it would be necessary to detect whether reduplication was present due to nominalization, to verbal number marking, or both. Furthermore, it could be the case that inflectional agreement is preserved in word formation processes in sign language (e.g. 'Giving to her makes me happy', where the object "her" would be marked on the nominalised verb), so once more, this criteria does not currently help to distinguish between verbal and argument number marked on verbs.

Taken as a whole, these criteria lend support to the idea that verbal number is marked by means of the reduplication of the verb (which appears in reduced form in the exhaustive marking), while the number feature of the verb's argument(s) is marked by means of the multiple locations. The multiple locations may be marked by separate hands, as in the bimanual dual form, or by including a movement across locations, as in the arc form. This applies in the same way to directional agreeing verbs and single argument agreement: plural marking involves both reduplication (to mark event plurality) and the arc movement (to mark plurality of arguments).

In line with the general tendency of agreement marking to be highly optional in LSE, number marking is also optional. This optionality for number occurs not only in the context of agreement marking on the verb, but also on the noun itself (see section 5.6). The noun may be plural but unmarked for number. Since an unmarked noun, such as COUSIN, may denote 'cousin' or 'cousins', this means that LSE has a general number value that lies outside the

number system and is expressed by means of the same form as the singular, as was described in section 2.2.5.2 for spoken languages such as Turkish. It remains to be established whether there is an interaction between number marking on the noun and number marking in verbal agreement, but a clear factor for number marking for agreement, which informants repeatedly mentioned, is the physical presence of the referents. Present plural referents invariably do trigger plural marking on the verb, whereas this is generally optional for non-present referents. This is reminiscent of the visible/invisible distinction for third person marking in Ute (Givón 1984: 356-8), but in this case provides a parameter that conditions the marking of the number feature.

In summary, distinguishing between verbal and nominal number in LSE reveals that number marking in the context of verbal agreement is achieved by moving the sign through the signing space, normally in the form of an arc, or by making use of different locations in space, in the form of bimanual dual inflection. In this sense, the number feature is comparable to what occurs in spoken languages and the available values fall within the possibilities attested cross-linguistically: in this case, singular (which may also serve as a default value), dual and plural. However, this number marking in LSE is not obligatory, but is much more likely to appear for present or visible referents. This forms part of a widespread tendency for optionality in the agreement system in LSE and will be characterized in terms of a condition in section 6.5.

6.4.3. *Person*

As became evident in the discussion of the use of space for reference in section 3.1.3, it is not immediately apparent how to reconcile the notion of person with the use of R-loci. The referential nature of space in sign language has been much debated, and different scholars have suggested that loci are indexical or that they encode the φ -feature of person (see section 3.1.3 for details). Spoken languages almost universally make a three-way person distinction and this is often marked in the verbal agreement system. LSE (and other sign languages), on the other hand, makes use of spatial locations to refer to referents. Section 3.1.3 introduced the two-way person distinction that has been proposed for other sign languages, and here I will examine in greater detail whether LSE does in fact make use of a person feature in this spatial marking mechanism. First I review the shortcomings of the indexical account and then look at alternatives: maintaining the person feature or adopting location as a feature. Finally, I propose an alternative solution based on a feature of identity.

As we saw in section 3.1.3, an indexical account runs into problems when faced with situations where the referent and the locus do not enter into an exclusive one-to-one relationship. This happens when the one-to-one mapping breaks down and may occur in either direction: the referent-locus relationship may be many-to-one, as in the case of stacking, in which several referents are assigned to the same locus; or one-to-many, when a single referent is assigned to more than one locus. The example of the “disrupted” use of role shift in section 5.1.2 is an instance of just such a breakdown: a referent that was associated with a point on one side of the signing space suddenly becomes associated with a point on the other side of the signing space.⁴ Alternatively, the one-to-one mapping may be invalidated by ambiguity: as mentioned in section 3.1.3, while spoken language pronouns are ambiguous within the relevant class (e.g. single, male entities for ‘him’), sign languages run into ambiguity when the point can refer to both a referent and to a locative argument. This can be seen in (8), in which the initial point could refer pronominally to the shepherd boy (previously introduced in the discourse and associated with locus *x*, as shown in example (3) of chapter 5), or to the place/situation in which the shepherd boy finds himself (also previously introduced in the discourse and associated with locus *x*). (Note that LSE is pro-drop and therefore a pronoun is not required in a sentence like (8), making the second, locative reading possible.)

Recent work on ASL has also claimed that treating loci as indexical variables fails to generate all available interpretations and that a feature analysis better captures their semantic and morphosyntactic behaviour (Kuhn 2015). Given that a purely indexical proposal cannot account for the data, different feature-based alternatives have been proposed. One option, which we have already mentioned, is to maintain the notion of grammatical person, but in a more restricted two-way distinction; another option is to consider location, rather than person, as the φ -feature encoded by spatial agreement in sign language. I will assess each of these options, looking at the problems of each for the LSE data, and based on this analysis propose an alternative feature to account for the spatial marking in LSE.

⁴ There are times when a change to the location of a referent in signing space is motivated, specifically when the space additionally involves locative (‘I moved my fan from here to there.’) or metaphoric (‘Let’s put that topic to one side.’) meaning. Such cases of locus shifting have been previously discussed (Bos 1990), but do not cover the type described here, where the change in locus has no apparent motivation.

LSE (JM_wolf 1:34)

(8)

IX_x

INVENT



CRY-WOLF

LIE

'He came up with the idea of crying wolf.'

'There [in the mountain] he came up with the idea of crying wolf.'

Various researchers have defended the idea that person is a relevant feature for sign languages but with a more restricted first versus non-first person distinction (Meier 1990 for ASL; Engberg-Pedersen 1993 for DTS). The main arguments for the difference between first/non-first relate to the special status and form of the first person pronouns: (i) the form of first person pronouns is constant and stable, as well as being different compared to all other pronouns; (ii) the first person form in role shift behaves differently to other pronouns; and (iii) first person plural pronouns are not compositional in form whereas other pronouns are. I examine each of these arguments in the context of the LSE data.

First person pronouns are different from other pronouns as they may have a different hand configuration, such as the  configuration rather than the  typically used for other persons, and always involve contact with the signer's body (Meier 1990). For LSE, this distinction is not seen between first and non-first person forms: alternation of the hand configuration is possible but for all forms, regardless of the reference. Additionally, McBurney (2002) suggests that these two observations (hand configuration alternation and contact) are related: the fact that there is contact in the first person forms creates a certain amount of specificity that makes it possible for phonetic variation in the hand configuration; for other person pronouns, in contrast, a lack of contact means that the configuration cannot deviate from its specified form. The presence of contact is nothing more than the result of the fact that the location associated with the signer is in the same place as the signer's body.

First person pronouns undergo reference shift in the context of role shift, so that a point towards the signer in role shift no longer means 'I, the speaker', but rather 'I, the protagonist of the role shift'. This referential shift does not occur for non-first person pronouns (Meier 1990). However, this

conceptualization of space necessarily distinguishes between signs on the signer's body from all others and thus creates a dichotomy between first and non-first. An alternative model of the signing space within which the signer moves (physically, as in body leans, and more conceptually, for any sort of role shift) provides a means of accounting for shifts in the reference of all pronouns. Furthermore, in the context of role shift, first person reference is achieved by means of a location *off* the signer's body. This can be seen in the LSE example (5) of role shift in chapter 5 between the doctor and patient: to say 'the doctor asked me what was wrong with me' the signer shifts into the character of doctor and directs the sign towards a point *in the signing space* (associated with 'me'). This further weakens the previous arguments based on the notion that first person reference has a special form that sets it apart from reference to non-first person.

First person plural forms are not compositional or indexical. In ASL, the first person plural pronoun is articulated on the signer's chest and involves a semicircular movement from an ipsilateral contact to a second contralateral contact (Cormier 2007). In contrast, non-first person plural pronouns involve an arc movement taking in the locations associated with the referents. As such, the latter are clearly indexical and compositional (since they involve an index plus a plural marking arc) whereas the first person plural form does not explicitly index the referents, nor does it involve the arc movement for plural (Meier 1990). This argument does not hold for LSE: the first person plural forms are much more similar to the non-first plural forms in that they are made up of the singular form plus a circular movement to indicate plurality. The first person form may display indexicality by being articulated on whichever side of the chest allows the circular movement to take in the referents other than the signer; as such, there is no difference in compositionality or indexicality between first and non-first pronouns in LSE.

Additionally, maintaining the person feature for this general agreement mechanism would create a typological anomaly: person plays a role only in verbal agreement and not in other domains, such as adjective noun agreement (Baker 2008). The agreement mechanism I consider here is a generalized process that goes beyond verbal agreement. If the locations in space were a reflex of person agreement, it would be necessary to explain why person agreement is not limited to the verbal domain. As such, agreement in LSE is qualitatively different to agreement in spoken language and this difference lies in the features that participate in the process. Taking into consideration the form of LSE pronouns and the objections raised for LSE against adopting the distinction between first and non-first pronouns made for other sign languages, there is no evidence for maintaining a first/non-first person

distinction in LSE. Without this distinction, the person feature does not play a role in agreement or in the referential system of LSE. We now turn to the proposal that location is the feature encoded by agreement in sign languages.

Zwitserslood & van Gijn claim that “the only two relevant types of φ -features in sign languages are gender and location” (2006: 195-6). (Their claim for gender is based on classifier handshapes as described above in section 6.4.1 and I will not address that issue further here.) Based on the referential use of space, the authors claim that sign languages show location agreement. The term “location” may refer to a morphophonological value (a locus in signing space), semantic feature (locative) or to a specific referent (‘location x’), but it is not clear that any of these things could be considered a φ -feature. A φ -feature, as pointed out in section 2.2.5, is abstract and categorical in the sense that the different values of the feature provide a means of classifying different linguistic items (typically nominal elements). Therefore, location must be understood as an abstract value that can be differentiated from the actual substantiation of a locus in the signing space; this seems to be Wilbur’s (2013) interpretation when she distinguishes between a geometric point and an actual point in space. If there is some abstract location φ -feature, what values does it take? The fact that location might not have a listable set of values is dismissed by Wilbur (2013: 223) as irrelevant to its linguistic status; it is nonetheless the case that other φ -features have a small, closed set of values.⁵

Another issue for location as a φ -feature with respect to the other φ -features that participate in agreement is the feature’s properties. Since typical agreement φ -features are direct, in the sense that they are associated with prototypical semantics (gender \leftrightarrow semantic class; number \leftrightarrow numerosity; person \leftrightarrow discourse role), this should also be the case for *abstract* location. Location may be instantiated as a point in the signing space, and this may (or may not) have (locative) meaning, but is this also the case for location as a φ -feature? Considering location to be a φ -feature appears to be a matter of thinking backwards: when faced with a use of locations in the form of a language, is it licit to postulate that location is part of the abstract grammar of the language? This seems akin to suggesting that English has a sibilant φ -feature because plural nouns are marked with a sibilant. Of course, the critical difference is that an argument’s being semantically [\pm sibilant] makes little sense, whereas having a given [location] value seems to make as much

⁵ I should point out that Wilbur (2013) does not argue for location to be treated as a φ -feature, but rather defends the linguistic status of spatial reference in sign languages. I cite her work here as many of her arguments are germane to the issue in hand.

sense as being second person or masculine. This is a clear effect of modality, since the visual channel makes it possible to employ forms that have a relatively transparent meaning that can be productively exploited. The important question is whether the modality effect goes beyond merely influencing how we analyse the language and actually creates a direct connection between function (φ -features) and form (agreement markers) that is unseen and unheard of in spoken languages.

In short, the proposal that sign languages make use of a location φ -feature is problematic. Firstly, location does not show the typical properties of φ -features of having a small set of categorical values. Secondly, it involves conflating the surface form (locations in the signing space) with the underlying abstract feature, which may be something else. While it could be the case that sign languages encode a grammatical meaning that is available to the languages' medium, I propose another possibility. The φ -feature responsible for spatial reference marking, which Zwitserlood & van Gijn (2006) call location and which is indeed realized by means of a location in the agreement process, is an abstract feature that encodes identity but is not intrinsically related to location. This identity φ -feature may take different values, which serve to distinguish one discourse entity from another. In this sense, the feature is direct since it is associated with the basic semantics of identity. Concerning the listability issue, in theory the number of values of the feature is unlimited, but in practice it is limited to the feasible number of discourse entities. Admittedly, this does not reduce the number of values to a closed set, but is more limited than any possible location.

A given value of this identity φ -feature is realized as a location in the phonological form. The breakdowns in indexicality mentioned above, such as stacking or a referent appearing in more than one locus, are due to the correspondence between the surface form and the underlying feature value. This proposal is based on the notion of R-locus (introduced in section 3.1.3), which also makes use of the correspondence with a (discourse-based) referential index in order to resolve the "imperfect" indexicality displayed by the spatial marking. The notion of an identity φ -feature attempts to integrate the referential mechanism into the apparatus of agreement, and this proposal will be further developed in chapter 7.

To summarize, in spite of the universal presence of the category of person in spoken languages, the use of space for reference in LSE does not employ this feature and as such it is not present in the verbal agreement system. I have assessed the proposal for an alternative φ -feature for sign languages, namely location, and have proposed that the abstract feature is not

related specifically to location (even though it surfaces in form as a location) but rather to identity.

6.4.4. *Other features: respect and case*

In addition to the major three features of gender, number and person, agreement systems may also mark other features. As described in section 2.2.5.4, respect and case are marked in the agreement systems of some spoken languages. This section assesses whether the data in this study provide evidence to postulate that these features also exist in LSE, and concludes that there is no evidence for either respect or case.

In spoken languages, respect is often marked by means of another feature, typically person (in Italian a third person form is used as a second person respect form, in both singular and plural) or number (in French, second person plural is used as the respect form for second person singular). Other languages have unique forms to mark respect that are not subsumed under another feature, as has been suggested for object honorification in Japanese (see section 2.2.5.4 for details and examples). This distinction occurs in both the pronominal forms and the verbal agreement marking. For LSE, in section 5.1 it was noted that the hand configuration of pronominal forms could change from the more common index-finger point (☞) to the flat ☞ handshape. However, it seems unlikely that this alternation is marking respect as a grammatically encoded category for two reasons.

Firstly, the “respectful” form is limited to use with physically present referents, and is not used with non-present referents. This means that the form is limited to deictic contexts and is not possible for anaphoric reference. Such a state of affairs could be expected for second person forms, since the addressee is invariably present, but the unavailability of the respect form for non-present third person reference suggests that the ☞ handshape is a stylistic polite form for those who are present to perceive it. Secondly, and more crucially, the alternation is possible with first person reference as well as second and third person reference. Since respect marks the perceived social relationship between the speaker and the referent, it makes little sense to have a respect form to refer to oneself. Again, this suggests that the use of the ☞ handshape is part of a polite register in which certain forms are deemed more appropriate, rather than a grammatically encoded feature.⁶

Leaving aside the pronominal system, is there any evidence for a respect feature in verbal agreement marking in LSE? As was pointed out in

⁶ A parallel can be found in certain varieties of English, in which reflexive pronouns are employed in more formal settings: ‘I myself would like to take this opportunity to thank yourselves for your understanding in this matter’.

sections 3.1.1 and 5.1.1, sign languages (LSE included) may assign referents to different locations in the signing space according to different conventions (Engberg-Pedersen 1993). One such convention involves metaphorical schemes in which the relative social status of referents is reflected by difference in height in the signing space. Thus, for example, a referent perceived to have higher social standing than the signer, such as a doctor, would be assigned to a relatively high location in the signing space, and any verb using spatial marking with the doctor as an argument would incorporate that higher location (Nilsson 2008: 53; Barberà 2012: 115). Could this use of height be considered a respect feature in the agreement marking? Again, as was argued for the pronominal forms, this alternation does not involve a grammatical encoding of a respect feature.

Firstly, the marking is not categorical, but involves the use of a continuum along the vertical axis of space. This contrasts with the discreet values displayed by the respect feature (and by φ -features in general) in spoken languages. The respect feature in LSE could be characterized as showing finer-grained distinctions in the same way that some languages have multiple number values rather than the simple singular-plural dichotomy. However, this misses the point that the space is being exploited as a continuous scale in much the same way that spatial descriptions in sign language involve an isomorphic mapping that defies a categorical analysis.

Furthermore, this use of space is not obligatory and is best described as a convention, evidenced by the fact that it enters into play with other conventions that also influence the choice of location assignment. Thus, for example, in the case of physically present referents, considerations of iconicity have greater weight: a signer talking to a doctor will use a point in space that coincides with the doctor's location; it would not be possible to mark respect by using a location above the doctor's real location. As such, this use of height as an indicator of respect in the verbal agreement marking does not form a consistent part of the grammar. It is possible that such a feature could be grammaticalized to form part of the agreement system, but the data indicate that LSE currently does not have a respect feature.

Case is often considered a relevant feature in agreement processes, particularly in the nominal domain. As pointed out in section 2.2.5.4, although case is not an inherent feature of a controller, it is closely related to agreement and can be marked together with more typical φ -features such as number and gender. In the context of LSE, we saw in section 5.3.3 when looking at verbal auxiliaries that there is an element PERS (derived from the sign PERSON) that behaves very similarly to PRO_[bC], a case-marked (dative) pronoun described for ISL (also derived from the sign PERSON). This leads us to ask whether case

is marked in the agreement system of LSE. Even though the PERS element described in section 5.3.3 shows similarities to the ISL pronoun described by Meir (2003; see section 3.3.3), I also pointed out important differences. In contrast to PRO_[bc], PERS does not appear to be pronominal, since it may appear with coreferential pronouns. Additionally, the semantic role associated with the marker is not consistent in LSE, since the referent may be AGENT/EXPERIENCER and not the just THEME, as occurs in ISL. Thus, the arguments for considering PRO_[bc] to be a case-marked pronoun in ISL do not hold for PERS in LSE. More generally, a case analysis for sign languages has been questioned due to the fact that there is no evidence for case morphology on nominal constituents, the elements that typically carry morphological case (Quer 2011). In conclusion, there is no evidence that case plays a role in the agreement processes of LSE.

6.4.5. Summary

This section has assessed which features (and corresponding values) are present in the spatial agreement process in LSE. Of the typical φ -features associated with agreement, namely gender, number and person, LSE makes use of number alone. (However, beyond the use of space, gender plays a role in the classifier system in the shape-based classes distinguished by different hand configurations.) Number in LSE can be both nominal and verbal: both may be marked on the verb and I have made a point of distinguishing between the two. From the point of view of agreement, nominal number (of an argument) marked on the verb results from agreement whereas verbal number expresses a feature that is inherent to the verb itself. Nominal number is marked on the verb by means of location(s) and for plurality this translates into movement across multiple locations; verbal number is expressed with movement by means of reduplication of the verb.

The lack of a person feature in LSE agreement is unarguably a typological anomaly since person distinctions are attested for all spoken languages. This is a modality effect due to the referential mechanisms available to a spatial language. Alternative proposals have suggested that location is the relevant feature for sign languages, but I have pointed out the need to separate the surface realization (a location in signing space) from the underlying function. I have tentatively proposed that a more basic feature of identity, which serves to distinguish one argument from another, could be at work in LSE agreement, and this proposal will be taken further in section 7.1. Even with this radical difference in the set of features available to agreement in LSE, the system still fulfils the generalization observed by Moravcsik (1978: 369) mentioned in section 2.2.5.4: whatever features are available to the

agreement system of a language will also be available in the pronominal system. The identity feature I propose here is also used by the pronominal system since the indexical points also avail of the locations that are the phonological manifestation of the identity feature.⁷ As such, LSE follows the established patterns for the behaviour of the features involved in agreement.

6.5. Conditions

Conditions are factors that are not realized in the agreement process, but which may determine how (or whether) agreement takes place. In section 2.2.6, we saw how animacy and topicality affect agreement in various languages, such that agreement will only occur if an argument is [+animate] or a topic, for example. In the light of the properties of agreement described in the sign language literature, especially the uneven distribution of agreement across the verbs of a given language, we considered in section 3.2.1.3 possible conditions and prerequisites that could explain the attested limitations on agreement. This discussion was framed within the characterization of agreement on directional agreeing verbs, which display a specific set of properties: agreement occurs on (di)transitive verbs of transfer, and arguments must be [+human], [+animate] or a possessor of some sort. However, I have argued that agreement in LSE should not be restricted to this type of agreeing verb and that there is a more general process involving an association between a referent and a location in signing space. This process is not limited to two- or three-place predicates and occurs with individual arguments as single argument agreement (sections 3.2.3 and 5.2.3). In this section, I adopt this broader perspective on agreement to examine the conditions that operate on this spatial agreement mechanism in LSE. This discussion will lead to the issue of optionality in LSE agreement.

Animacy is a well attested condition on agreement in many spoken languages, with less animate arguments being less likely to trigger agreement (see section 3.2.1.3 for examples). Various proposals have suggested that agreement is restricted to animate arguments in different sign languages (for ASL, Mathur 2000: 212; for Korean Sign Language, Hong 2008: 170). However, even within the domain of (two-place) agreeing verbs, this condition does not hold cross-linguistically: in section 3.2.1.3 we saw example (14) from LSQ of an agreeing verb with inanimate arguments, and in section 5.4.1, LSE example

⁷ Furthermore, the proposal for classifier handshapes as some sort of class or gender agreement (section 6.4.1) also fits into this generalization. If classifier proforms are considered as another type of pronominal reference, then the gender feature is also present in the pronominal system.

(23). Furthermore, expanding the notion of agreement marking to single argument agreement makes this condition less tenable: examples from ISL (see (22) in section 3.2.3) and LSE (see (10) in section 5.2.3) demonstrate that inanimate arguments such as 'stick' or 'exam' may trigger agreement. Furthermore, the arguments of the so-called spatial verbs are inanimate. Padden's (1983/1988) tripartite classification of verbs does not characterize the spatial modification of spatial verbs as an agreement process; I now reassess this distinction.

In section 3.2.1.4, I questioned the distinction between agreeing and spatial verbs: various authors have already proposed models that do not maintain such a distinction (for ASL, Janis 1992; for Libras, Quadros 1999). I will draw upon two separate observations to support the claim that both agreeing and spatial verbs manifest the same agreement process. Quadros & Quer (2008) suggest that agreement occurs in both categories of verb, which may agree with either locative or personal arguments.⁸ This coincides with the idea mentioned above in the section on the controllers of agreement (6.1) that sign languages have locative agreement (Thompson, Emmorey & Kluender 2006), and locative arguments form part of certain verbs' argument structure. Therefore, sign language verbs agree with their arguments, some of which are locative, and this is achieved by means of the same spatial mechanism of assigning the referent to a location in signing space.

This use of space for agreement should be distinguished from the exploitation of space for isomorphic mappings typically employed in spatial descriptions. In the case of locative arguments, the former tends to occur within the context of the latter, such that the locations assigned to arguments occur within a spatial map. By their semantic nature, locative arguments are places, so they occur in discourse contexts in which location is likely to be relevant, and spatial information is therefore represented (by means of isomorphic mapping of the signing space). However, the two uses of space are independent, as is evident from the following two cases that highlight the distinction. Firstly, non-locative arguments may occur in isomorphic spatial mappings. This occurs in the case of present referents, in which the locations assigned to referents correspond to each one's real-world location. Non-present non-locative referents may also occur in a spatial map, motivating the use of a higher location in signing space in examples of the type 'I asked the tall man' (cf. Liddell 2000). Secondly, locative arguments may appear in

⁸ Quadros & Quer maintain the presence of a person feature, which I have rejected above in section 6.4.3. My analysis makes use of an alternative identity feature, but the relevant point here is that arguments may be locative.

contexts in which relative location is not relevant, and thus an isomorphic mapping is not used. This dissociation is apparent in LSE due to the fact that isomorphic mappings of large physical distances tend to occur in the vertical plane: a signer describing where she has studied may place Bilbao, Barcelona and London at different points on the vertical plane to show their relative positions, as if she had a map in front of her. However, if the geographical location of each place is not relevant, each referent may be associated with a point on the horizontal plane. In this context, any verb that agrees with those locations ('I moved from Barcelona to London') is not susceptible to the (iconic and scalar) properties of topographic space. Indeed, the properties of spatial verbs that Padden (1983/1988) described (and which seemed to set them apart from agreeing verbs) are in fact properties of isomorphic, topographic space in which spatial verbs *tend to* (but do not necessarily) occur.

In summary, since the spatial agreement marking in LSE operates in a similar way for agreeing verbs, single argument agreement and spatial verbs, the arguments are not restricted to a specific semantic property, but take in animates, inanimates and locatives. As such, there does not appear to be a condition related to the semantic category of the arguments of agreement. However, although arguments of different types may trigger agreement, the issue remains that agreement in sign languages is highly optional. As described in section 3.2.1.2, agreement marking may be omitted for one of the arguments (agreement marker omission), or may be completely absent. In the first case, the subject argument is not marked, while marking for the object argument is preserved. As mentioned above in section 6.3.1, this appears to be related to a general tendency for the object argument to be more salient in sign languages, and requires further investigation to determine whether this could be a modality driven effect. Nevertheless, although the subject argument is not marked by the verbal inflection, alternative mechanisms could substantiate the agreement process such as a role shift operator, which may be characterized as another type of agreement (Herrmann & Steinbach 2012). Alternatively, the lack of subject marking may be due to specific types of reference: for example, null arguments (with null agreement marking) may be used to mark impersonal reference (Kimmelman 2015).

The complete absence of agreement marking on a verb that might potentially agree, on the other hand, suggests that the agreement relation is completely absent. Since agreement marking is achieved by the use of the locations in signing space associated with the corresponding referents, this issue is closely related to whether or not location assignment occurs. If locations are not assigned, they are not available to the agreement

mechanism. Whether or not a location assignment occurs seems to depend upon discourse considerations to do with the presence of other referents and whether the predicates give rise to the need to track those referents. For example, a semantically reversible sentence ('Bea likes you') may require (spatial) means to clarify the semantic/syntactic role of each argument, whereas this is not so for a non-reversible proposition ('Bea likes maths'). Equally, even when a verb only agrees with a single argument (as in the case of single argument agreement), the presence of competing referents in the discourse may force the use of space to distinguish between them. In this sense, the use of spatial reference (and hence of the agreement mechanism that depends upon it) appears "as required", perhaps along lines similar to the use of explicit pronouns in pro-drop languages. This "only if needed" nature of LSE agreement is an unusual property, since agreement is generally taken to be a basic, automatic mechanism in a language. The optional nature of spatial agreement will be returned to in section 7.1.3 since it represents an important challenge to a syntactic account of agreement in LSE.

To conclude this section on conditions, agreement in LSE, understood as a basic mechanism that uses locations in the signing space as markers for arguments, is not subject to semantic conditions. In contrast, the widespread optionality of LSE agreement highlights the fact that discursive and pragmatic considerations determine the appearance of spatial marking, and as such represent a condition on agreement that merit further investigation.

6.6. Canonicity

Having described the workings of spatial agreement in LSE in some detail, and having assessed how the different aspects (controllers, targets, features, etc.) measure up against what has been described for spoken languages, I now turn to an evaluation of how agreement-like this mechanism is. In order to do this, I use Corbett's (2003b, 2006) notion of canonicity. As described in section 2.2.7, the notion of canonicity is essentially a means of defining prototypical agreement based on a set of general principles that characterize the phenomenon and on consensus (in the literature and across different theoretical frameworks) about what counts as agreement. Thus, the properties of prototypical agreement conform to general characteristics of agreement (e.g. "agreement is redundant rather than informative") and are those that are accepted by most linguists as qualifying as a case of agreement (e.g. "the domain is local"). Prototypical agreement is defined in terms of a series of specific criteria (e.g. "marking is bound") and occupies the centre of the space of possible agreement-like phenomena. The remaining space is mapped by

the less prototypical alternatives for each criterion (e.g. “the domain is non-local”, “marking is free”).

C-1:	controller is present	>	controller is absent
C-2:	controller has overt expression of agreement features	>	controller has covert expression of agreement features
C-3:	consistent controller (all targets take the same value for a given feature)	>	hybrid controller (targets take different values for a given feature)
C-4:	controller’s part of speech is irrelevant	>	controller’s part of speech is relevant
C-5:	marking is bound	>	marking is free
C-6:	marking is obligatory	>	marking is optional
C-7:	marking is regular (affixal)	>	marking is suppletive
C-8:	marking is alliterative (marker on all targets is the same and identical to formant on controller)	>	marking is opaque (marker changes from target to target and is not identical to formant on controller)
C-9:	marking is productive (applies to all members of a category)	>	marking is sporadic (only appears on some members of a category)
C-10:	target always agrees	>	target agrees only when controller is absent location assignment occurs
C-11:	target agrees with single controller	>	target agrees with more than one controller
C-12:	target has no choice of controller	>	target has choice of controller
C-13:	target’s part of speech is irrelevant	>	target’s part of speech is relevant
C-14:	domain is asymmetric	>	domain is symmetric
C-15:	domain is local	>	domain is non-local
C-16:	domain is one of a set	>	single domain
C-17:	feature is lexical	>	feature is non-lexical
C-18:	features have matching values	>	feature values do not match
C-19:	no choice of feature value	>	choice of feature value
C-20:	no conditions	>	conditions

Table 6.2 *Criteria for canonical agreement. The symbol > means “is more canonical than”. Adapted from Corbett (2006: 10-27). For each criterion, the behaviour of spatial agreement marking in LSE is indicated in boldface and shaded background. The original formulation of C-10 is adapted to the case of LSE and the change indicated by strikethrough and italics (see text for details).*

This section examines each of Corbett's criteria for the general spatial mechanism of agreement in LSE, to include all instances of the association between a referent and a location in the signing space and thus not limited to two-place agreeing verbs. Table 6.2 provides an overview of the criteria for canonicity: each criterion examines a single property and contrasts two different possibilities or values, one of which (shown on the left in the table) is stipulated as more canonical than the other (shown on the right). The table also shows how spatial agreement in LSE fares for the different criteria by highlighting the appropriate value for each in bold. These will be discussed in the following section.

6.6.1. *Applying Corbett's criteria to spatial agreement in LSE*

The first four criteria (table 6.2: C-1 to C-4) deal with properties of the controller. The first (C-1) states that it is more canonical for the controller to be present. In LSE the controller may be present, but typically is not. In fact, this is the case with most pro-drop languages, and, given that many languages are pro-drop, Corbett (2003) points out that this type of canonicity is limited to relatively few languages.

The second criterion (C-2) stipulates that the controller has overt expression of agreement features. This generally does seem to be the case in LSE: during the process of location assignment, the controller is marked with the agreement feature expressed through the locus in signing space. In section 5.1.1, we saw that this can be achieved by means of an adjacent or simultaneous point or by localization, all of which can be treated as a marker on the controller. In the case of pronominal controllers, the pronoun overtly expresses the agreement feature by pointing towards the locus.

The next criterion (C-3) specifies that a controller with a single consistent agreement pattern is more canonical than a hybrid controller, which triggers different feature values on different targets. The LSE data indicate that this is the case: a given controller triggers the matching feature value on different targets. As such, LSE spatial agreement is canonical in this respect.

The fourth criterion (C-4) states that the controller's part of speech should not affect the agreement process, and refers to the fact that in canonical agreement it should be possible to define the controller in general terms. Thus, a predicate agrees with its subject, regardless of whether the subject is a noun or a pronoun. As noted above, in LSE the controller of agreement may be a nominal or a pronoun. Furthermore, as described in section 6.1, a variety of nominal-like elements may serve as controllers,

including entire clauses. In LSE, then, the part of speech of the controller is irrelevant to the agreement process.

The following nine criteria (table 6.2: C-5 to C-13) concern properties of the target of agreement; the first five relate to the means of exponence of agreement on the target, and the remaining four to the behaviour of the target itself. According to C-5, canonical agreement involves bound marking on the target. The more bound the marker, the more canonical, so that inflectional marking is more canonical than a clitic, which in turn is more canonical than marking by a free word. As described above in section 6.2.3, LSE marks agreement by means of a stem alternation of the target, a bound marker. I argued there that agreement in LSE cannot be characterized as a pronominal clitic and that the marking is bound, making spatial agreement canonical for this criterion.

Agreement marking is obligatory in the canonical case (C-6). The LSE data make clear that there is a great deal of optionality in the spatial agreement system, including the marking. The discussion of conditions in the previous section pointed out that the absence of marking may be due to an absence of agreement altogether (in which case no agreement marking is to be expected, but this optionality will be dealt with in the context of C-10 below) or may be a failure for marking to appear, described as agreement marker omission. Although this absence of agreement marking could be explained by alternative mechanisms (such as role shift) or specific properties of the argument (such as impersonals), the fact remains that the spatial agreement marking is not obligatorily present across the board in LSE, and is thus not canonical.

The marking in canonical agreement is regular as opposed to suppletive (C-7). Although I have characterized agreement marking in LSE as a stem alternation rather than an affixal process, this does not mean that the process is suppletive or irregular. Indeed, the contrast between a stem alternation and an affix is somewhat spurious since certain types of stem alternations may be characterized as featural affixes that induce modifications to the phonological form of (part of) a word (Akinlabi 1996). The important difference between affixes and stem alternations resides in the nature of the change to the stem: affixes add material to the sequential form of a word (whether that be at the beginning, middle or the end in the case of prefixes, infixes or suffixes, respectively) whereas a stem alternation involves a change in the quality of (part of) the word form. Even though an extreme case of stem alternation is suppletion (as described in section 2.2.3.3), the agreement marking in LSE is clearly regular in the sense that it applies a predictable modification to the form of the stem, namely a change in the location value of one or various slots

in the phonological form. As such, agreement marking in LSE is regular and canonical.

Canonical marking involves a marker that is the same on the controller and on any and all targets (C-8). This is the case for alliterative agreement, and I have already drawn comparisons between LSE and classic alliterative agreement such as gender agreement in Bantu languages (see section 6.2.3 and the Swahili example there). The marking of spatial agreement in LSE is a stem alternation that modifies the location of the sign, and this applies equally to controllers as to targets. For signs with no lexically specified location, this alternation may be achieved by localization (i.e. articulating the sign at the given location); otherwise the location may be marked non-manually or by means of an accompanying point. Additionally, the same marking (i.e. the location) may be applied to all sorts of targets, such as verbs, adjectives, numerals and quantifiers, making agreement marking in LSE canonical in this respect.

Related to the previous criterion, marking in canonical agreement is productive insofar as it applies to all members of a given category (C-9). Thus, if subject-verb agreement exists in a language, it should appear on all verbs of the language. For sign languages, one of the puzzles of agreement has been that only some verbs agree. However, this depends on limiting agreement to a specific class of two-place directional verbs. By expanding the notion of agreement to a more general mechanism exploiting spatial locations, the process becomes much more productive. In LSE, spatial agreement marking is available to most signs. As noted in the previous paragraph, the marking may appear directly as a manual inflection (localization) on any sign that fulfils the prerequisite of having an unspecified location; for body-anchored signs, non-manual marking may be used. As such, spatial marking in LSE is productive and canonical.

Looking more broadly at the target, rather than the actual marking of agreement, it is more canonical for the target to always agree (C-10). The alternative is for the target to agree only when the controller is absent. In this sense, LSE agreement appears to be canonical since the target will agree in the presence or absence of the controller. However, even if agreement on the target is not dependent on the type of controller in this sense, it is not the case that the target always agrees. Agreement in LSE displays a high degree of optionality, and this depends on whether location assignment occurs and is thus available for the expression of agreement. As mentioned above in section 6.5, whether or not location assignment occurs depends on a series of pragmatic and discursive considerations. In this sense, agreement in LSE is by no means canonical. Corbett's original description of the non-canonical value

for this criterion is not relevant for LSE, and so I have changed it in table 6.2 to reflect how LSE deviates from canonicity in this dimension. The fact that Corbett's description refers to a dependency on the type of controller, and that the revised version is formulated in terms of the availability of the means of exponence (i.e. location) raises the issue of the relationship between the controller and location. This issue will be explored further in the context of the asymmetry of the domain (C-14).

In canonical agreement, the target agrees with a single controller (C-11). Again, the standard characterization of sign language agreement in terms of two-place agreeing verbs leads to a non-canonical instance of agreement, since these verbs agree with both subject and object. However, taking agreement in LSE to consist of the use of a spatial location to mark an argument provides a basic mechanism that behaves canonically, as evidenced by single argument agreement in the verbal domain (5.2.3) and DP-internal agreement in the nominal domain (section 5.6).

Targets not only have a single controller, but that controller should be fixed and not one possibility of various options (C-12). This recalls the discussion of sign language verbs that agree with a single argument: originally they were portrayed as being "promiscuous" in the sense that they might agree with the subject argument or the object argument willy-nilly (Padden 1983/1988). However, as described in section 3.2.3, it was subsequently shown that these verbs do in fact show consistent behaviour, and regularly agree with the internal argument (Meir 1998b). Those cases where transitive verbs appear to agree with the subject are special cases in which spatial marking is used for pragmatic or associative purposes and limited to specific discourse contexts (Engberg-Pedersen 1993). This highlights the fact that spatial locations may be used for different purposes in sign languages, and not all uses should be treated in the same way. Thus, although not all uses of space in LSE are to be characterized as agreement, the spatial mechanism underlying single argument agreement is canonical in the consistency of the controller-target pairing.

The last criterion concerning targets is the corollary of C-4 for controllers: the target's part of speech is irrelevant (C-13). For LSE, we have seen that in the verbal domain both lexical and auxiliary verbs may show agreement (section 5.3). In the nominal domain, various elements, including adjectives, numerals and determiners may display agreement. This makes it possible to describe this aspect of agreement in LSE in general terms of attributive modifiers agreeing with their head noun. As such, agreement in LSE is canonical in this respect.

The next three criteria (table 6.2: C-14 to C-16) relate to the domain of agreement. C-14 states that the domain of canonical agreement is asymmetric, reflecting a basic characteristic of agreement as involving one element agreeing with another. Corbett (2003b) points out that this property could be taken as a defining characteristic for agreement, in which case only asymmetric relationships would qualify as agreement, but he includes it as a property of canonical agreement such that symmetric relationships count as non-canonical instances of agreement. A symmetric relation can be seen for structural case marking: a noun and an adjective in a noun phrase governed by a preposition may both be marked for case as required by the preposition. Thus, the case marking on both elements is due to a common source (the preposition), and not the result of an asymmetric relationship between the noun and the adjective. For LSE, the domain of the agreement relationship appears to be asymmetrical: verbs agree with their arguments, adjectives with nouns, and so on. However, there is also a sense in which, similar to the situation described for case assignment, both the controller and target in the agreement relationship receive the same marking. Since location is assigned to the controller noun, the domain between the controller and the target is symmetrical insofar as both co-vary with respect to some third element (realized as a location). This raises two issues. Firstly, location assignment for the nominal may itself be an agreement process in which the localizing element agrees with (i.e. is the target for) a controller X. Secondly, once location assignment for the nominal is established, if a subsequent agreement process occurs, such as verbal agreement, does the resulting nominal act as the controller (thus creating an asymmetric domain), or does the verbal target take the same controller X? I will address both of these issues in the next chapter (section 7.2), which develops a syntactic model for agreement in LSE. For the present discussion, the relevant issue is the second, and I offer a slight preview of the next chapter by advancing that LSE agreement involves the nominal (or, in more precise syntactic terms, the DP) acting as the controller. Thus, the domain of agreement is asymmetric, and LSE behaves canonically in this respect.

The domain of canonical agreement is also local (C-15). Similarly to the previous criterion, the notion of locality depends very much on the accompanying syntactic model. As was pointed out in chapter 2, the underlying syntactic assumptions will decide where the line is drawn between agreement and “other” phenomena (such as antecedent-anaphor relations). For LSE, the use of spatial locations appears in local domains. Although pronouns also make use of spatial locations, this reflects a process of feature copying common to most pronominal systems, and so I do not

consider it to be an impediment to considering that LSE agreement is canonical in the (widespread) locality of its domains.

The final criterion for domains (C-16) stipulates that it is more canonical for there to be various domains than just one. The LSE data show that spatial agreement may occur between verb and subject, verb and object, adjective and noun, and so on. Thus, LSE agreement operates in various domains and is canonical in this respect.

The following three criteria (table 6.2: C-17 to C-19) have to do with the features of the agreement process. Canonical agreement makes use of lexical features (C-17). This is clearly not the case for spatial agreement in LSE, since the feature is not associated with the class to which the nominal controller belongs (as would be the case with gender) but is assigned to the nominal. As such, the feature of spatial LSE agreement is non-canonical in this respect.

The features of canonical agreement have matching values (C-18). In spatial agreement in LSE, the values of features match between the controller and target. Potential exceptions to matching feature values are instances where different points in space are used for a single referent (van Hoek 1999; Nilsson 2008; described in section 3.1.3). Although the feature's value appears to be different on different targets, two issues need to be highlighted here. Firstly, the expression of the feature's value (i.e. the location in signing space) is what changes, and not necessarily the value itself. Secondly, this phenomenon generally occurs in the context of role shift, and the change in the expression of the value can be characterized in terms of an operator (or agreement mechanism) that resolves different surface forms and achieves co-reference to a single underlying feature value (Quer 2005; Herrmann & Steinbach 2012). Thus, any seeming inconsistencies in the feature values triggered by a controller can be accounted for by referential shift mechanisms available in LSE.

Additionally, feature values in canonical agreement are determined insofar as only one value is possible; less canonical agreement systems provide a choice of values for a feature in a given context (C-19). Again, changes in the location assigned to a referent may appear to be less canonical in the sense that they provide a choice of values for the agreement feature. However, as argued above, this is more to do with the *expression* of a feature value and not with the value itself. Furthermore, these changes in the expression of agreement occur within role shift, which represents a change in the domain of the agreement process. Thus, it is the different domains that motivate the different agreement forms and there is no need to contemplate a choice of feature values for a given context.

The final criterion for canonicity (table 6.2: C-20) refers to conditions: canonical agreement has no conditions. Once a target, controller, domain and features have been defined, this should be enough to fully specify the agreement relation. However, for LSE, we have seen that the presence and expression of agreement is subject to various conditions: notably, discursive and pragmatic considerations determine whether space will be used for reference tracking, and also the physical presence or visibility of the referents in the communicative context. As such, agreement in LSE is not canonical in this respect.

In summary, this assessment of spatial agreement in LSE shows that on the basis of most of the criteria the process is more canonical than not: 15 out of 20. It is important to bear in mind that most spoken languages also present varying numbers of non-canonical properties. As a comparative, a precursory evaluation of verbal agreement in spoken Spanish suggests that the process is canonical according to 16 of the criteria, but has less canonical behaviour for four criteria (C-1, C-2, C-8 and C-18). Nevertheless, these criteria serve as guidelines, and do not furnish us with an index of canonicity: as Meatloaf so aptly points out, “two out of three ain’t bad” as far as scorekeeping goes, but more important is the nature of the measures being applied. To avoid trying to make sense of a statement of the type “LSE agreement is 75% canonical”, I turn to the general principles that underlie the criteria for canonicity to provide a broader perspective (Corbett 2006).

6.6.2. *Applying Corbett’s general principles to spatial agreement in LSE*

Three general principles underlie the criteria for canonicity. These principles concern redundancy, syntactic simplicity and the morphological expression of agreement (Corbett 2003b, 2006). Each criterion is motivated by one (or more) of these principles, and these dependencies are shown in table 6.3. The table also indicates whether spatial agreement in LSE is canonical for a given criterion by means of a tick or cross.

The first general principle states that canonical agreement is redundant rather than informative. This principle groups together criteria 1, 2, 10, 17, 18 and 19 (Corbett 2006: 27). As can be seen in table 6.2, spatial agreement in LSE meets just half of these criteria, which indicates that the system displays a relatively low degree of redundancy. This lack of redundancy stems from two aspects of the referential system that the agreement mechanism exploits: firstly, the marking is strongly indexical (rather than lexical) in nature (cf. C-17) and so in some sense the marker is adding rather than just repeating something (which would be more redundant).

	I Canonical agreement is redundant rather than informative.	II Canonical agreement is syntactically simple.	III The closer the expression of agreement is to canonical inflectional morphology, the more canonical it is as agreement.
C-1	×		
C-2	✓		
C-3		✓	
C-4		✓	
C-5			✓
C-6		×	×
C-7			✓
C-8			✓
C-9			✓
C-10	×	×	
C-11		✓	
C-12		✓	
C-13		✓	
C-14		✓	
C-15		✓	
C-16		✓	
C-17	×		
C-18	✓	✓	
C-19	✓	✓	
C-20		×	

Table 6.3. *The general principles for canonical agreement, and the criteria associated to each principle. The ticks and crosses indicate whether or not spatial agreement in LSE is canonical according to a given criterion. The lighter shading of C-6 for general principle II indicates that this criterion is only partially associated (see text for details).*

The second property of the referential system that reduces redundancy is the “only if needed” quality mentioned in section 6.5 (and reflected in C-10). If spatial reference were obligatory whenever a referent is introduced, this would create a much more redundant system. However, LSE does not always anchor reference to space (and thence use spatial agreement) but only whenever the need arises.

The second general principle characterizes canonical agreement as syntactically simple, and takes in criteria 3, 4, 10, 11, 12, 13, 14, 15, 16, 18, 19 and 20 (and partially 6) (Corbett 2006: 27). According to this principle,

agreement that can be described by straightforward rules is more canonical. In this respect, spatial agreement in LSE is broadly canonical (especially from the point of view of the consistency of controllers, targets, their marking and features), but fails on two related counts. The optionality of the mechanism means that agreement does not consistently occur (cf. C-6 and C-10) and this complicating factor is (at least partially) expressed in terms of conditions on the agreement process (cf. C-20).

The third general principle relates to how agreement is marked: the closer the expression of agreement is to canonical (i.e. affixal) inflectional morphology, the more canonical the agreement mechanism. This motivates criteria 5, 6, 7, 8 and 9 (Corbett 2009: 27). As far as the marking of spatial agreement in LSE is concerned, it behaves like canonical inflectional morphology with the peculiarity that the marking is a stem alternation. Still, this idiosyncrasy may even be considered to be canonical in the context of the simultaneous templatic morphology of signed languages (Sandler & Lillo-Martin 2006). However, once more, the optional nature of the process makes spatial agreement in LSE less canonical: the fact that marking may be omitted makes it less like (canonical) inflectional morphology.

In light of these general principles, the anomalous or non-canonical properties of spatial agreement in LSE can be seen more clearly. What becomes apparent is that the factors that pull the agreement system away from canonicity derive from two general areas: on the one hand, the related issues of redundancy and optionality, and, on the other, the nature of the referential system exploited by agreement in LSE.

The optional character of agreement in LSE makes the system less redundant since it often will not appear if it is not required. This raises the question of what determines the optionality of the system: when can or must agreement appear, or not? I have already indicated that pragmatic and discourse considerations play a role in this respect, but further study is required to establish a more precise characterization of the factors that have an effect on the appearance of agreement in LSE. To this end, a corpus-based study could provide valuable evidence to identify what causes agreement to occur or not. A study of an Auslan corpus established that verbs modify to indicate their arguments relatively infrequently (less than half of the tokens) (de Beuzeville, Johnston & Schembri 2009). The authors suggest that the availability of other strategies (such as constituent order, information structure and constructed action) may influence whether or not spatial agreement occurs but it remains to be seen if the choice of one strategy or another is systematically conditioned by discourse, pragmatic or syntactic factors.

Secondly, the fact that the marking is spatial, and based on a spatial referential system, comes to bear on the nature of agreement in LSE. The agreement process in LSE involves adding a spatial label to the controller of an agreement relation, rather than exploiting an existing lexical feature (such as gender). This means that both controller and target are marked with the feature, possibly weakening the asymmetric directionality of the relation. Nevertheless, the use of spatial reference also has canonical aspects. Corbett (2006: 24) points out that features based on formal assignment are more canonical than those for which assignment is semantically based. Although in LSE the semantic and formal values of a locus tend to coincide, the important observation is that the locus need not be assigned based on semantics. This was mentioned in the discussion of the distinction between spatial and agreeing verbs (in section 6.5); the point is that spatial loci may be used exclusively for reference with no semantic spatial meaning. Thus, although the use of loci can be (non-canonically) semantic, it is possible for the loci to serve a merely referential function.

This exercise in assessing spatial marking in LSE in terms of canonicity does not provide a definite classification of the phenomenon as “agreement” or “not agreement”. Although it has been claimed that the issue of (non-)canonicity has been overstated (Quer 2011: 196) and it is true that the agreement systems of many languages show non-canonical properties (recall that all pro-drop languages fail C-1), I agree with Corbett (2006: 27) that “it is more important to understand agreement and its related phenomena than to draw a precise line” between agreement and other phenomena, and considerations of canonicity provide a useful perspective for observing and analysing the matter.

6.6.3. *Other evaluations of the canonicity of sign language agreement*

Before closing this section on canonicity, I look at the two other attempts to apply this concept to agreement in a sign language, both of which focus on ASL (although the first paper also presents data from other sign languages).

Mathur & Rathmann (2010) provide a somewhat cursory evaluation of sign language agreement based on Corbett’s criteria for canonicity. Their conception of agreement in sign language is limited to directional agreeing verbs.⁹ They evaluate all of Corbett’s criteria (with the exception of C-20, which they do not mention), and most of their verdicts coincide with mine, so

⁹ Mathur & Rathmann (2010) distinguish between double agreement (i.e. with subject and object) and single agreement (i.e. with the object). Note that the latter is not what I have called single argument agreement but is a directional agreeing verb with agreement marker omission.

I will focus on the points of divergence. Concerning targets, there are two differences, both of which concern the issue of optionality: for C-6, Mathur & Rathmann consider that the marking is obligatory, whereas I have claimed that it is optional given the phenomenon of agreement marker omission; and for C-10, they maintain that the target always agrees, whereas I pointed out that this only occurs when spatial loci are assigned. Unfortunately, they do not provide much explanation or clarification for their decisions, so it is not possible to clear up this difference. The other discrepancy comes from the criteria for features: for C-17, they judge features of agreement to be lexical; for C-18, they hold that the feature values do not match. Their underlying analysis of agreement (as involving the features of person and number) is what leads them to differ in these criteria. Additionally, while they consider role shift to be a reason for mismatches between features (e.g. first person verbal forms for non-first person controllers), I considered that such cases constituted a different domain that motivates a different expression of a feature value. In summary, despite minor differences due to different characterizations of the agreement process (and its scope), Mathur & Rathmann's assessment of the canonicity of sign language agreement coincides to a great extent with that of the LSE data presented here.

In their discussion of the linguistic status of sign language agreement, Lillo-Martin & Meier (2011) dedicate a section to the non-canonical properties of directionality as agreement. However, they do not frame the discussion in terms of Corbett's criteria, but rather in terms of the issues discussed in the sign language literature, namely, verb classification and the prominence of object (over subject) marking. This leads to an interesting analysis of agreement in sign language (and highlights topics that have cropped up in the discussion of the LSE data here, notably, optionality) but does not provide an evaluation from within an independent framework that can provide a systematic means of gauging how and where a given agreement system "misbehaves". Additionally, Lillo-Martin & Meier's discussion is limited to directional agreeing verbs and does not contemplate spatial marking for other targets, such as single argument agreement.

6.6.4. *Summary*

Spatial agreement in LSE shows many properties of canonical agreement as defined by Corbett (2003b, 2006), and this broadly coincides with the only other assessment that has systematically evaluated each of the criteria for agreement in sign language based on data from other languages (Mathur & Rathmann 2010). Furthermore, assessing the properties of agreement in terms of wider reaching general principles has provided a way of analysing spatial

agreement in LSE to highlight its peculiarities as an agreement process. Where the phenomenon deviates from canonical behaviour, this is in large part due to two factors: the optionality of the process and the spatial reference mechanism that it makes use of.

6.7. Discussion and conclusions

This chapter has analysed the LSE data on spatial agreement from the point of view of the typological approach set out in section 2.2. This examination has shown that agreement in LSE, understood as the use of space to mark arguments on verbs and other lexical categories (such as adjectives, determiners, and so on), falls within the boundaries of the phenomenon of agreement as described for spoken languages. Importantly, the phenomenon I have assessed is not limited to a subset of verbs that show subject and object agreement (i.e. agreeing verbs) but takes a wider view of agreement as a basic process at use in the language.

The first part of this assessment involved reviewing the different elements that play a role in agreement: controllers, targets (including means of exponence), domains, features and conditions (sections 6.1-6.5). In each case, spatial agreement in LSE is comparable to the findings for spoken languages (although some unusual characteristics, to be discussed below, also turned up). This conformity was also confirmed by the second phase of the analysis, which applied Corbett's (2003b, 2006) notion of canonicity to the LSE data to see how agreement-like this mechanism is (section 6.6), both from the point of view of the individual criteria (section 6.6.1) and the general principles that underlie the notion of canonical agreement (6.6.2). On both counts, the spatial agreement mechanism in LSE fares well, and qualifies as more agreement-like than not when viewed through the lens of canonicity.

As pointed out during this analysis, it is important to bear in mind that the end result of this analysis is not the most interesting finding (nor, in the final reading, can it provide us with a conclusive categorization of spatial agreement as an instance of agreement). Rather, the process of analysing the data in this way has led to a refinement in how we conceptualize this spatial mechanism in LSE and has also brought to light those properties that are unusual or anomalous. In terms of refinements, this chapter includes several analyses of the LSE data that provide a clearer, more motivated description of the general phenomenon.

When looking at the means of exponence of this agreement mechanism (section 6.2.3), I assessed previous claims that the spatial marker is some sort of pronominal affix and applied various criteria related to the properties of

agreement markers and pronominal affixes in order to categorize spatial inflection in LSE as one or the other. This evaluation pointed in the direction of agreement marking, and also helped to strengthen the case for treating single argument agreement as a valid manifestation of this agreement mechanism. It also highlighted the difference between a pronoun and a point in space: when the two are confounded, what is essentially a phonological feature may erroneously be considered a clitic. I presented a characterization of this spatial marking in LSE as a stem alternation, a mechanism also attested for spoken languages.

The discussion of the number feature brought up the distinction between verbal and nominal number (section 6.4.2). Given that LSE has various mechanisms for marking plurality on the verb, I applied a series of diagnostics to ascertain whether this inflection was a reflex of the numerosity of the verb's arguments, or of verbal number. The results confirmed the initial intuition that the reduplicative process present in the distributive form marks verbal number, while argument number is marked through the use of space (whether that be the arc movement of the multiple marker, or the two distinct locations in the dual marker).

The final refinement came about in the context of the conditions that operate on this agreement process (section 6.5). When analysing the common claim that agreement in sign language is restricted to human or animate arguments, I pointed out that considering spatial marking as the agreement mechanism removes this constraint since single argument agreement shows a much wider variety of arguments (and the data show that even some agreeing verbs are not subject to this semantic restriction). The proposed semantic restriction may be relevant for (some) agreeing verbs, but not for the agreement mechanism as a whole. Furthermore, the inspection of the semantic properties of verbal arguments led to a reassessment of the difference between agreeing and spatial verbs: I proposed that spatial verbs have locative arguments but the agreement mechanism is the same for both types of verb (contra Padden 1983/1988). What can make a fundamental difference in the use of space is isomorphic spatial mapping, which involves strong iconic motivation. The fact that spatial verbs (with their locative arguments) frequently exploit isomorphic mappings confounds this distinction. However, I provided examples that demonstrate that locative arguments do not necessarily imply an isomorphic use of space. Thus, space may be used in sign languages in different ways, but the mechanism of interest here – the marking of arguments via locations – has many of the hallmarks of agreement.

Although this process of spatial marking is a strong candidate for agreement based on this assessment in terms of cross-linguistic data from spoken languages, the analysis also pointed out areas where LSE is doing something out of the ordinary as far as agreement is concerned. The most striking – and typologically extraordinary – aspect of spatial agreement is the fact that it does not make use of a person feature. Although a person distinction has been argued for in other sign languages, the data do not support upholding this feature for LSE. This makes LSE extremely unusual as a language. I argue that the lack of the person feature stems from the referential system employed by the language. In turn, this referential system is based on the use of space and the lack of person marking is a consequence of the possibilities afforded by a spatial reference mechanism. As an alternative to the person feature, I have proposed an identity feature, based on the notion of R-locus, and this proposal will be developed in the next chapter.

Another anomaly of spatial agreement in LSE that cannot be avoided is its pervasive optionality. This issue has been mentioned at many points in this thesis (and will continue to rear its head), and is one of the main causes for the non-canonical traits of agreement in LSE. This aspect of sign language agreement also seems to be the cause of much scepticism as to its status as agreement, especially in the spoken language literature, and I will mention two different references in this respect. Firstly, in his comprehensive study of agreement, Corbett (2006: 264), on whose work much of this thesis has so heavily leant, mentions sign languages in a footnote and states that the process described as agreement for these languages does not seem to have the “systematic covariance” to be considered agreement. Even though I could try to claim that Corbett’s dismissal of sign language agreement is not relevant to my analysis since I consider spatial agreement *per se* and not just agreeing verbs, the underlying issue that his comment alludes to is not diminished: optionality. The second reference is Cysouw’s (2011) reply to Lillo-Martin & Meier’s (2011) landmark paper on the linguistic status of sign language agreement. Cysouw states that Lillo-Martin & Meier convincingly show that pointing and directionality in sign languages is comparable to person marking in spoken languages, but that this does not allow them to take the further step of claiming that this process is agreement. Clearly this depends on the definition of agreement, which Cysouw goes to great lengths to trace through its historical evolution, and the underlying problem appears to be the fact that this person marking mechanism does not represent a “systematic covariance” of linguistic expressions. Again, I could argue that my conception of agreement as a spatial marking mechanism is much more systematic in that

it applies to a wider variety of verbal agreement in addition to agreement in the nominal domain. However, I am still left holding the baby as far as optionality is concerned.

In the section on conditions (6.5) I went some way to addressing the issue of optionality by suggesting that it is due to discursive and pragmatic conditions on agreement: only when the right circumstances hold will agreement take place. This still leaves unanswered the question as to how the agreement system would handle this endemic optionality: the formal account developed in the next chapter attempts to explain this in terms of default values.

Before closing this chapter on the commensurability of spatial agreement in LSE and agreement in spoken languages, we can now address the second of the research questions from chapter 1: *Are the spatial mechanisms employed by LSE comparable to the agreement mechanisms in spoken languages?* This chapter has provided a detailed analysis of the various spatial mechanisms that I earmarked as being likely candidates for agreement in LSE and described in chapter 5. This appraisal indicates that spatial marking in LSE shows strong parallels with agreement in spoken languages and certainly appears to fall within the limits of the phenomenon as manifest across spoken languages. The assessment of the canonicity of LSE spatial agreement also yielded a favourable result, suggesting that this mechanism is a relatively canonical instance of agreement. As Mathur & Rathmann (2010: 196) point out in their evaluation of canonicity of sign language agreement, “other approaches to verbal agreement in signed languages may interpret Corbett’s criteria for canonical agreement differently” and it is worth bearing in mind that this diagnostic tool depends greatly on the prior conceptualization of the process under examination. Indeed, some discrepancies between Mathur & Rathmann’s canonicity analysis and my own can be traced back to their restriction of agreement to agreeing verbs and my inclusion of related spatial phenomena.

In sum, spatial agreement in LSE, understood as the spatial marking of one element to mark covariance with another, shows enough similitude to the typological concept of agreement used for spoken languages, for both to be treated as manifestations of the same linguistic process. Considering these phenomena from different modalities as the same is both meaningful and useful for arriving at a better understanding of how and why a language creates relations between its elements. (This is not to say that there are no differences, and this section has also brought these to the reader’s attention.)

The findings of this chapter also make it possible to build upon the preliminary answer to the first research question offered at the end of the

previous chapter. The fine tuning of the characterization of spatial agreement in LSE from the analysis in this chapter puts us in a better position to compare the LSE data with what has been described for other sign languages. In many ways, the characterization of LSE agreement I have developed has diverged from the situation for other sign languages as laid out in chapter 3. Spatial agreement in LSE takes in a broad range of phenomena, well beyond the domain of agreeing verbs, and does not involve a person feature, which is not what we saw for other sign languages. Some of these differences may be due to genuine intra-modal cross-linguistic variation: the differences in the data for pronominal forms between LSE and ASL, for instance, suggest that some sign languages may make use of a person feature while others do not. However, other differences may have more to do with the evolution of the theory of agreement that I have developed for LSE: only a reanalysis of the data for other sign languages will reveal whether this model can be applied to explaining spatial agreement in those languages as well. In the interim, the data from LSE and other sign languages offer enough similarities to suggest that a similar mechanism is at work and enough differences to make comparative studies worthwhile.

The next chapter continues to analyse the data for this study, and provides a formal account of spatial agreement in LSE.

7. Formal analyses of agreement in LSE

The previous chapter evaluated the LSE data from a typological point of view. This was one of the two approaches set out in chapter 2. The second was a formal theoretical approach, outlined in section 2.3, and analysing the LSE data within that approach is the topic of this chapter.

I adopt the framework of minimalist syntax to assess whether the LSE data fit into a model of this type. This will require providing an adequate characterization of the formal elements that take part in the spatial agreement process in LSE. When assessing the φ -features that are involved in LSE agreement in section 6.4, I dismissed the person feature as irrelevant and proposed in its place an identity feature. Here I develop this notion and provide details of how this could work from a syntactic point of view. Once the proposal for the identity feature is consolidated, I turn to developing a minimalist syntactic description of spatial agreement that can explain the facts for LSE. This will mean providing analyses of different manifestations of the use of space: location assignment and verbal agreement in its various guises (single argument agreement, classical agreeing verbs and agreement auxiliaries).

In addition to this model for spatial agreement per se, this chapter also offers a more detailed formal analysis of a very specific aspect of spatial agreement in LSE. As mentioned in section 5.4.2.1, a certain class of agreeing verbs, which in other sign languages tend to show defective patterns of agreement, display unusual forms that use various strategies to include agreement marking for both arguments. Optimality Theory is used to develop a systematic account based on a hierarchy of constraints that generates the appropriate verb forms from the lexical verbal root and the agreement morphemes.

Applying these formal analyses to the data for spatial agreement in LSE provides a complementary method for measuring up this phenomenon against other spoken and signed languages. In the previous chapter, the typological approach took a very broad perspective that is backed up by a vast amount of empirical data from the world's languages. Formal approaches, in contrast, offer a very specific way of looking at the data by means of stringently delimited concepts and precisely defined rules that

govern the operations and mechanisms that make up the theory. Essentially, this exploration will tell us whether spatial agreement in LSE can be accounted for by these types of analysis and thus falls within the limits of the linguistic boundaries that such formal approaches contemplate.

This chapter is organized as follows. Section 7.1 develops the idea of an identity φ -feature and how it could be implemented in a syntactic model. This involves delving into the location of φ -features within the syntactic structure and reassessing assumptions about the intrinsic nature of φ -features for nominals. The section also addresses an anomaly of the identity φ -feature, its apparent optionality, and suggests that this optionality only exists on the surface. Section 7.2 takes the theoretical constructs developed in section 7.1 to provide a description of the workings of spatial agreement in LSE. The LSE facts accounted for include the location assignment process, verbal agreement and agreement auxiliaries. The section concludes by distinguishing between syntactic agreement on the one hand and pragmatic agreement on the other. The latter looks like syntactic agreement but does not involve the same underlying structure, and as a result does not have the same interpretation. Section 7.3 sets out the Optimality Theory analysis of “defective” agreeing verbs in LSE. A description of the behaviour of these verbs provides the facts that the subsequent analysis must account for. The analysis is also extended to account for the divergent behaviour of similar verbs in ISL. Section 7.4 deals with three issues that these analyses bring to light, offering detailed discussion that looks at the strengths and limitations of the proposals developed in this chapter. The chapter concludes with section 7.5, which evaluates the relative success of applying these formal approaches to spatial agreement in LSE.

7.1. Location, identity and locating identity

In order to provide a formal account of agreement in LSE, it is first necessary to characterize the relationship that is established under agreement and to clarify what elements enter into that relationship. In the previous chapter, we saw that the controllers, targets and domains of spatial agreement in LSE largely coincide with those attested for agreement in spoken languages. However, there are two issues that represent significant divergences from the spoken language data: firstly, the types of φ -feature that are expressed, and secondly, the rampant optionality of spatial agreement.

In the examination of features in LSE in the previous chapter, I showed that the person feature is not present and suggested that some sort of “identity” feature is involved in spatial agreement. According to the

discussion in section 6.4, an identity φ -feature is broadly similar to the standard features of person, number and gender found in spoken languages. The feature provides a categorization reflecting basic semantic distinctions just as person, number and gender do. In the case of identity, the semantic distinction generates categories in the extreme, distinguishing one referent (in its own category) from another. In this sense, identity seems to be closely linked to the notion of referential index and this idea will be returned to below.

Another property of φ -features, linked to the fact that they reflect meaningful categories, is that they are inherent to nominals (Steinbach & Onea 2015). The Spanish noun *mesa* ['table'], for instance, is feminine in gender, singular in number and third person. Does this property also hold true for an identity feature? At first sight, it seems that this feature is not inherent to a given noun but that it is assigned to the noun. Indeed this is what appears to be happening in the process of location assignment (described in sections 3.1.1 and 5.1.1). This relates to the issue of optionality in the use of space for reference in LSE. As we have seen in the descriptions provided in chapter 5, sometimes a referent may be associated with a location in space and sometimes not. However, we need to maintain a careful distinction between the feature itself and its morphophonological expression: the identity feature may be obligatory but the expression of the feature may be optional (or result in a null form).

There is another sense in which identity is not inherent to a given noun. While *mesa* is feminine, for example, and this is a property of this lexical item, a specific value of identity is not a property of a given lexical item, but of a referent. A given lexical item in LSE does not have a specific, fixed identity value (in the sense that *mesa* is always, intrinsically feminine in gender) and two instances of the same lexical item may refer to distinct referents and thus have different identity values. This can be seen in example (1), in which the nominal HOTEL appears twice, each time denoting a different referent. The distinct values for the identity feature are manifest as distinct locations in the signing space.

LSE (Ai_conv 16:35)

(1)



‘I wasn’t staying at their hotel but in another one, with friends.’

This raises the question of where the identity feature is hosted: if not directly on the NP, then possibly on some other structural projection within DP. Before considering the different options for the location of an identity feature, I reassess the assumption that for spoken languages the other φ -features are inherent to the noun (and thus hosted directly on the NP).

7.1.1. *The location of φ -features*

So far I have maintained that φ -features are inherent to nominals (section 2.2.5 and above), and this is the position generally held in the typological literature and, less explicitly, in much generativist work on agreement. However, there are proposals that these features are not necessarily part of the lexical entry for a nominal but are rather distributed across different projections within the DP. Intuitively, there is a difference between gender and number. A given lexical item may have a gender value that forms part of the lexical entry. In contrast, it does not seem necessary for a lexical entry to be marked for number. This intuition underlies Ritter’s (1991) analysis for Modern Hebrew, in which she shows that gender in the language is derivational, and thus a lexical property, whereas number is inflectional, and thus part of the syntactic representation. This leads Ritter to posit that within the DP the NP is dominated by a functional projection (NumP)¹ where the number features are specified. Thus, in Modern Hebrew, a noun carries gender values (from the

¹ In her 1991 article, Ritter refers to the projection as NBR, but subsequently (1993, 1995) as Num, which is the label commonly used in the literature and thus the one I adopt here.

lexicon) but obtains its number specification by head movement into the higher Num head, where the number features are affixed onto the lexical head.

Ritter (1993) argues that other languages may behave differently in this respect and claims that for Romance languages gender may be located on the Num projection. An alternative proposal has been made for the gender feature in Romance languages, involving a corresponding functional projection, GenP, within the DP (Picallo 1991). Although the existence of a dedicated projection for gender has been contested on the basis that gender is not relevant to the syntactic computation (Alexiadou 2004), other proposals maintain that gender is not intrinsic to the lexical entry. In his work on Niger-Congo languages, Kihm (2005) draws a distinction between word class and semantic categorization. As we have already seen, Niger-Congo languages tend to have classes that can be marked on nouns and each word class corresponds to a particular semantic category, such as humans, plants, animals, artefacts and so on.² For example, in one such language, Manjaku (spoken in Guinean-Bissau and South Senegal), *u-ndali* ('cat') is composed of the class marker *u-*, associated with animals, and the lexical root *-ndali*. Kihm argues that the class marker is actually a lexical morpheme that nominalizes the lexical root, turning it into a grammatical object that is a noun. As already mentioned, each class marker is associated with a given semantic category. Therefore, the burden of semantic categorization (essentially what gender does) is borne by the class marker and not the lexical root. Crucial to Kihm's reasoning is the fact that a given lexical root can combine with different class markers to give different but related meanings: Kihm gives the example of the root *-lik*, which combines with different markers to give the meanings 'water', 'well' and 'fruit juice'. As such, there is nothing intrinsic to the lexical root that conditions which marker it must combine with. It is the semantic import of the word class marker that provides the categorization. Syntactically, Kihm characterizes the class marker as occupying *n*, a functional projection immediately above that of the lexical root (and generally assumed to be the nominal parallel of *v* in the verbal domain).³

² Discussion of an example from Swahili is given in sections 2.2.3.3 and 6.2.3.

³ Kihm also extends his analysis to Romance languages, and claims that for these languages too class and not gender is the important feature for the syntax. In contrast to the Niger-Congo languages like Manjaku, for Romance languages class and classificatory gender are divorced. Class continues to be a noun-forming feature but is marked by semantically empty functional items (also on *n* in the syntactic structure); gender, on the other hand, is an encyclopaedic feature that is present only for a subset of lexical items (those which can have biological gender). See Kihm (2005) for details.

Equally, the person feature is commonly assumed to be located on the D head rather than on the NP itself (Ritter 1995; Carstens 2000; Danon 2011; Landau 2015). Yet again, we see that an apparently intrinsic feature is situated not on the lexical entry itself but on a higher functional projection.

If the features associated with a nominal do not necessarily enter the syntactic system with the nominal itself, this has consequences for the lexicon and for syntax. I will not dwell on the former, and only mention that another language component, such as the encyclopedia contemplated by Distributed Morphology (Halle & Marantz 1993), could provide information about the links between different lexical items and the features (and meanings) they are associated with (Kihm 2005). As far as the syntactic component is concerned, the fact that features are not located on a single head requires a revision of the mechanism of Agree, which is conceived as a relationship between a probe and a (single) feature-bearing goal. Danon (2011) adopts a view of Agree as a feature sharing operation (based on earlier work by Frampton & Gutman (2006) and Pesetsky & Torrego (2007)). Rather than the one-off value-and-delete process contemplated by Chomsky, this feature sharing version of Agree allows features to be collected into shared formal objects (which create chains as multiple instances of Agree take place). As such, features do not disappear once they have participated in an agreement process and remain available (for further agreement operations).⁴ Thus, I assume that the formal apparatus of Agree can be modified to accommodate a syntactic structure in which (valued) features enter the numeration on functional heads distinct from the lexical head with which they are associated.

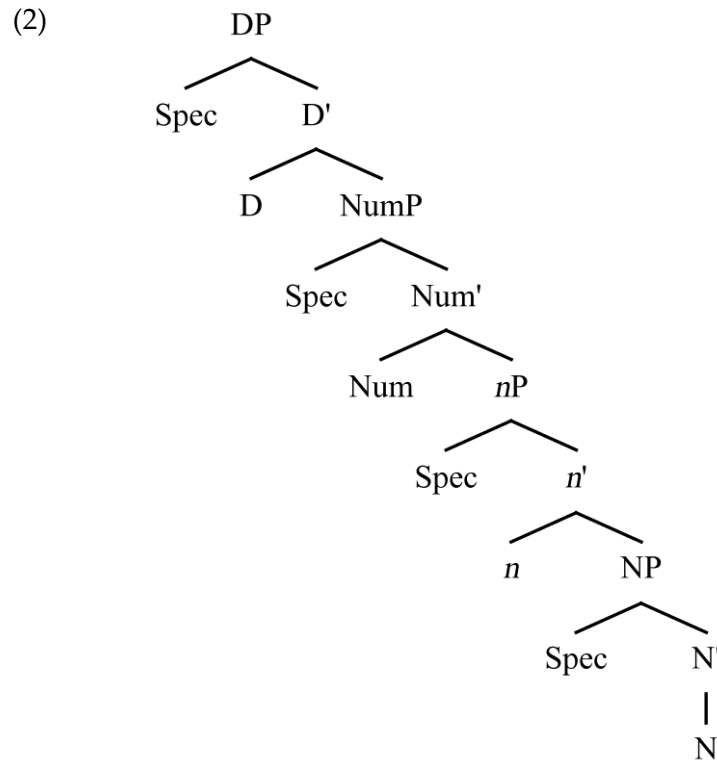
7.1.2. *The location of the identity feature*

Coming back to the identity feature in LSE, we return to the question of where this feature is inserted in the syntactic structure. In the light of the various proposals for other φ -features mentioned above, I will consider the following options: D, Num, *n* and N. I look first at the intermediate projections of Num and *n*, and then consider N and D, which are located at the lower and upper boundary of DP, respectively. The position of these structures within DP is shown in (2).

As a first approach, the identity feature could occupy some intermediate functional projection within the DP. In the discussion of φ -features as being distributed throughout the DP, we saw proposals for different positions: a

⁴ Another issue that demands a rethinking of Agree is the issue of multiple agreement in Bantu languages, which requires reassessing the issue of φ -completeness and case assignment (Carstens 2001). Since there is no evidence of case marking in LSE (or many other sign languages), I have very little to say about the role of case assignment as part of Agree.

dedicated Num projection has been proposed for number and an independently motivated nominalizing *n* projection for gender/word class. I will deal with each in turn.



The Num projection is a midlevel functional category analogous to T in the verbal domain (Ritter 1991; Carstens 2001) and provides the structural position for the number feature. Ritter (1993) further claims that for Romance languages the gender feature is also located at Num, and not on N, the noun head, as is the case for Hebrew. This is based on observation of the inflectional morphemes in these languages, and it is thus an empirical question for a given language (or language family) whether gender appears on Num or not. If the identity feature occupies Num, this means that it is in the same functional head as the number feature (in much the same way that number and gender are in Romance languages according to Ritter's proposal). This could provide predictions about the position of number and identity relative to other elements that could be tested empirically. However, the fact that much morphology in sign languages is simultaneous rather than sequential makes it difficult to pinpoint the relative position of these features in the structure based on surface form. Furthermore, both the number and the identity feature may be manifest spatially (and thus at the same time), obscuring even more how each feature contributes to the final form. The LSE

data in this study do not provide any clear evidence either for or against the person and identity features occupying the same structural position.⁵

Alternatively, the host for the identity feature could be *n*. This projection immediately dominates the NP and is effectively what makes the NP function as a noun in the syntactic structure. As we saw above, it has been claimed that the gender (or, more precisely, word class) feature is located in this projection (Kihm 2005). Given that the identity feature is assigned to the nominal, it is possible that it occupies the head of a nearby (i.e. immediately dominating) projection in order for the identity feature to affix to the NP, thus forming a “syntactically complete” nominal, that is, an *nP*. However, two considerations point away from this possibility. Firstly, word class/gender provides a means of categorizing lexical items according to some underlying semantic classification, and this is not what the identity feature appears to do. The second consideration concerns the notion of referential index and is also relevant when evaluating N itself as a potential host for the identity feature. So we will now examine this possibility.

As mentioned above, it seems unlikely that the identity feature is part of the lexical entry of a given noun since the same noun may appear with different identity values (i.e. referring to different entities). Nevertheless, Baker (2003, 2008) defines nouns as lexical categories that have a referential index, and it is this referential index that the identity feature appears to pick up on. Indeed, Baker speculates that bearing a referential index depends on more fundamental underlying criteria of identity (2008: 31-33). This link between identity and the (modality-independent) referential index is an insightful connection and provides support for my proposal for an identity feature, but I question the association between the noun itself and the referential index. Baker mentions the principle that an XP must have a referential index in order to have intrinsic ϕ -features (values for person, number and gender). For Baker, this XP would be an NP; for a proponent of an *nP* account sketched in the previous paragraph, it would be an *nP*. Nevertheless, as we saw in section 7.1.1, the ϕ -features associated with a nominal are distributed throughout structure that goes beyond the NP (and the *nP*). As such, it is the entire DP that contains the ϕ -features and so, in keeping with this principle, it must be the DP that has the referential index. Independent support for this idea comes from work on determiners that assumes that the determiner licenses the appearance of a noun as an argument (Longobardi 1994). Evidence that DPs can be arguments whereas

⁵ Examining how classifier constructions interact with number and the use of location may provide a useful means of probing this issue and I leave the matter for future research.

NPs cannot come from contrasts such as (3) in Spanish. In (3a), a determinerless NP (*hermano de Amaia*) may occupy a predicate position, whereas in (3b) a full DP (with the definite article *el*) is required in an argument position and the sentence is ungrammatical without the article. Furthermore, support from LSE itself comes from the fact that whole sentences can be localized and thus operate as arguments. (This link between localization and nominalization will be developed in section 7.2.3.)

Spanish

- (3) a. Itzal es hermano de Amaia
 ‘Itzal is Amaia’s brother.’
- b. A Itzal le gusta *(el) hermano de Amaia
 ‘Itzal likes Amaia’s brother.’

Since the full DP carries the referential index (and the φ -features), there is no need for the identity φ -feature to be restricted to the N (or *n*) position. Furthermore, the very fact that the full DP is associated with the referential index makes D a much stronger candidate as the host of the identity feature than N (or *n*) is.

The connection between location and the D head had been touched upon in previous work. In her work on LIS, Bertone (2007) proposes that space features are hosted on D. Building on this analysis Brunelli (2011) places location assigning points also in the head of the DP.⁶ We saw above that the person feature is situated on D for spoken languages: since here I claim that LSE has an identity feature and no person feature, a parsimonious solution would be for these complementary features to occupy the same position. Indeed, there is a lot in common between the features of person and identity, since both take values that depend upon the context of utterance. The person feature does this by dividing referents according to their role as participants in the discourse (speaker, addressee, etc.) while the identity feature distinguishes referents that appear in the discourse.

One possible problem with this proposal is the optionality of the use of location. Abner (2012) points out that a non-obligatory determiner that may or may not appear flies in the face of the idea that languages cannot exhibit free variation between the presence or absence of a determiner for nominal arguments. Thus, if a language has a lexical determiner with a certain meaning, it must use that determiner to express that meaning (Crisma 1997,

⁶ The idea that location features are hosted on D is exploited by Pfau & Steinbach (2013) in their analysis of the grammaticalization of the sign PERSON in DGS.

cited in Longobardi 2001: 584). However, the claim here is not for a specific lexical determiner in D (along the lines of MacLaughlin's (1997) analysis for prenominal points in ASL, which is what Abner was arguing against) but rather for the presence of a feature that enters the syntactic structure at a specific place.⁷ Furthermore, the optionality of a point is a separate issue from the optionality of the identity feature: this is demonstrated by the possibility of localization, in which an identity feature is present and expressed, but a point may (or may not) be absent.⁸ The apparent optionality of localization doubtless complicates the issue but it is not specifically problematic for the identity feature being hosted on D.

7.1.3. *Optionality of the use of space*

In the above discussion of the identity φ -feature, the issue of optionality cropped up several times. The fact that location is not always used raises an important question: is the underlying identity feature optional, or, alternatively, is the feature present but (sometimes) phonologically null? Given that the identity feature reflects a fundamental underlying concept, it seems more likely that it is present but may give rise to a phonologically null realization. Other φ -features show similar behaviour: in section 2.2.5.2, we saw how number may have a neutral value such that the corresponding form is ambivalent with respect to numerosity, and often this neutral value is expressed by means of a default form. Thus, in Turkish, the default "singular" form *ev* may mean 'house' or 'houses'. By the same token, the identity feature may also take a neutral value that is outside the reference system. This does not mean that the semantics of reference break down. Just as a numerically agnostic form does not undermine the expression of plurality, a neutral value for the identity feature means no more than that the language does not have to assign a specific value in certain contexts. Thus, much of the optionality of agreement in LSE (and sign language in general) appears to stem from the matter of whether the identity feature has a specific (non-neutral) value.

The question that now arises is what factors condition whether the identity feature has a specific value or the neutral value that results in a default form. As mentioned in section 6.6.2, this seems to be principally a matter of discourse rather than syntactic factors, but the matter requires

⁷ Equally, I am making no claims about definiteness with regard to either D or localization. Some authors have claimed that locations in space always involve definite reference (e.g. MacLaughlin 1997). Barberà (2012) provides compelling evidence that indefinite referents may be localized in space in LSC.

⁸ I owe the observation that point optionality and localization optionality are separate issues to Natasha Abner.

further investigation. A loose parallel can be drawn between the use of space in sign languages and the use of prosody in a spoken language like English: various factors can play a role in shaping prosody including pragmatic, discursive and syntactic factors as well as emotional content. The use of space is also governed by multiple factors, such as metaphoric schemes (mentioned in section 3.1.1) and semantic considerations (such as the use of higher space for unspecific referents). The default situation is null marking, but if certain conditions hold, a specific value spells out as a more marked location. One such condition may be the need to contrast between different discourse referents (as we saw in section 6.5), which licenses the use of different identity values and thus of distinctive locations. Another influencing factor is iconic motivation, which provides a mapping that can account for the location assigned to present referents or topographical descriptions. The role of iconicity in the use of space is formally accommodated in the work of Schlenker (2011, 2014), and more work is needed in order to formalize other factors that trigger and influence the use of space.

In summary, I claim that the identity φ -feature in LSE occupies a functional head that dominates the NP. There are various candidates for this position (*n*, Num, D; I also considered the N head itself). The parallels between identity and the referential index, on the one hand, and the association between the referential index and DP, on the other, lead me to propose that the identity feature is hosted on D, the head of DP. Once the valued identity feature is in the numeration, it may enter into agreement relations. I now turn to how such a proposal would account for spatial agreement in LSE.

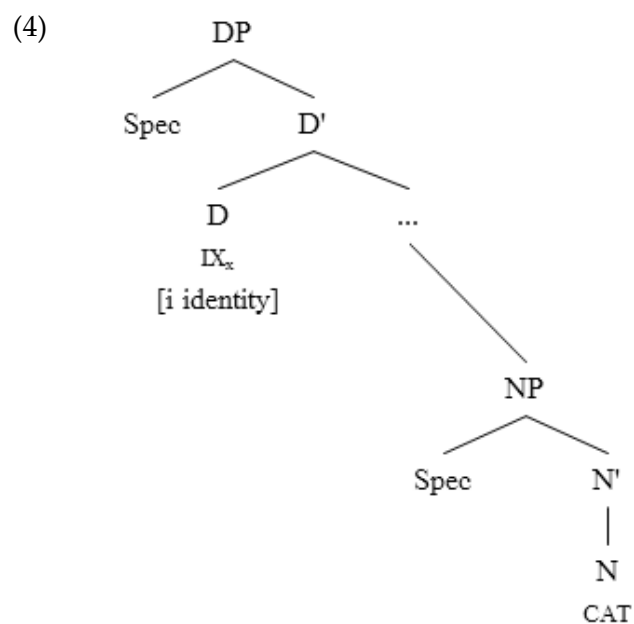
7.2. Accounting for spatial agreement in LSE

I have proposed that an identity feature participates in the agreement process in LSE. In this section I spell out how this process operates in terms of the Agree process stipulated within the Minimalist Program (described in section 2.3.3), by looking first at location assignment, and then at verbal agreement. I then turn to pragmatic agreement, a use of space that looks like an agreement process but that does not depend on a specific syntactic configuration.

7.2.1. Location assignment

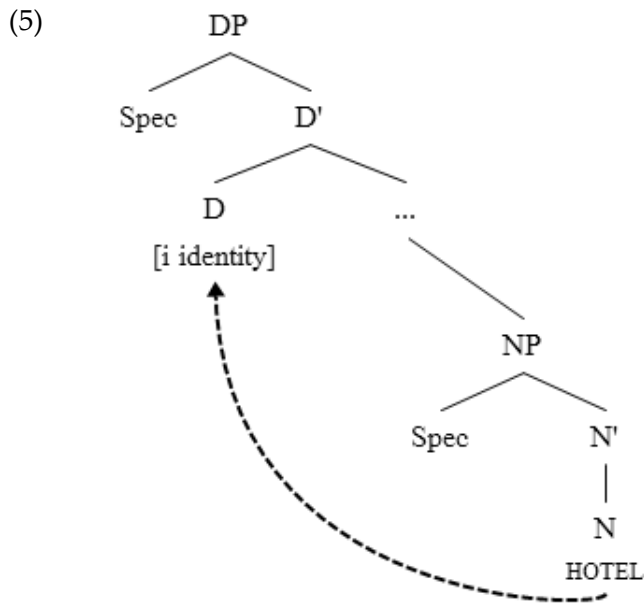
In LSE there are three mechanisms for location assignment: pointing, localization and classifier structures (see section 5.1.1). In the first case, in which a point is used to establish the location of the referent, phonological

material is inserted at D, as shown in (4) for the LSE DP IX_x CAT ('the/a cat').⁹ The presence of a valued identity feature on the D head gives rise to a stem alternation at Spell-Out that generates a form with specific spatial properties (namely, the indexical point is directed towards a given locus in the signing space). Note that the phonological material inserted at D may be manual – giving rise to a manual point – or non-manual, such as eye gaze or head tilt, which may also be directed to a locus in the signing space.



When localization occurs, the spatial marking associated with (the specific value of) the identity φ -feature is expressed directly on the phonological form of the noun itself. This may be accounted for by head movement of the N to the D position so that the identity feature affixes to the lexical head N. This is shown for the LSE DP $HOTEL_x$ in (5). The N head $HOTEL$ moves up to the D head and is associated with the valued identity feature. As a result, at Spell-Out the stem alternation incorporates a specific location x into the form of the noun.

⁹ This is somewhat similar to the analysis provided by Brunelli (2011) for location assigning indices in LIS and NGT, although here I make use of the identity φ -feature.



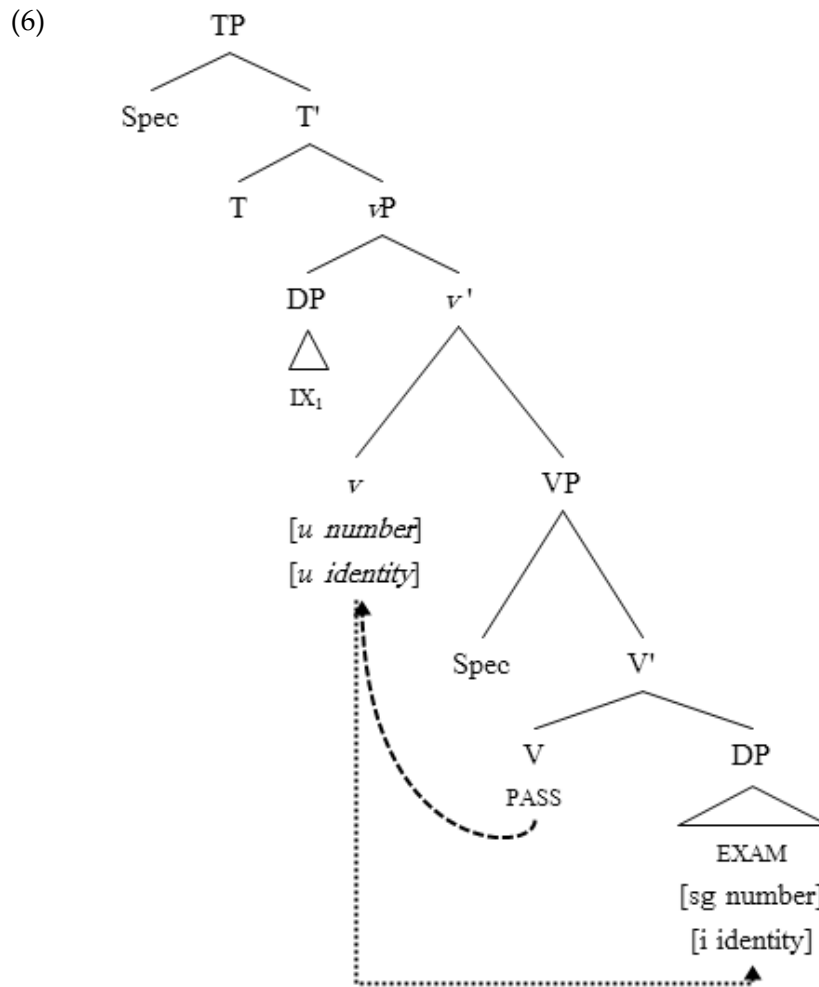
As pointed out in section 5.6 in the context of DP-internal agreement in LSE, location assignment is often predicative in nature (as evidenced by prosodic information). This is frequently the case for post-nominal points and classifier structures and I take these structures to involve some sort of reduced relative clause. In such instances the location assigning element (the post-nominal point or classifier) enters into an agreement relationship with the nominal antecedent (or, more precisely, with the valued identity feature on D). This mechanism of the agreement relationship for the identity φ -feature is described in the next section.

7.2.2. Verbal agreement

The φ -feature values that appear in location assignment as described in the previous section may also enter into an agreement relationship. When this happens, an unvalued identity feature is valued by a valued identity feature by means of a probe checking a goal (as described in section 2.3.3). This may occur in the context of verbal agreement and DP-internal agreement, and I follow Carstens (2000, 2001) in assuming that Agree can equally account for the former and the latter with no need for any additional specialized mechanism. In this section, I will focus on the case of verb agreement. Furthermore, as pointed out above in section 7.1.1, I follow Danon (2011) in adopting a feature-sharing view of Agree in order to account for the fact that valued features do not appear on a single head and may be located at positions distinct from that of the lexical head with which they are associated.

The DP argument of a verb bears a valued identity feature. When the verb enters into an agreement relationship with its argument, this results in

the verb's own unvalued φ -features becoming valued. Let us first examine the case of single argument agreement using the LSE sentence IX_1 EXAM_x PASS_x ('I passed the exam').¹⁰ In this sentence (based on example (10) in chapter 5) the verb PASS is articulated at the location associated with the referent EXAM, represented here as (6).



The verb's internal argument, which occupies the complement position of V, has valued φ -features for identity (the value *i*) and number (singular). The *v* head contains unvalued features for number and identity and probes within its domain to find a goal with interpretable features that can value those on the probe. The DP EXAM is a suitable goal since it has valued φ -features and

¹⁰ Note that I continue to use the subscript 1 for signs directed towards the signer's body, such as the indexical IX_1 here. As pointed out in footnote 9 in chapter 3, this does not commit me to a first/non-first person distinction, but merely makes the form of the sign clearer. The matter will be discussed in section 8.1.2.

there is no intervening goal between the probe and this DP.¹¹ Thus, the values of the goal's features are assigned to the probe's features, as shown by the dotted line in (6). Subsequently, the verb undergoes head movement to *v*, shown by the dashed line in (6), and the features affix to the lexical head, thus making it possible for the correct phonological form to be generated by the phonological stem alternation at Spell-Out, namely, the verb is articulated at the location *x* associated with the identity value *i*.¹²

In the case of prototypical agreeing verbs, which show both subject and object agreement, two instances of Agree occur, such as the LSE sentence IX_x xTRICK₁ ('He's tricking me'), from example (7) in chapter 5. In the first place, the object agreement happens along similar lines to what we saw above for single argument agreement, with the unvalued features in the *v* head probing and receiving the values of the features on the verb-internal DP. Subsequently, when the T head is merged with the rest of the structure, the unvalued features there probe within the domain. The subject DP (in Spec-*v*TP) serves as goal, and the features' values are assigned to the features on T. Once again, head movement takes the verb to the T head, thus ensuring that the relevant features are affixed and available at Spell-Out so that the appropriate phonological form is generated. The subject agreement marking feature spells out as location *x* (associated with identity value *j*), and the object marking surfaces as a location on the signer's body (associated with identity value *i*), yielding the form IX_xTRICK₁. The syntactic structure for this process is shown in (7).¹³

The mechanism outlined here for agreement in LSE can also account for the appearance and behaviour of auxiliary verbs, such as AUX, described in section 5.3.1. When AUX appears, the Agree processes take place in the same manner as shown in (7), but the verb stays in situ in the head of V and the auxiliary is inserted into the syntactic structure directly at the head of *v*. The fact that there are many parallels between auxiliary verbs and light verbs,

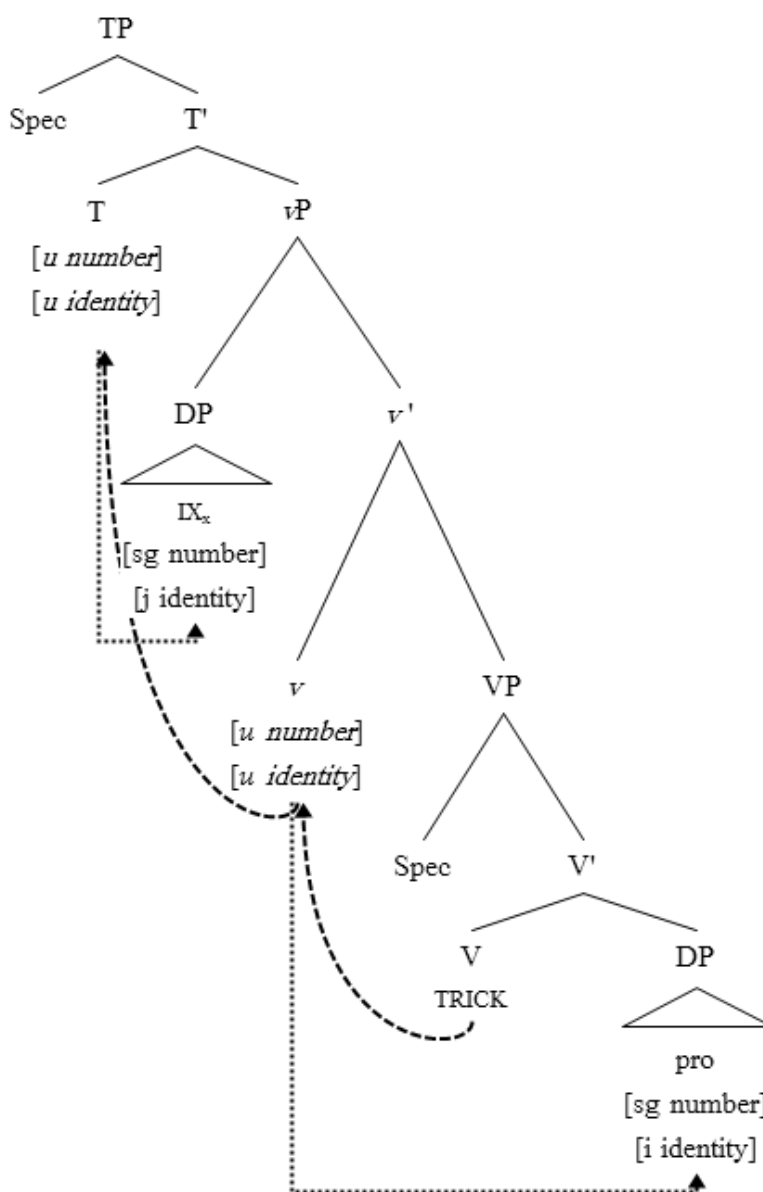
¹¹ I do not address the issue of whether the goal is a maximal projection or a head. Although in the text I refer to the DP, note that both features may be present on the D head. Likewise, Danon's analysis of agreement as feature sharing allows for the features to "collect" at the head of the DP and thus be available for further agreement operations beyond the DP domain.

¹² In order to account for the canonical surface form IX₁ EXAM PASS, further operations are required: if the verb continues on to T, remnant movement could then displace the remaining structure higher up (to the left periphery), thus creating the order. Since my aim here is to focus on the Agree operation, I will not dwell on this matter.

¹³ Again, further operations are required to account for the surface form. This could be dealt with by assuming movement of the subject DP into Spec TP (to fulfil some sort of EPP constraint), or by means of remnant movement.

which normally occupy *v*, lends support to this position for the auxiliary (see Pfau & Steinbach (2013) for the GSL auxiliary GIVE-AUX). Thus, from its initial position AUX is associated with the features valued by the object DP, and subsequently moves up to T, which affixes the features valued by the subject DP. As a result, AUX has the features required for the relevant phonological stem alternation to be applied at Spell-Out. Similarly, in the case of the PERS auxiliary, which in section 5.3.3 I argued should be considered an agreement auxiliary based on parallels with single argument agreement, insertion of the auxiliary at *v* would provide an adequate syntactic framework for the agreement process between PERS and the verbal argument.

(7)



This explication of the mechanisms of agreement in terms of the syntactic operation of Agree suggests that the LSE data could fit into the theoretical model provided by the Minimalist Program. However, there are various issues remaining. Firstly, for the agreeing verb in (7), with both subject and object agreement, the T head has features that are valued thanks to the (second) Agree process. In contrast, for the case of single argument agreement in (6), T has no such features. The suggestion that features may or may not appear on T is problematic, since this requires postulating two different types of T head. Although there have been proposals that the presence of agreement may involve a more complex structure with more projections for clauses with agreeing verbs (Quadros 1999), the need for two different types of T head erodes the simplicity of the theory. Alternatively, we can assume that the T head in (6) also hosts unvalued features and that a second Agree process also takes place. However, this agreement is not manifest in the surface form of the verb because the phonological stem alternation cannot be applied to the verb in question: syntactically the verb agrees with its subject, but morphophonologically this agreement is not possible. The fact that non-manual markers may appear in the absence of manual markers of agreement supports the idea that agreement may be present but blocked in (the manual component of) the phonological form.

A second issue that is problematic for this syntactic account of the agreement process is the matter of optionality. If the Agree operation takes place, as in (6) and (7), how is it that the agreement marking does not always appear? If we say that the Agree operation does not take place, then we face the same problem as above with the now feature-hosting and now featureless T head, and would need to postulate two sets of syntactic scenarios to account for the presence or absence of agreement. However, if we adopt the solution proposed in section 7.1.3, then the possibility of a neutral default value for the identity feature means that the Agree mechanism can take place and result in an unmarked (“agreement-less”) verb form. As such, the proposal is that the *syntactic* agreement operation always takes place in LSE, but does not always give rise to spatial agreement forms. The lack of agreement marking may be due to two situations: either the identity feature takes a default value and no specific location is associated with the phonological form of verb; or the phonological form of the verb blocks the phonological stem alternation that applies as a result of the agreement process (as occurs with defective agreeing verbs; see section 5.4.2.1, and 7.3 below).

Finally, an important issue that needs to be addressed is the question of the ordering of the agreement markers on the verb. Obviously, this is relevant only in the context of agreeing verbs, which mark agreement for both subject

and object. However, any purely syntactic account that attempts to explain the ordering of the markers of the verb exclusively in terms of the ordering of the merged elements in the numeration runs into the problem of backwards verbs. There are two approaches to this problem. The first option is a lexicalist solution that maintains that there are two different types of agreeing verb in the lexicon. Each type is specified differently for the position of the subject and object agreement marking within the (sequential) phonological form of the verb. This solution effectively removes the question of ordering (within the agreeing verb) from the syntax and is more or less felicitous depending on how committed you are to giving syntax as much explanatory power as possible. The second option is to posit that there are different types of arguments for prototypical and backwards agreeing verbs, respectively. This type of proposal has been made by Quadros & Quer (2009), who suggest that backwards verbs are derived from handling verbs that have locative arguments. Since my aim is to provide a unified account of spatial agreement, I shy away from making a distinction between locative and person (or “identity” in my terminology) arguments. A different distinction may provide an explanation: as pointed out in section 6.5, it is important to tease apart locative referents from the isomorphic use of space. It may well be the case that backwards verbs involve a spatial mapping (or a metaphorical extension of such a mapping) that impacts on the form of the verb (rather than the fact that the arguments are locative). The underlying agreement process, however, remains the same for all types of argument. While this proposal assigns much of the labour of linearity to the syntactic component, this does not exclude the possibility of other mechanisms at the morphophonological level that play a role in ordering the markers in agreeing verbs: further work on the templatic nature of sign language morphology and phonology may reveal how these different surface forms come about.

This section has provided a proposal for how spatial agreement could be accounted for syntactically within the theoretical framework of the Minimalist Program and particularly with the Agree operation. I have put forward structures and explanations for single argument agreement, agreeing verbs and agreement auxiliaries in LSE, and have addressed various issues that the account comes up against. The following section looks at a use of space that on the surface looks like agreement, but does not involve the same syntactic process of agreement, namely pragmatic agreement.

7.2.3. *Pragmatic agreement*

One of the main proposals of this thesis is that the notion of (spatial) agreement in sign language needs to be broadened to include uses of space

beyond the class of two-place agreeing verbs. I have proposed the idea of single argument agreement for those verbs that agree with just one argument by being articulated at the location associated with the argument (see sections 3.2.3 and 5.2.3). However, as has been pointed out throughout, this does not mean that all uses of space involve agreement. On the one hand, there is isomorphic use of space (for spatial descriptions) that may require another treatment. On the other, there are instances of the use of space that create loose associations between different elements. When applied with verbs, this use of space could give rise to different meanings and the ambiguity between which argument (subject or object) was being referenced led Padden (1990) to suggest that this was not a syntactic process (see section 3.2.3 for examples). Subsequently, Engberg-Pedersen (1993) noticed that this sort of “pragmatic” agreement arises in certain discourse contexts. Thus, pragmatic agreement can be distinguished from (unambiguous) syntactically driven agreement in the shape of single argument agreement. In the previous section I proposed a syntactic account for spatial agreement in LSE, including single argument agreement. In this section, I wish to speculate on what is going on in pragmatic agreement and to provide a tentative explanation based on the framework I have developed.

LSE (Ai_conv 16:35)

(8)



‘I wasn’t staying at their hotel but in another one, with friends.’

A non-verbal example of pragmatic agreement can be seen in example (1), reproduced here as (8). Following the second token of ‘hotel’, located at locus *y*, are an index and the nominal ‘friends’, also articulated at location *y*. I take

the index, IX_y , to be a locative and to agree with its antecedent $HOTEL_y$.¹⁴ Of greater interest is the final element, $FRIEND_y$, which is associated with the referent 'hotel' by being articulated at the same location. $FRIEND_y$ is prosodically detached from the preceding material (by means of a prolonged hold on the previous sign and eyebrow raise over the sign itself). Notice that there is no apparent argument structure relation between these two elements and that the discourse context is precisely one of contrast between various elements (in this case, two different hotels), as identified by Engberg-Pedersen (1993) for pragmatic agreement.

Given that the hotel and the friends are different discourse entities, they must have different referential indices. As such, in the syntax, the values of the identity features for these elements are distinct, let's say i and j . From a syntactic point of view, these elements are independent and the values of the identity features do not match. However, a given value of the identity feature spells out as a location in the signing space, and it is here that the association between the two elements is achieved. At Spell-Out, the different identity feature values are assigned the same (or a similar) location. This achieves an associative link that does not have the same precision as a syntactically computed relationship. This would require that discourse considerations (not expressed in the syntax) could intervene at the phonological level. Providing the details for how this might work are beyond the scope of this study and I limit myself to pointing out that the problem is not unique to this specific proposal since some aspects of meaning (such as that expressed in spoken language) often escape syntactic analysis. One possibility could be that the link is established by means of basic cognitive principles of association such that two locations are judged to be more closely linked the closer together they are in space.

In the context of verbal pragmatic agreement, an association is formed between an element with interpretable valued features (i.e. a nominal of some sort), and a verbal element that does not have its own valued φ -features and normally enters a (syntactic) agreement relationship in order to value its uninterpretable features. This is exemplified in (9), the sentence that Padden (1990) initially used to argue against the possibility of syntactic single

¹⁴ The nature of the agreement between the locative and the NP could be DP-internal (and thus within a clear syntactic domain) of the type 'that there hotel', or more akin to anaphoric agreement between a pronoun and its antecedent, in which the locative is more predicative in nature ('another hotel [which was] there'). In this example the timing of the articulators suggests that the locative has coalesced with the nominal and is thus DP internal, but both types of relation are possible in LSE.

argument agreement but which subsequent work reanalysed as pragmatic agreement.

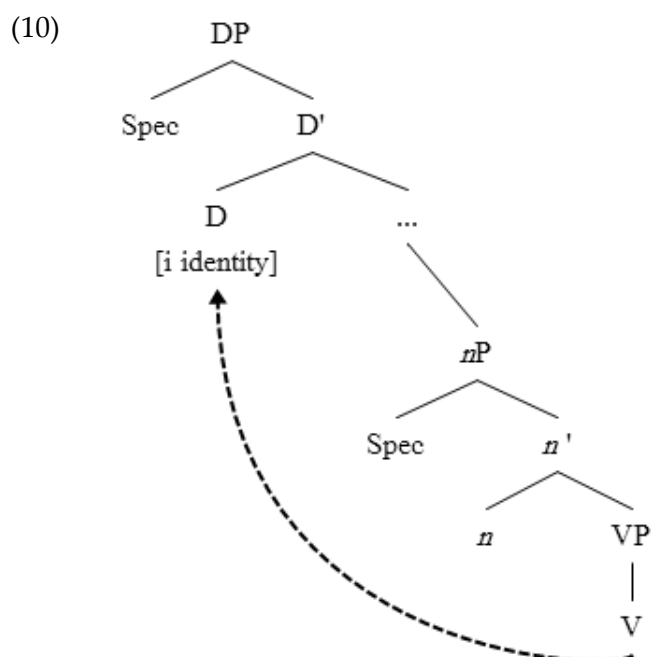
ASL (Padden 1990: 121)

- (9) WOMAN WANT_x WANT_y WANT_z
 ‘The women_{i,j,k} are each wanting.’

If pragmatic agreement involves distinct identity features that spell out as the same location, as outlined in the previous paragraph, this means that the verb must acquire valued φ -features from somewhere (but not from the argument DP). In order for this to happen, the verb itself could undergo a process similar to that described above for location assignment of a DP, namely, valued features are inserted in the numeration. For the DP, these features are intrinsic (and appear at the D head), but this is not the case for a verb. Instead, the verb must undergo a process of nominalization, which involves acquiring its own intrinsic identity feature. Rather than merging with a *v*P projection, the VP merges with an *n*P projection that nominalizes it. This *n*P projection is dominated by a DP projection that includes a valued identity φ -feature. The V head then undergoes head movement to end up at the D head for the valued feature to affix to it and make possible the assignment of a corresponding location in the phonological form at Spell-Out. The proposed structure is shown in (10).¹⁵

Once the verb has obtained its own identity φ -feature, the pragmatic agreement process between (nominalised) verb and nominal – each with distinct values for their respective identity features – can take place by both identity features spelling out as the same location. Thus, just as example (8) involved establishing an association of some sort between a hotel and friends, verbal pragmatic agreement involves establishing an association between a DP and a nominalized verb. To return to Padden’s famous example: an association is formed between each woman and an “event of wanting” for each.

¹⁵ An interesting question arises concerning whether more complex verbal structure can be nominalized. Here I suggest that a simple VP merges with the *n* projection, but it is possible that higher phrases may also be nominalized. For example, if a verb inflected for aspect can be nominalized and enter into a relation of pragmatic agreement, this would provide affirmative evidence. The current LSE data do not shed any light on this issue.



To conclude, pragmatic agreement is not an agreement process proper, but a vague association between different elements. This is achieved by assigning similar locations to different identity values, which results in a pragmatic resolution of the link created between the referents (possibly thanks to some basic cognitive process of association). This contrasts with syntactically conditioned agreement which, as the previous sections have set out, forges an unambiguous relationship between a verb and its arguments (or a noun and its dependents).

7.2.4. *Summary*

On the basis of an identity φ -feature, this section has provided details of a syntactic account of spatial agreement in LSE. The process of location assignment involves the spelling out of the valued identity feature on phonological material (typically a manual point) inserted directly at the D head, where the feature is hosted, or on the noun itself after it has moved into the D head (resulting in localization of the noun). Alternatively, if the location assignment process occurs predicatively, by means of a classifier construction, then an agreement relationship may hold between the explicit localized element and the valued identity feature in the same way that a verb agrees with its argument.

In the case of verbal agreement, I have shown how the identity feature operates in verbs that agree with one argument (single argument agreement), with two arguments (agreeing verbs) and in auxiliaries that may agree with either one or two arguments (PERS and AUX, respectively). This is achieved by

means of the syntactic operation Agree, as stipulated by the Minimalist Program. In order to provide as coherent an account as possible, I propose that this syntactic agreement always occurs but may not show up in the surface form for one of two reasons. Firstly, the verb may only allow for agreement with one argument, as occurs with single argument agreement, since its phonological form does not allow the incorporation of more than one location. Secondly, the identity feature may take a default value that gives rise to a neutral location in the phonological form. This goes some way to explaining why spatial agreement looks so optional in sign languages, and also why agreement marker omission is possible. The claim here is that the syntactic process is obligatory, but the availability of a default value frequently renders the process invisible in the surface form.

Finally, I distinguish between syntactic agreement proper and pragmatic agreement. In form both exploit space in a very similar manner, but syntactic agreement creates an unambiguous relationship between a verb and its arguments, whereas pragmatic agreement gives rise to an associative link that must be resolved pragmatically. I speculate that this relationship involves independent identity features with different (i.e. unmatched) values being mapped onto the same location. As such, the association is formed at the phonological level and not the syntactic level. In order to explain how a pragmatically agreeing verb obtains its own valued identity φ -feature, I suggest that it undergoes nominalization (by merging with *n*), and merges with a D head with a valued identity φ -feature. This allows the verb to spell out at the same location as another nominal to create a relation of pragmatic agreement between the two.

This concludes the syntactic account for spatial agreement in LSE. While it does not claim to be exhaustive in addressing all the issues that such a proposal faces, the account does provide a working model that can explain the main spatial agreement phenomena found in the language, and distinguishes them from similar uses of space that do not merit a syntactic account. The framework of minimalist syntax has been applied to syntactic agreement in other sign languages (Pfau, Salzmann & Steinbach 2011 for DGS and NGT; Lourenço 2015 for Libras) and the analysis presented here provides an account for LSE and extends it to pragmatic agreement. The next section looks at a specific aspect of spatial agreement in LSE, namely a phonological constraint that appears on verbs with certain phonological characteristics, and provides a formal account for the different forms that appear in LSE.

7.3. “Defective” agreeing verbs in LSE: an OT account

In section 5.4.2.1, when looking at the phonological constraints on spatial agreement forms in LSE, I described a group of agreeing verbs with a phonological form that complicates the expression of agreement for one of the arguments. The form of such verbs includes a lexically specified location at (or near) a part of the body and an underspecified movement, which means that (object) agreement marking at the end of the sign is possible, but the lexically specified location causes problems for the expression of subject agreement at the beginning of the sign. In some sign languages this means that the agreement marking is not expressed, resulting in a defective agreement paradigm (see section 3.2.1.3). Nevertheless, in LSE alternate forms of the verbs appear that involve modifications of some sort to accommodate the inclusion of both agreement markers. Many such verbs in LSE belong to the semantic class of speech-act verbs such as *SAY*, *WARN* and *TEASE*, and the phenomenon has also been described for other sign languages, such as ISL (Meir 1998b). In this section, I provide an account of the LSE facts in terms of Optimality Theory (following Prince & Smolensky 1993; McCarthy & Prince 1993, 1999).

Optimality Theory (OT) sets out to explain language forms in terms of optimal output resulting from a hierarchical set of constraints. The basic conceit behind OT is that an underlying form, or input, may generate many different outputs; however, only one of these outputs is the successful candidate and is the form surfacing in the language. The question is how the optimal output comes to be selected: the set of possible outcomes is evaluated against a series of constraints, some of which have more weighting than others. The optimal output is the option that best complies with the most important constraints (but it may, nevertheless, violate less important constraints). This evaluation process is visualized in tableaux that show the different constraints and how each possible outcome fares in complying to (or violating) each constraint.¹⁶ OT is most commonly used to explain phonological phenomena, but has been fruitfully applied to the morphosyntactic sphere in sign languages, such as reciprocal forms in DGS (Pfau & Steinbach 2003).

I provide a description of the forms of these “defective” verbs in LSE (section 7.3.1), before specifying the OT constraints that are required to account for these facts (7.3.2) and how these are applied (7.3.3). Finally, I look at the data from ISL to see how this analysis could be extended to account for the phenomenon in that language (7.3.4).

¹⁶ The conventions used in these tableaux are explained below in the relevant part of the text.

7.3.1. *“Defective” agreeing verbs in LSE*

Commonly, defective verbs can only mark agreement for the object argument, since the lexically specified (initial) location blocks the appearance of a subject agreement marker at the beginning of the sign. Although I have labelled these verbs as “defective” in LSE, they often do show marking for both arguments. However, in order to achieve this marking, the verb forms are often more complex than standard agreeing verbs.

I will exemplify the behaviour of these verbs taking the specific case of WARN, articulated from the chin using a closed fist with crooked index finger, as shown in (11).

LSE (Ai_agr 4:18)

(11)



WARN

In the case of a subject that requires a locus on the body (which would be considered a first person subject in a person-based account),¹⁷ the lexically specified location on the body is sufficient to act as an agreement marker locus and so no special modification is required: the verb is articulated as $_{\text{chin}/1}\text{WARN}_x$, as shown in figure 7.1(a). The problem arises when the subject is at a locus not on the body. In this case, the sign starts at the lexically specified location, moves to the location associated with the subject argument and then moves on to the location associated with the object argument. For an object with a locus not on the body, this involves passing through two different points in the signing space, whereas for an object locus on the body, the sign doubles back to end on the signer’s body. These LSE forms, $_{\text{chin-}x}\text{WARN}_y$ and $_{\text{chin-}x}\text{WARN}_{1/\text{chest}_y}$, are illustrated in figures 7.1(b) and (c), respectively. Additionally,

¹⁷ Throughout this analysis I refer to the agreement marking via loci either on the body or not. These would correspond to first person and non-first person arguments on a person-based account. This OT analysis does not depend on a rejection of the person feature, and could be expressed in such terms, but since I have proposed that the person feature does not exist in LSE, I present this account in terms that are coherent with my model.

these verbs have an alternate form for object locus on the body: the verb starts at the location associated with the subject argument, moves to the lexically specified location and then moves to the signer's chest. Thus, $x\text{-chinWARN}_{1/\text{chest}}$, shown in figure 7.1(d), has the same meaning as the form in 7.1(c).

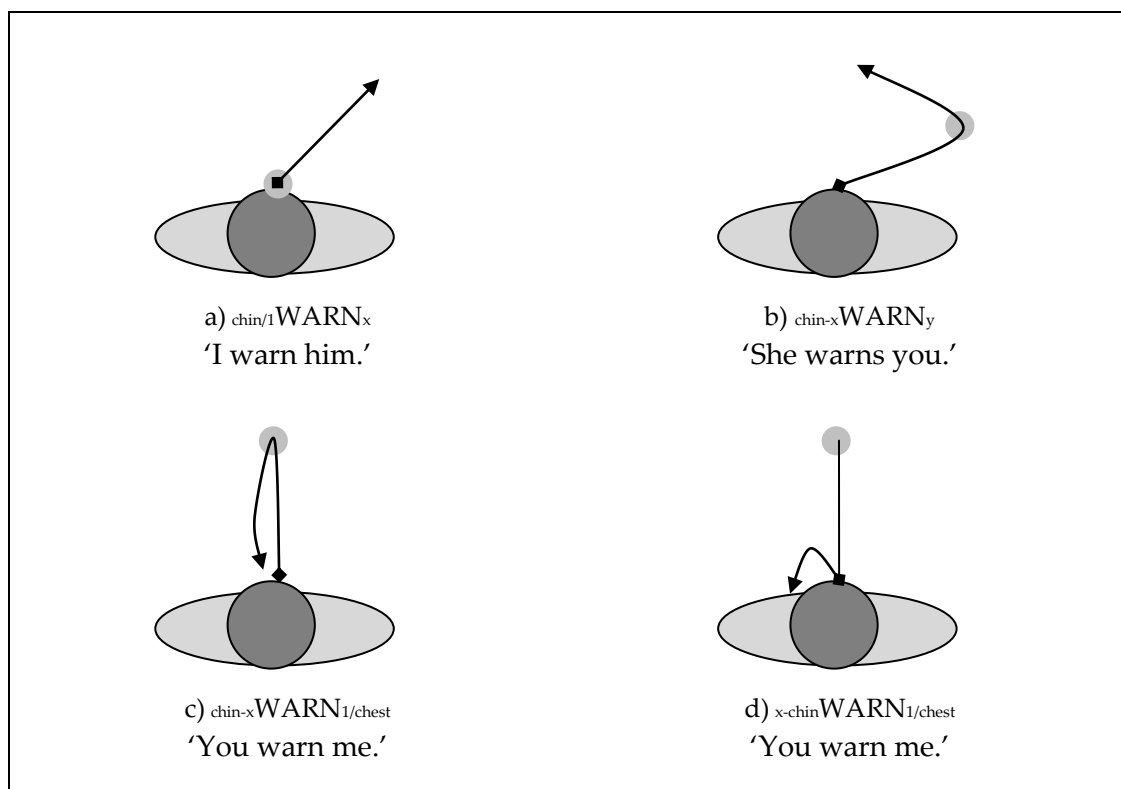


Figure 7.1 The expression of agreement for WARN in LSE. The square represents the specified location for the sign (the chin), the grey circle shows the subject locus, and the arrow-head the object locus.

LSE adds movements and timing units to the form of these signs in order to accommodate the lexically specified location in the verb's form. The following sections present an OT analysis to account for these forms. First we look at the constraints that are required to generate these forms.

7.3.2. *OT constraints*

To select the correct optimal output for these “defective” agreeing verbs in LSE, three constraints are required. (A putative fourth constraint will be introduced in section 7.3.4 to extend the analysis to the ISL data.) The constraints I shall use are general modality-independent structural considerations which have been invoked for OT models of spoken language phonology: IDENT(F), REALIZE(μ) and LINEARITY.

The first two constraints are faithfulness constraints which ensure that the output respects certain aspects of the input. The first, IDENT(F), states that any features that are lexically specified in the input may not be changed in the derivation: features may be added, and unspecified features may be specified, but those that are already specified must be respected (McCarthy & Prince 1995; 1999: 55-56). In the example under consideration, this constraint is relevant for the place of articulation feature of the verb root, the initial location, which is already specified, and ensures that the location is maintained in the output.

IDENT(F): Features specified in the input may not be changed.

The second faithfulness constraint, REALIZE(μ), states that all morphemes present in the input must be present in the output (see Kurisu 2001: 39, and references therein).¹⁸ The output may contain features that do not appear in the input, but those morphemes that are there in the input must have a phonological reflex in the output. This constraint ensures that inflection is triggered: agreement morphemes included in the input must be present in the output. Those verbs which fail to show agreement for both arguments violate this constraint.

REALIZE(μ): All morphemes in the input must have a phonological reflex in the output.

The third constraint required, LINEARITY, specifies that the input and output have consistent precedent structures (McCarthy & Prince 1995; 1999: 55-56). For spoken languages, this constraint rules out metathesis, but as will become clear shortly, the application to sign language will be slightly different.

LINEARITY: The input is consistent with the precedence structure of the output, and vice versa.

The next section describes how these constraints are applied and ordered to account for the LSE data.

7.3.3. *Applying the constraints*

Returning to the example of the LSE agreeing verb WARN, the input for the final morphophonological form is the fusion of the verb root and the

¹⁸ Kurisu's formulation of REALIZE(μ) is more complicated than the version used here but the technicalities are not required for this analysis.

output options in terms of the OT constraints described in the previous section.

Following standard convention, an OT tableau displays the input and the compliance of the possible output candidates with the constraints. The input is shown in the top left cell. The different output options are in each row of the leftmost column, and the constraints (in hierarchical order) in the columns to the right (with labels for each in the top row). The violation of a constraint by a candidate is marked by * in the corresponding cell of the tableau. The optimal output (marked with the symbol Ⓢ) is that which either has no violations or only has violations further to the right than all other options. When a violation rules out a candidate, it is accompanied by an exclamation mark to show its fatality, and the rest of the row is shaded in. Constraints may be violated as a matter of degree and multiple violations are marked with the corresponding number of asterisks.

As far as the ordering of these constraints is concerned, the proposed hierarchy is as follows:

Ranking of constraints in LSE: IDENT(F) » LINEARITY » REALIZE(μ)

The constraints are inserted into the tableau in this order.

Tableau 1. Agreement for WARN-type verbs in LSE.

[chin]O, μ_x, μ_y	IDENT(F)	LINEARITY	REALIZE(μ)
[chin]O[neut]			**!
[x]O[y]	*!		
[chin]O[y]			*
[chin]O[x]		*!	*
Ⓢ [chin]O[x]O[y]			
[x]O[chin]O[y]		*!	

Tableau 1 shows the evaluation of a number of different output options for WARN-type verbs in LSE. The citation form of the verb (the first candidate) fails to show agreement and so violates the REALIZE(μ) constraint on two counts since neither of the agreement morphemes is present in the output. The option of expressing agreement as normal agreeing verbs do (the second candidate) violates the IDENT(F) constraint since the lexically specified feature [chin] has been changed to [x]. Maintaining the lexically specified feature and marking agreement with only the object argument (the third candidate), violates the REALIZE(μ) constraint but only once since one of the agreement

morphemes is expressed. Likewise, subject agreement only (the fourth candidate) violates $\text{REALIZE}(\mu)$ for failing to include one of the agreement morphemes, and additionally violates the LINEARITY constraint since in the input [x] cannot be located at the end of the verb, but in the output it appears in the coda position of the verb syllable. The optimal output (candidate five) fulfils all the constraints by maintaining the lexically specified feature of the verb root and adding an extra syllable, thus creating location slots for the realization of the agreement morphemes. The related strategy of adding a syllable but changing the order of the locations to [x]>[chin]>[y] (candidate six) creates a violation of the LINEARITY constraint. Although [x] is now in an onset location and [y] at the end of the sign, the fact that the two elements are not neighbouring (i.e. [x] does not immediately precede [y] due to the intervention of the lexically specified feature [chin]) does not comply with the linearity considerations.

The tableau shows that this particular hierarchy of constraints correctly predicts the optimal output for WARN -type agreeing verbs. However, the value of a constraint hierarchy lies in its applicability to more than one candidate set. Recall that WARN -type verbs in LSE allow two forms in the case of agreement with an object locus on the body: the general pattern used for any type of object (i.e. the optimal output in tableau 1), and the [x]>[chin]>[y] form (corresponding to candidate six in tableau 1). How is it that a candidate that was rejected in the general paradigm becomes acceptable in the case of an object locus on the body?

The answer lies in the fact that the [chin] location may count as the locus for the object locus on the body, in which case the linear integrity of the agreement morphemes is preserved by the first syllable ($_{[x]}\sigma_{[\text{chin}]}$ is equivalent to $_{[x]}\sigma_{[y]}$). Note that the [chin] location also serves as the subject locus on the body: in such forms the movement of the sign is simply $_{[\text{chin}]}\sigma_{[y]}$ (as shown in figure 7.1(a)), and not $_{[\text{chin}]}\sigma_{[\text{chest}]\sigma_{[y]}}$.¹⁹ This might seem to render the [chest] location redundant since the object marking has already been achieved. However, note that the inclusion of this second syllable puts the lexically specified feature [chin] in a syllable-initial position, thus respecting the identity and linearity conditions stipulated in the input. The [chest] location appears to be some sort of default or dummy location to fill the empty slot of

¹⁹ Further support for accepting [chin] as a valid locus for agreement marking on the body is provided by the observation that many agreeing signs are articulated at a specific height, for both the subject and object arguments (Liddell 1995). For example, LSE UNDERSTAND is articulated at the height of the forehead/temple whereas GIVE is at chest height. In the case of WARN, the chin is the relevant height.

the second syllable. Tableau 2 indeed shows that LSE has two optimal outputs for marking object agreement on the body in WARN-type agreeing verbs.

Tableau 2. Agreement for WARN-type verbs with object locus on the body in LSE.

[chin]σ, μ _x , μ _y	IDENT(F)	LINEARITY	REALIZE(μ)
[x]σ[chest]	*!		
[chin]σ[chest]			*!
☞ [chin]σ[x]σ[chest]			
☞ [x]σ[chin]σ[chest]			

Before moving on to extending this analysis to data from another sign language, I wish to make some comments on the nature of the LINEARITY constraint. Various candidates have been excluded on the grounds of this constraint, which depends upon the precedence structure of the input and output matching each other. Notably, for the lexical root, the lexically specified location does not need to be sign initial, but cannot be sign final. Equally, the same stipulation holds true for the subject agreement morpheme: it need not be sign initial, but cannot be sign final. Additionally, the subject and the object agreement morphemes must appear contiguously, that is to say, in the same syllable. This suggests that the agreement morphemes are not just a pair of independent location slots and that the two must exist within a phonological unit. This lends support to Meir's (1998b, 2002) proposal that agreement in agreeing verbs is due to a DIR morpheme with a syllabic structure (see section 3.2.2.3 for details of this proposal). The fact that the two agreement markers must be connected in this specific way may set two-place agreeing verbs apart from the general spatial agreement mechanism argued for in this thesis (and may be why they have attracted so much interest in the field). Furthermore, pragmatic agreement only occurs when a single spatial marker is used and is not possible for verbs that spatially mark two arguments. This lends further support to the idea that the movement between the two agreement markers is relevant and contributes to the syntactic integrity of two-place agreeing verbs.

This section has laid out an OT analysis of "defective" agreeing verbs in LSE based on the various forms that exist in the language. We now turn to the same phenomenon in another sign language to see whether the constraints proposed can also explain the facts.

7.3.4. *Extending the analysis to ISL data*

Having shown that the OT analysis explains the LSE facts, the next question is whether this constraint hierarchy can be applied to the ISL data. As described in section 3.2.1.3, WARN-type verbs in ISL show agreement with the object alone (candidate three in tableau 1) for most forms and agreement with both arguments when the object locus is on the body (candidate four in tableau 2). Reviewing tableau 1 for LSE makes clear that reordering the constraints would not fit the ISL facts since candidate five does not violate any of the constraints and will always come out top. This suggests that ISL could have another constraint which excludes candidate five. Let us call this constraint C and place it before REALIZE(μ) in the constraint hierarchy. From tableaux 3 and 4 it can be seen that this modification would give the correct results.

Tableau 3. Agreement for WARN-type verbs in ISL.

[chin] σ , μ_x , μ_y	IDENT(F)	LINEARITY	C	REALIZE(μ)
[chin] σ [neut]				**!
[x] σ [y]	*!			
∞ [chin] σ [y]				*
[chin] σ [x]		*!		*
[chin] σ [x] σ [y]			*!	
[x] σ [chin] σ [y]		*!		

Tableau 4. Agreement for WARN-type verbs with object locus on the body in ISL.

[chin] σ , μ_x , μ_y	IDENT(F)	LINEARITY	C	REALIZE(μ)
[x] σ [chest]	*!			
[chin] σ [chest]				*!
[chin] σ [x] σ [chest]			*!	
∞ [x] σ [chin] σ [chest]				

Although this solution fits with the data, we need to be able to specify what this new constraint is in order for the finding to be meaningful. Unfortunately, it is not obvious what the exact nature of constraint C could be. One enticing option is a *SYLLABLE constraint that rules out the insertion of an additional syllable. Such a constraint has been postulated independently in the context of reflexive forms in DGS (Pfau & Steinbach 2003). This would certainly fit well with the situation shown in tableau 3, since it would exclude the fifth candidate on the grounds of containing an extra syllable. Also, this constraint could be added to the LSE tableaux but with a lower ranking with

respect to the other constraints so that it did not affect the outcome. This would mean that LSE favours the addition of an additional syllable whereas ISL avoids this strategy and opts for omitting agreement markers in the context of “defective” verbs. However, such a constraint would fail to account for tableau 4, in which a candidate with an additional syllable is the optimal output.

An alternative solution would be to conserve the three constraints proposed for LSE but to alter the precedence rules that are subject to the LINEARITY constraint. Thus, in addition to the linearity considerations for LSE ([x] must immediately precede [y]; [chin] cannot be sign final, etc.), ISL has a more restrictive stipulation in the input to the effect that [x] must be sign initial. This would create violations for the LINEARITY constraint for both candidate five in tableau 3 and for candidate three in tableau 4, while leaving the optimum output in each untouched.

Even though the details of the OT analysis for the ISL data require some working out, the framework provides a useful tool for analysing and explaining sign language data. On the basis of language general constraints, that is, constraints that have been used to account for phenomena in both spoken and signed languages, the different strategies employed by LSE to resolve the conflict between lexically specified locations and agreement markers that are expressed as locations can be accounted for in a systematic way.

7.4. Issues arising

The applicability of the formal approaches used in this chapter for dealing with spatial agreement in LSE provides confirmation that they are valid tools for linguistic analysis. Conversely, these analyses also confirm that spatial agreement in LSE fits in with existing models and theories for language, both in terms of agreement as a syntactic phenomenon and for the morphophonological forms that agreement gives rise to. However, as occurred with the evaluation of spatial agreement in LSE from the point of view of canonicity in chapter 6, the process of carrying out the evaluation is of as much interest as the final result. The exercise of looking at the LSE facts from the viewpoint of a given theory brings up new issues and throws a new light on the matter, and I wish to dwell upon three topics that have emerged in this chapter: optionality, locative arguments and linearity.

7.4.1. Optionality (revisited)

As became clear in the evaluation of agreement in LSE from a typological perspective in chapter 6, a property of spatial agreement that stands out is the

fact that it may or may not appear. This issue of optionality has cropped up throughout this chapter also since it is problematic for a syntactic account that attempts to provide consistent rule-governed mechanisms for the agreement process. To explain why agreement frequently fails to show up in LSE, I suggested that the underlying (syntactic) process does take place, but the agreement markers do not surface on the verb form because there is an incompatibility with the phonological form of the verb, or because the resulting form is a null form. The first reason (phonological incompatibility) is a reasonable explanation for why many verbs cannot express agreement, and may have its ultimate cause in the phonological resources available to a language. If location is used as a phonologically relevant feature and as a morphological (agreement) marker, there will be instances when these two functions come into conflict. The second reason (a default value that spells out as a neutral or null form) is a far-reaching claim that attempts to account for the general optional character of spatial agreement for any verb in the language. The notion of a null form is common in linguistics, be it a null morpheme or a syntactic trace. However, in this case the null form itself is optional: whenever the underlying (syntactic) feature takes a default value, the null form comes about. By safeguarding the underlying agreement mechanism, the question of optionality is just brushed under the carpet. The question simply becomes why a feature should take a default value or not. With such a readily available (and frequently used) default value, the syntactic system appears to be performing agreement operations with no apparent effect on the surface form. Nevertheless, there may be a benefit to the agreement mechanism itself being obligatory. If agreement, or more specifically the Agree operation, is the “glue” that holds together the derivational cascades of Multiple spell out (Uriagereka 1999), then agreement is an essential part of language structure, even when it does not result in redundant displaced information in the surface form.²⁰

7.4.2. *Locative versus locus*

At various points in this thesis, I have taken pains to draw a clear distinction between locative arguments and locations in the signing space that map onto real locations. The two often coincide since both relate to locations, but they involve very different representations. The issue of locations as arguments or

²⁰ A final comment on optionality: I have focused here on the identity feature but casting a glance at the number feature also presents a similar panorama. In LSE, number marking seems highly optional, and a singular form is often used with a plural meaning, as mentioned in sections 5.6 and 6.4.2. Since both features are expressed spatially, it may well be that this optionality is rooted in the modality of the language.

as mappings is essential when considering spatial verbs. In most of this chapter I have limited myself to agreeing verbs, but my aim is to provide a unified account of the use of space for agreement generally. In section 6.5, I claimed that spatial verbs exploit the same agreement mechanism as other verbs that use space to mark their arguments. Under the syntactic analysis presented in this chapter, spatial verbs (spatially) agree with their locative arguments, and I do not see any difficulty in including in the analysis verbs that take locative arguments. An interesting consequence of the model proposed here is that, in the same way that agreeing verbs may use space syntactically (to agree with their arguments) or pragmatically (in the case of pragmatic agreement), both options are available to spatial verbs. Thus, a spatial verb may syntactically agree with its (locative) arguments or may undergo a nominalization process that permits an association with another element. This would explain why the spatial modification of a (spatial) verb like OPEN-BOX may mark different referents. In (13) the verb is localized at three different locations in the signing space: x, y and z. In (13a) the locations are associated with the internal argument of the verb ('the presents') and the verb displays syntactic agreement with this locative argument. In contrast, the locations x, y and z in (13b) are associated with the external argument of the verb ('the children'), and in this case, the spatial modification of the verb is an instance of pragmatic agreement.

LSE

- (13) a. IX₁ BIRTHDAY PRESENT MANY OPEN-BOX_{x-y-z}
 'On my birthday I got lots of presents and I opened up each of them.'
- b. CHRISTMAS IX₁ CHILDREN ₁GIVE-PRESENT_{x-y-z} OPEN-BOX_{x-y-z}
 'At Christmas I gave the children presents and each of them opened the gift.'

The existence of this distinction for spatial verbs again highlights the similarities between agreeing and spatial verbs. As was made clear in section 3.2.1.4, the distinction between the two categories is often difficult to maintain when classifying the lexica of sign languages. I claim that these verbs are subject to the same spatial agreement process. The fact that they have different types of arguments favours the co-occurrence of complicating factors, such as the isomorphic use of space, for one type of verb more than another. Add the further complication that spatial locations may be used for other functions (i.e. pragmatic agreement), and the picture begins to look as messy as the data really are, making the syntactic process of agreement difficult to identify. Nevertheless, the underlying similarities between spatial

and agreeing verbs, and the applicability of the analysis provided in section 7.2 to both sets of verbs is support for the claim that a single syntactic process of spatial agreement operates for both verb types.

7.4.3. *Linearity*

The final topic that has been highlighted by the formal analysis developed in this chapter is the question of linearity. As mentioned in the opening pages of this thesis, in section 1.1.1, the degree of simultaneity available to sign languages, from the availability of multiple articulators to the use of signing space, presents a challenge to the importance of linearity. In the context of syntactic theory, the notion of linearity is central to explaining how a language assembles its components in a given order. There is an underlying assumption that structural relations at the syntactic level translate into relations of precedence at the articulatory level.

Sections 7.1 and 7.2 of this chapter provide a syntactic account of an agreement process in LSE that makes use of space, based on the idea that referents are associated with points in space (and this is implemented syntactically by means of an identity φ -feature). Space might undermine linearity because it provides a means for representing relations between different elements that does away with the need for linear order. This is effectively a spatial map: in sign languages this map may be isomorphic, as occurs with spatial descriptions and classifier constructions that exploit both imagistic and diagrammatic iconicity, or not, as occurs with location assignment, which exploits diagrammatic iconicity alone (see section 1.1.2 for explanations of these different types of iconicity). In order for a map to work, it is essential for there to be a correspondence between what is represented and how it is represented: to know, for example, that (on an Ordnance Survey map of a village) a circle with a cross represents a church and not a woman or the planet Venus. The proposal presented here for LSE is based on this correspondence: points in space are used to represent referents and this is achieved by location assignment. Furthermore, these symbols on the map may be used to provide more information: I could pin a flag onto the church's symbol on the map to indicate that a fête is being held there. This is the spatial agreement relation in LSE that exploits the locations in space for which I have provided a syntactic account. However, the real power of a map comes from its ability to represent relations *between* the elements represented: where the bar is with respect to the church on the village map, or who is tricking whom in the LSE map.

As soon as there is more than a single referent involved, issues of linearity crop up: in the discussion of the syntactic model for verbal

agreement in section 7.2.2, the question of the ordering of the agreement markers on the verb was discussed and the conundrum of backwards verbs was mentioned. My solution was to suggest that backwards verbs are conditioned by an additional isomorphic mapping (driven by imagistic iconicity) that imposes further conditions on the ordering of the agreement markers. The important point, though, is that even with a spatially motivated system, linearity does not disappear. Likewise, in the OT analysis of “defective” verbs in LSE (section 7.3), issues of linearity were at the forefront. One of the constraints used in the analysis was concerned with conserving linearity between the input and output in the generation of the inflected forms of the agreeing verbs. Moreover, the solution to extending the analysis to the ISL facts involved reconsidering the nature of the input that is evaluated by the LINEARITY constraint. By positing stricter stipulations for the precedence structure of the input in ISL, the data could be fitted by the model. This means that differences between sign languages may be due to differences in linearity considerations, and further underlines the importance of linearity for these languages. This does not imply that the LINEARITY constraint is different for each language: the constraining principle is the same, but the input to the constraint is different in LSE and ISL, and this makes the (optimal) outputs different.²¹

The discussion of the relevance of the LINEARITY constraint in the OT analysis also provided an observation that ties in well with my point about a map’s power lying in having multiple points. The agreement markers on (two-place) agreeing verbs are not independent elements and must show up on the inflected verb at the start and end of the same syllable. Once again, when two markers appear, linearity considerations apply. This suggests that for agreeing verbs, the whole is greater than the sum of the parts. The parts (how each location is associated with a referent and how the agreement process transfers this marking onto the verb) are accounted for by the syntactic model set out in this chapter, but the whole (the linearity present in the final form) escapes the analysis. In providing a unified account for spatial agreement in LSE beyond the confines of agreeing verbs, taking in single argument agreement and excluding similar but non-syntactic uses of space, I have to acknowledge that I have lost some explanatory power as far as agreeing verbs themselves are concerned. However, the unified account offers

²¹ The fact that linearity is mentioned in the discussion of both the minimalist syntactic model and the morphophonological OT account is no coincidence. If the precedence structure of the input for the OT analysis is determined by the syntactic structure (along the lines of Kayne’s (1994) Linear Correspondence Axiom), then there is a close link between the linearity considerations in both contexts.

various advantages: a basic mechanism of spatial agreement, explanatory power for the use of locations across a much broader range of phenomena and generalizations that fit in with the theoretical constructs and empirical findings from work on other languages. I recognise that linearity considerations, then, are a limitation for the model presented here. Of course, future work may come up with a complementary model or theory to bridge the gap, but for the time being I stake out the terrain that the ideas developed in this thesis can map out, and acknowledge where there is uncharted territory.

7.5. Conclusions

This chapter has examined the LSE data for spatial agreement from a formal theoretical linguistic perspective. At a broad level, I have adopted the syntactic framework and the specific syntactic operation Agree from the Minimalist Program of generativist linguistics (described in section 2.3) to see how well the LSE facts can be accounted for. At a more concrete level, I used Optimality Theory to explain a specific phenomenon of verbal agreement in LSE, namely, the alternative forms of (potentially) “defective” agreeing verbs. To close this chapter, I assess the results of these two endeavours in turn and finally address the outstanding research question for this thesis.

The syntactic analysis proposed here for the mechanism of spatial agreement in LSE includes an important deviation from the theoretical apparatus set out for spoken languages: one of the basic components of the process, a φ -feature, is substantially different. A close examination of the nature of spatial reference in LSE led me to reject the existence of a person feature in LSE (in section 6.4.3) and I proposed an alternative φ -feature of identity. I developed this proposal in section 7.1 and looked at where and how the feature operates syntactically. Essentially, the identity feature is inserted into the syntactic numeration on a functional head within the DP that dominates the NP it is associated with. I suggest that this is the D head, given the parallels between the identity feature and the indexical reference that the D head expresses. However, the syntactic account proposed here does not depend on the identity feature being hosted on D and could work equally well if the feature were to occupy another functional head within the DP.

Despite the change in the φ -features that take part in the agreement process, the mechanisms and operations associated with a syntactic account of agreement allow for this modification. Section 7.2 provided a framework for spatial agreement in LSE by describing how the identity feature takes part in the syntactic derivations that account for different aspects of agreement as

described in chapter 5. This outline accounted for location assignment, single argument agreement, agreeing verbs and agreement auxiliaries. Furthermore, the syntactic model also provided a means of distinguishing between these syntactic manifestations of agreement (involving the Agree operation) and other uses of space that give rise to loose associations that must be resolved pragmatically (i.e. pragmatic agreement). With the modification of the φ -feature, the LSE data are amenable to the type of syntactic analysis that has been developed on the basis of spoken language data. In the cookbook of human languages, some ingredients may be different, but the basic recipes are the same.

In addition to characterizing spatial agreement in LSE from a syntactic point of view, this chapter has also examined a specific aspect of agreeing verbs. In section 5.4.2, I examined the phonological constraints that operate on agreeing verbs, and described a class of verbs that have non-paradigmatic forms due to a conflict between a lexically specified phonological feature and the agreement marking. Although these types of verbs are often defective in other sign languages, in LSE various strategies allow the agreement markers to surface on the verb. Section 7.3 provided a formal analysis, using the framework of Optimality Theory, to account for these forms. The framework and constraints it appeals to are not language (or modality) specific, yet they provide an account for the behaviour of these verbs in LSE and go a long way towards explaining the data for similar verbs in ISL.

To conclude, we can now offer an answer to the third and final question defined in chapter 1: *Can spatial agreement in LSE be given a formal characterization?* This chapter has offered a formal characterization of the basic mechanism of spatial agreement in LSE. A general model based on the theoretical apparatus offered by minimalist syntax provides an adequate account of the LSE data and explains the range of phenomena that exhibit spatial agreement. Additionally, Optimality Theory was applied to a specific spatial agreement phenomenon in LSE and also provided an appropriate means to account for the phonological form of this class of agreeing verbs. Developing these analyses brought up various issues, notably, optionality, the locative/locus distinction and linearity considerations (section 7.4). In discussing and addressing these matters, I examined the consequences of this syntactic account, to underline its strengths and to acknowledge its limitations. In this sense, the formal account of LSE agreement offered here not only confirms that this spatial mechanism can be characterized syntactically, but also provides a refinement to the second research question by identifying how LSE differs from spoken languages. Once more, the interrelated issues of optionality and the basic referential mechanism set sign

languages apart from spoken languages as far as agreement is concerned. Yet important commonalities remain: despite the modality-specific use of space, linearity considerations play a central role in how sign languages generate agreement forms.

8. Closing remarks

This thesis has examined the use of space in the verbal agreement system of Spanish Sign Language (LSE). The three main goals of this work were: firstly, to provide a comprehensive description of agreement in LSE and compare these findings with what has been described for other sign languages; secondly, to assess to what extent this spatial mechanism can be labelled as agreement in terms of what that label means for spoken languages; and thirdly, to provide a formal account of this spatial agreement mechanism in LSE. This study of agreement in LSE reveals that the spatial mechanism used by LSE fits into the patterns described for other sign languages (although there are some idiosyncrasies that will be summarized below) and depends upon an association between a referent and a locus in the signing space. Furthermore, by considering this spatial marking as a basic agreement mechanism, present throughout the verbal domain (and not just in a small set of directional verbs) and also in the nominal domain, the characteristics of this agreement process fall within the range of the phenomenon of agreement as construed based on the spoken languages of the world. Additionally, this agreement mechanism comes out as a relatively canonical instance of agreement on the criteria for canonicity established by Corbett (2003b, 2006). Finally, by positing an identity feature (rather than a person feature) that participates in this agreement process, it is possible to provide a syntactic characterization based on the tenets of the Minimalist Program (Chomsky 1995), including the formal operation of Agree. In a nutshell, the spatial modification of verbs in sign language is a case of agreement.

In this final chapter, I will review the findings of this study and lay out the main conclusions that can be drawn. I start by looking at the specific language that is the focus of this study, and what the findings show us about LSE (section 8.1.1). I then progressively broaden the perspective, considering first what this study tells us about sign languages (section 8.1.2), and subsequently what is revealed about language in general (section 8.1.3). Shifting the focus between sign languages and language in general makes it possible to address the issue of modality, which, as I mentioned from the very beginning of this thesis (in section 1.1), is one of the points of departure for this work. Looking at sign languages provides an intra-modal perspective that

allows us to identify commonalities to languages in the visual-gestural modality; considering language in general means taking in both spoken and signed languages, and offers a cross-modal view that brings to light modality differences and also commonalities that cross the modality divide.

Just as important as knowing what this study tells us is to know how much it tells us. In an attempt to delimit the findings of this study, I will also look at what it does not tell us (section 8.2). I identify the gaps and shortcomings of this study, as well as limitations that may be intrinsic to the questions I have tried to answer. Looking at what is missing from this study is the first step in setting out what more needs to be done. In the closing section (8.3), I will present possible future directions for work on the use of space and agreement in sign languages.

8.1. What this study tells us...

The opening paragraph of this chapter provided a single-shot summary of this thesis. The following sections describe the findings of this study in more detail and take progressive steps back to contemplate the wider picture and draw out the issues that have come to light throughout this thesis.

8.1.1. ...about LSE

This thesis has offered a detailed account of the use of space for agreement in LSE. A variety of data types (free conversation, elicited narratives and guided interviews) from recordings, as well as grammaticality judgements of native (or near-native) signers from the Basque Country (see chapter 4 for details) made it possible to give a description of the use of spatial marking in LSE (chapter 5). As such, this study offers an important advance in the linguistic description of this language, on which relatively little work had been carried out (see section 1.4.3), especially with regard to the specific topic of space and agreement. Furthermore, this thesis has used two different theoretical frameworks – a typological approach and generativist syntax – to analyse the data (chapter 2). As far as I know, neither of these methods of analysis has been applied to LSE data before.

This study reveals that, from the point of view of spatial agreement, LSE is broadly similar to what has been described for other sign languages (section 5.7). While this was expected and does not uncover a wildly interesting scientific fact, it nevertheless represents an important confirmation of the relative uniformity of this phenomenon across sign languages mentioned in the opening lines of chapter 1 (and will be returned to in the next section). Nevertheless, this detailed examination of LSE has exposed idiosyncratic properties of the language, and various data points represent novel findings

for spatial agreement in sign languages. I highlight three such facts here. Firstly, potentially “defective” agreeing verbs in LSE are not actually defective since they employ various strategies to include marking for both the subject and object arguments (sections 5.4.2.1 and 7.3). Secondly, the repertoire of agreement auxiliaries includes forms (or specific uses of forms) that have not been described for other sign languages. This includes (i) the specific use of the general auxiliary AUX as a relational kinship marker and a general relational marker (section 5.3.1), (ii) the comparative auxiliary derived from the lexical verb BEAT (section 5.3.2), and (iii) the PERS auxiliary, grammaticalized from the nominal PERSON, which marks just a single argument (section 5.3.3). And thirdly, LSE pronouns, especially the “first person” forms, have distinct phonological forms and are as indexical and compositional as other pronouns (section 6.4.3). Although these findings are novelties, they represent variations within a constrained set of possibilities, and continue to show underlying properties that show up in other sign languages (see section 5.4.2.2). Even so, some of these distinctive properties of LSE have motivated the alternative analysis of spatial agreement that is the central contribution of this work (see sections 5.2.3, 5.7 and 7.2).

One of the main innovations of this thesis is the explicit claim that not only the spatial modification of verbs is agreement: spatial modification in general is agreement in LSE. That is, the phenomenon of agreement is not limited to the spatial modification of directional verbs (i.e. agreeing verbs *and* spatial verbs) but also includes the spatial modification of localized verbs (i.e. single argument agreement – see section 5.2.3) and adjectives, determiners, numerals and so on (i.e. DP-internal agreement – see section 5.6). Widening the domain of agreement beyond a small set of verbs with specific properties was motivated by the fact that a more general spatial process appears to be exploited by LSE and a unified agreement process could account for this behaviour. Based on the similar types of spatial modification reported for other sign languages (and reviewed in chapter 3), it seems likely that this analysis could be extended to other signed languages (see section 8.1.2). Furthermore, a careful examination of the characteristics of this general process reveals that it has much in common with agreement as understood from the point of view of spoken languages (chapter 6). This parallel with spoken language agreement is confirmed by the fact that a formal syntactic account is possible for this spatial marking based on theoretical apparatus developed for spoken languages (chapter 7).

The claim that spatial modification in general is agreement does not imply that *all* spatial modification is agreement, and this is an important caveat. As was shown in section 1.2, space is exploited in many different ways

by LSE. Of relevance to the issue of agreement, we have seen various cases where spatial modification is not indicative of syntactic agreement: pragmatic agreement and isomorphic mapping. In the first case, two elements share the same locus and this creates an association between those elements that must be resolved pragmatically (section 3.2.3). The ambiguity of the interpretation sets this use of spatial marking apart from syntactic agreement, in which one element establishes an unequivocal link with another (for example, a verb with its subject). The syntactic account I developed in section 7.2 offers an explanation for this distinction. On the other hand, isomorphic mapping involves a use of space that corresponds to the real world in a continuous manner (see section 1.1.2) and represents a greater challenge for an analysis based on discrete values, although such iconically motivated mappings have been incorporated into formal accounts (Schlenker 2014). I have shown that spatial verbs often coincide with this use of space, but that isomorphic mapping and the spatial agreement mechanism are independent (see sections 6.5 and 7.4.2). The presence (or remains) of an isomorphic mapping may also offer an explanation for the conundrum of backwards verbs (section 7.2.2).

As such, this thesis has characterized an important aspect of the use of space in LSE. This use of space is similar to agreement in spoken languages and can be characterized in syntactic terms. However, there are other uses of space that exist, and these other uses may or may not be amenable to linguistic analysis. In this sense, this study has made advances in staking out the linguistic terrain of LSE: more work needs to be done to describe other ways in which the language uses space, and to provide suitable models for those uses of space. In this thesis I hope to have offered convincing arguments that the use of space in LSE described here is an agreement process on a par with agreement in spoken languages.

A fundamental aspect of the analysis developed here is the claim that LSE does not have a person feature (section 6.4.3). This claim is not entirely new in the sign language literature, but the alternative account I propose, based on an identity feature, is original (see section 7.1). This puts LSE in a very unusual position with respect to spoken languages, which always encode some sort of person distinction (section 2.2.5.3). The possibility that the identity feature I suggest is common to sign languages (and thus a modality effect) will be considered in the next section.

8.1.2. ...about sign languages in general

The LSE data in this study confirm much of what has been described for the use of space in a variety of sign languages (chapter 3). However, the analysis offered for spatial agreement in LSE is a significant departure from the

treatment usually given to agreement in sign languages. To start with, nearly all work on agreement, especially since Padden's (1983/1988) seminal work on the topic, has focused exclusively on directional verbs (sections 3.2.1 and 3.2.2). As described in the previous section, the analysis for LSE agreement attempts to capture a more general mechanism of spatial marking. This section starts by considering whether this analysis for LSE could be extended to other sign languages, and then moves on to the more general question of how this study contributes to the typological study of (agreement in) sign languages.

The applicability of the model of agreement in LSE to other sign languages is, to a large extent, an empirical question. It is necessary to look at each sign language to see how well the data can be explained by the analysis developed in this thesis. However, we already have a certain amount of cross-linguistic sign language data available, and here I offer some thoughts on why this model may work well for many sign languages. As mentioned above, this thesis maps out one aspect of the use of space in LSE. It does not offer a general theory of the use of space in sign languages, but does provide a delimited and formalized model for a certain type of use of space, which I claim is an agreement mechanism. This use of space has resisted identification and analysis due to the very fact that across sign languages space is used in different ways. The expectation that space should always behave with a single function (always as agreement or always as a discourse marker) makes it impossible to tease apart these different exploitations of space. Only once we recognize that the use of space is not monolithic and needs to be categorized, can we begin to analyse each category.

Until now, agreeing verbs were generally treated as the only manifestation of agreement in sign languages, and this is probably due to the fact that they are one of the clearest manifestations of agreement and because the phenomenon is relatively straightforward to delimit and analyse. As soon as other uses of space are incorporated, things start to get complicated. An obvious example of this is Padden's (1990) exclusion of verbal localization (see section 3.2.3) from the domain of agreement. The similarity between a syntactic agreement process (what I call "single argument agreement" – see sections 3.2.3 and 5.2.3) and a pragmatic use of space (known as "pragmatic agreement" – see sections 3.2.3 and 7.2.3) led her to treat both as one thing that could not be a case of agreement. This confusion is understandable: not only do both mechanisms use space to form a link between different elements, but the contexts in which each appears are also very similar. Pragmatic agreement arises in discourse contexts where two elements are being compared; the use of spatial locations tends to occur when there are various

referents that need to be distinguished. As such, both mechanisms are conditioned by discourse considerations and this further obscures the distinction between the two.

Restricting agreement to agreeing verbs provided an amenable analysis, but was not without its problems. In the final reading, agreement in sign languages has looked like a fairly haphazard affair, and this is probably why various spoken language linguists have dismissed it as displaying insufficient systematic covariance. My claim is that an analysis of agreement as a more general spatial mechanism (but differentiated from other types of spatial functions) provides a much more systematic phenomenon. (I still have to contend with the issue of optionality and this is discussed below.) Obviously, I would like to be able to say that my model is the panacea for sign language agreement, but clearly I cannot make such an extravagant claim. I will, however, present two arguments that support my case.

The uniformity of the use of space across different sign languages was identified as one of the unusual properties of sign language agreement on the first page of this thesis. Another unusual property of agreement that has been mentioned throughout this thesis, and which also serves to reaffirm the similarities across different sign languages, is the optionality of the agreement marking. These properties are related to one another and are consequences of the modality. The use of space underlying this agreement process is available in the gestural modality and this is what makes sign languages behave so similarly. The optionality is a consequence of this use of space, and this is why these properties bundle together in sign languages. The analysis presented here provides an account for how a feature in the syntax spells out as a spatial location in the phonological form. The model for this spatial agreement process incorporates various mechanisms that can account for the optionality, such as default values and phonological conflicts (sections 7.1.3 and 7.2.2). If spatial agreement gives rise to other properties, an analysis that accounts for this basic spatial agreement process gains a lot of explanatory power. And if the use of spatial agreement is a modality effect, the analysis stands a good chance of working for other sign languages.

The second argument relates to the issue of iconicity and the identity feature that appears in the analysis of LSE agreement (section 7.1). First of all, the identity feature depends on the use of diagrammatic iconicity (see section 1.1.2), since different values of the feature correspond to different entities: x represents i and y represents j ; x and y are distinct, therefore i and j are distinct. This type of diagrammatic iconicity is so facile as to seem uninterestingly obvious, but it highlights an important property of this use of space: it is abstract and not visually motivated (in contrast to imagistic

iconicity). Such an abstract use of space sits well with an abstract, syntactically driven agreement process. However, in the case of physically present referents, other types of iconic motivation come into play: when referring to herself, a signer will use a location in space that coincides with the space that she physically occupies. This visually motivated use of space gives rise to regularities in certain forms that give the impression of a difference between first and non-first person forms. Two further effects conspire to accentuate this apparent contrast. The phonological salience of the difference between a location on the body and another off the body emphasizes this distinction. Additionally, role shift allows the referential space to be shifted so that a location in the signing space moves onto the body, thus maintaining a putative first/non-first preference (sections 3.1.2 and 5.1.2).¹ In this way, the identity feature, based on an abstract correspondence between a feature value and a location, may take on the outward appearance of a person-like feature due to the visual motivation associated with physically present referents, who are normally discourse participants. In sum, what looks like a person distinction may just be a reflection of the fact that the signer occupies a phonologically relevant location in the signing space, and reference (and spatial agreement) in other sign languages may also be better characterized in terms of an identity feature.

Only continuing description and analysis of different sign languages will show whether this model stands up against the data. The fact that the use of space is so similar across different sign languages plays in my favour, but I lay this proposal before the brute force of empirical testing.

Aside from the matter of how applicable the analysis of LSE agreement is for other sign languages, this study also represents an important advance for the linguistic typology of sign languages. In the first place, the study offers one of the most complete pictures to date of an agreement system in a sign language. I have described different agreement phenomena, including agreeing verbs (section 5.2), agreement auxiliaries (section 5.3), single argument agreement (section 5.2.3) and DP-internal agreement (section 5.6), as well as specific aspects of the nature of agreement forms in general (sections 5.4.2.2 and 5.2.3) and in exceptional circumstances (section 5.4.2.1). This effectively maps out at least part of the typological space occupied by agreement in sign languages, and provides a starting point for detailed work on other sign languages. Additionally, this study provides a unified account

¹ Evidence of a preference for this distinction comes from ABSL, a relatively young sign language. Even though verb agreement is not attested in this language, verbs denoting transfer involve movement on the front-back axis of the signing space (i.e. towards or away from the signer) (Aronoff et al. 2004).

for the spatial agreement process underlying these various agreement phenomena in LSE (see section 7.2.2), and is couched in terms of “tried and tested” linguistic frameworks (from the spoken language tradition) that favour cross-linguistic analysis (see chapter 2). Although the model proposed here may need to be adjusted to accommodate data from more sign languages, it offers a framework and a set of linguistic tools that make it possible to describe and characterize agreement phenomena in such a way that patterns can be found across different sign languages.

Secondly, this study has drawn comparisons between LSE and data from other sign languages, and has revealed intra-modal cross-linguistic differences (see chapter 5 and specifically sections 5.4.2.2 and 7.3.4). In addition to the unique features of LSE mentioned in section 8.1.1, the review of agreement in sign languages made clear that different languages do different things to achieve agreement. This fact of linguistic diversity is no big surprise, but the analysis of the LSE data allowed for comparison with other sign languages and revealed that the attested variation reflected underlying constraints. We saw this in the comparison of the different inflectional paradigms of agreeing verbs (section 5.4.2.2), which showed that the patterns differed across languages, but in all cases – LSE plus the four different sign languages examined by Mathur & Rathmann (2006) – the paradigms were subject to phonological constraints. Equally, the OT analysis of defective agreeing forms in LSE used constraints and principles that could be applied to data from ISL (section 7.3).

Taken together, the unique features of agreement in LSE and the existence of common constraints across different sign languages reveal a typological landscape in which diverse languages have different properties taken from a common set of properties (or different values for a common set of parameters). Recent typological work on another linguistic mechanism, negation, confirms this idea: for each individual property a given sign language patterns like many other sign languages, but once all the different properties are taken into account, that language has a unique set of properties (Oomen & Pfau 2015). The detailed description offered in this study locates the unique position of LSE on the typological map. This is a step towards discovering what the relevant typological parameters are for cross-linguistic variability of agreement behaviour in sign languages in general. Once more, linguistics is all about looking for the patterns in the variability: sign languages show regularities that are explained by appealing to linguistic rules. Furthermore, many of these rules also operate in spoken languages, and this indicates that there are linguistic principles that are independent of modality.

8.1.3. ...about language

Studying sign languages offers unique opportunities to think outside the spoken language box. We may expect to find surprises in the shape of phenomena that simply do not show up in spoken languages. In the case of signed languages, the use of simultaneous articulators (section 1.1.1) and role shift (sections 3.1.2 and 5.1.2) are just two examples of aspects of language in the visual modality that have no immediate corollary in the spoken domain. As pointed out in section 1.1, looking at sign languages offers the chance to compare signed and spoken languages to identify properties of language that are due to the modality, or that show up in both modalities. If linguistics is about finding patterns in the variability, coming up with regularities that are invariant across modalities gives us a glimpse of something essential to language. As we saw in sections 2.3.1 and 2.3.2, the notion of a language faculty enshrines the idea that human language has basic design features that are common to all languages.

In this context, what does spatial agreement in LSE tell us about language? In the first place, it suggests that agreement is a common property of language. Even though the spatial agreement process often looks like some sort of conventionalized gesture of transferring something from A to B, the assessment of this mechanism in terms of its properties shows that it has a great deal in common with agreement in spoken languages (chapter 6). Treating sign language agreement and spoken language agreement as comparable traits is worthwhile, since doing so in this thesis provided the means to analyse and provide an account of the phenomenon. Additionally, isolating the use of space for agreement from other uses of space made it possible to give a syntactic analysis of spatial agreement in LSE, based on syntactic structures and operations that have been developed for spoken languages (chapter 7). As was suggested in section 7.5, agreement (or, more precisely, Agree) is the basic mechanism that underlies language structure: if agreement were radically different in sign languages, this would mean proposing a completely different structure for signed and spoken languages (or completely reassessing the importance of agreement).

There are qualitative differences in the workings of agreement in LSE and spoken languages, the most patent being the difference in the set of ϕ -features that take part in this process, and this has consequences for some of the properties of the mechanism. Most noticeably, the identity ϕ -feature that underlies the use of spatial locations gives rise to a high degree of optionality (section 7.1). Although this optionality can be accounted for by the syntactic model, it appears to be a modality effect that sets sign language agreement apart from spoken language agreement. This may be related to the

fact that agreement in LSE is doubly redundant in the sense that the displaced information (on the target) is also redundant on the controller itself. The identity feature only serves for reference tracking and does not provide any meaningful information about the referent in the way that person or gender does. If agreement is such a basic part of language, it is possible that the identity feature (and the associated locations) is needed to give agreement something to work with. Despite these differences, the underlying structure and operations are the same for both LSE and spoken languages, and once more we see that there is variation within certain limits. These common constraints outline the shape of the language faculty.

This study has turned up an interesting feature of sign languages that is of relevance to the comparison with spoken languages and the notion of cross-modal invariance. In the analysis of defective verbs in LSE and ISL in section 7.3, it was shown that the differences between the two sign languages can be attributed to differences in the linearity stipulations in each language. As the discussion in section 7.4.3 pointed out, this makes evident that linearity considerations are relevant to sign languages (just as they are for spoken languages) and may provide explanations for cross-linguistic variation.

In his study of agreement, Baker (2008) notes that nouns do not agree. This provides a useful point of comparison between signed and spoken languages because we have seen that nominals in LSE can be localized. Since we have characterized the use of space as an agreement mechanism, does this mean that nouns in sign languages can show agreement? Firstly, we should recall that not all cases of localization are agreement: as we saw in sections 5.1.1 and 7.2.1 location assignment may also be achieved by localization and this does not involve agreement. Secondly, those instances of localization of a nominal that were not location assignment counted as cases of pragmatic agreement, which is not a manifestation of syntactic agreement but rather a loose association that is pragmatically resolved. (This was the ambiguous relationship between 'hotel' and 'friends' in example (8) in section 7.2.1.) This seems to be very similar to the sort of semantically coherent agreement between nouns that was mentioned in section 2.2.3.2: the underlying process is not one of syntactic agreement but merely a means of avoiding semantic mismatches. Thus, nouns in LSE are just as adverse to (syntactic) agreement as nouns in spoken languages are.

In sum, this study of spatial agreement in LSE offers a promising model for characterizing agreement in other sign languages (a model that needs to be tested against data) and provides an initial point of comparison with spoken languages. There is much about LSE agreement that complies with spoken language models, as is made clear by the application of two different

theoretical frameworks that yield a useful way of understanding and characterizing the LSE data. As far as modality effects are concerned, the use of space for reference in LSE gives rise to a set of interrelated properties that are not seen in spoken languages: the resulting agreement system makes use of an identity feature that is closely related to referential identity of discourse entities, and this also makes the agreement process much more optional. Although this reduces the systematic covariance of agreement in LSE, this spatial agreement mechanism systematically appears throughout the language in those contexts where agreement appears in spoken languages.

8.2. What this study does not tell us

This study is limited to a single sign language and, as became clear in the discussion in section 8.1.2 above, can make no hard and fast claims about other sign languages. Although I have included a review of the sign language literature (chapter 3) and have used data from other sign languages to contrast with the LSE data and the analyses developed in this thesis, I have been cautious not to make claims about “sign languages” or “sign language agreement”. I am aware that it is all too easy to slip from the specific to grandiose generalizations, especially where sign languages are concerned, and I should stress again here that my claims are about LSE. I believe (and hope) that the model I have traced out may be applicable to other sign languages, but this is as much as I can say in that respect.

Even restricting myself to LSE, this work is on a specific aspect of the use of space in this language. As stated above, this thesis does not offer a general theory of the use of space in sign languages (or even in LSE). There are many other uses of space, some of which I have touched upon (e.g. isomorphic spatial mapping), some of which I have contrasted with the use of space for agreement (e.g. pragmatic agreement), and others that I have left untouched (e.g. location in phonology). I do not believe that a unified theory of space in sign languages is possible and it would perhaps be like trying to come up with a unified theory for the function of vowels in spoken languages. Still, this study is about one type of spatial mechanism in LSE, and others will require quite different treatments.

In addition to demarcating the domain of this study, I should point out a series of issues that this thesis does not address. These are topics that could have been pursued within the scope of this research but time restrictions prevented these paths from being explored. There are several points in this thesis where I leave matters for future research, or gloss over gaps in the analysis, and I would do well to review these pending issues here.

With respect to location assignment, this study does not answer the questions of when or where location comes into play in LSE. The syntactic model I propose can “cope with” the optional nature of spatial agreement but it remains to be seen what exactly triggers the use of space for reference: I have pointed out that discourse factors are central to this but a more detailed understanding is required (see section 6.5). Equally, the question of where a location will be assigned in the signing space has been alluded to in section 3.1.1, with reference to general principles put forward by Engberg-Pedersen (1993) and the distinction between specific and non-specific referents identified by Barberà (2012), but how these different factors interact and are prioritized would help to understand how spatial reference is achieved.

Related to the appearance (or not) of location for reference (and thence for agreement marking) is the issue of number marking (sections 3.5 and 5.6), which also shows a large degree of similarity across sign languages. Since number can be marked in agreement, and normally involves spatial marking (section 6.4.2), this issue is of great relevance for obtaining a fuller picture of spatial agreement in LSE.

Focusing on the agreement mechanism itself, there are three topics that I have not been able to fully address. The first is the predominance of object marking, most clearly seen in agreement marker omission (section 3.2.1.2), but also in single agreement marking on transitive verbs. This is a clear trend across sign languages and deserves some sort of explanation. I have argued (above in section 8.1.2) that other common properties of agreement across sign languages (the optionality, the use of spatial locations) go hand in hand, but I cannot see a connection with this tendency to mark objects more than subjects. I have no good explanation for what is going on here but this is clearly a relevant property of spatial agreement. The second issue I have shied away from is the possibility of long distance agreement in LSE. In section 6.3.2 I set out several reasons for why it would be so hard to identify a case of agreement between a verb and an element in another clause, and the challenge remains.

The third aspect of spatial agreement in LSE that goes unanswered is the matter of multiple exponence (see sections 2.2.3.3 and 6.2.4), which arises on two separate counts. Firstly, there is the question of agreement being marked non-manually as well as manually (see sections 3.4 and 5.5). The data in this study do not make it possible to provide any generalizations on the role of eye gaze, head tilt or other non-manual markers in spatial agreement in LSE. Secondly, agreement may also display double marking on a lexical and auxiliary verb (see section 2.2.3.1). Such double marking occurs in LSE (see section 5.3.1) and the syntactic account offered does not address this

issue. These types of “exuberant” agreement are problematic for most analyses of agreement (section 2.2.3.3) but this is a weakness, albeit commonplace, in the account.

I wish also to consider what this study **cannot** tell us. I have presented an analysis of what I consider to be an agreement mechanism in LSE and have justified this classification by evaluating the phenomenon with well established tools from spoken language research. However, there is a sense in which there is no definitive answer to the question “Is agreement in LSE the same as agreement in spoken languages?” This observation is not motivated by relativistic hand-wringing, but by the fact that linguists from the spoken language tradition are quick to exclude sign language agreement from their concept of agreement. This is evidenced by the Corbett and Cysouw references mentioned in the discussion in section 6.7. In contrast, most linguists working with sign languages consider sign language agreement to be a legitimate case of agreement (see chapter 3). The decision to classify a phenomenon one way or another is as much a product of the context in which the decision is taken: we would do well to bear in mind that agreement is not only a theory-bound concept but a context-bound notion too.

8.3. Future directions

Much of the previous section was a shopping list for future work on spatial agreement in LSE. In this section I will develop those directions that would provide useful insight into how LSE – and sign languages in general – make use of space.

This thesis has leant heavily on the typological tradition of spoken language research. However, it has focused on a specific signed language and would benefit greatly from a fuller cross-linguistic perspective based on data from other sign languages. The discussion in the previous sections has made it patent that analysing other sign languages would provide a clear demonstration (or refutation) of the proposals and the model developed for LSE. Additionally, comparing across a greater range of different sign languages would give a good idea of the extent and the limits of the phenomenon of spatial agreement, in the same way that this has been mapped out for agreement in spoken languages. An important addition to an intra-modal typological approach would be the inclusion of shared signed languages, mentioned in section 1.1. I have made reference to a couple of languages of this type, but given that they show very different characteristics to most of the urban western sign languages that have been studied to date, they offer a valuable testing ground for claims about modality effects. For

example, Kata Kolok (KK), a shared sign language used in a village in Bali, Indonesia, employs an absolute frame of reference for spatial marking on pronouns and spatially modified verbs. This means that in KK, spatial modification for a given referent is towards that referent's actual location in the real world, regardless of distance involved (de Vos 2012). The possibility of different frames of spatial reference adds another dimension to how space can be exploited by sign languages, and raises the question of whether other sign languages use absolute frames. For LSE (and many of the other languages mentioned in this thesis), such absolute frames appear to be limited to present or visible referents, but the matter requires more attention.

The growing availability of sign language corpora offers another valuable tool for looking at spatial agreement. Not only do corpora provide a wealth of data points but, if suitably transcribed and tagged, they make it possible to look for patterns across different genres and discourse contexts. This may be critical in discovering when spatial reference is activated in sign languages (and, doubtless, how this varies cross-linguistically). Corpora studies will also make it possible to map out other uses of space in sign languages and to see how these different uses of space interact with considerations of iconicity and gesture.

The use of corpora is well complemented by formal studies of sign languages that dissect a specific phenomenon with the aid of well developed theories and frameworks. At several points in this research on spatial agreement I have become increasingly aware of the need for a better grasp of fundamental issues concerning reference, semantics and pragmatics. Formal work by Barberà (2012), Gökgöz (2013), Schlenker (2014) and Kuhn (2015) represent important steps in this direction.

Finally, work based on the processing of sign language can provide important clues as to how space is manipulated, and to what extent these spatial mechanisms are integrated into the language system (or not). Specifically, the distinction between locative arguments and isomorphic mappings may be made clearer by resorting to eye-tracking or brain imaging studies. There was ground-breaking behavioural work in this direction a long time ago (Emmorey, Corina & Bellugi 1995), and more recent work has used the EEG technique to look specifically at the syntactic status of spatial agreement (Hosemann, Herrmann, Steinbach & Schlesewsky 2011; Hosemann 2015).

This study of spatial agreement in LSE shows how, when compared to spoken languages, a sign language can use different means (space) to achieve the same end (agreement). The future study of this phenomenon in other sign

languages, and other uses of space in sign languages will help to make the linguistic map of human language more complete.

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Language and modality: Effects of the use of space in the agreement system of *lengua de signos española* (Spanish Sign Language) (Summary)

This thesis examines agreement in Spanish Sign Language (*lengua de signos española* – LSE) and provides a comprehensive description of the agreement mechanisms available to the language based on data collected from LSE signers from the Basque Country. This description makes it possible to compare agreement in LSE with what has been described for other sign languages, and also to offer a cross-modal comparison of the phenomenon, that is, to compare agreement in a signed language to agreement in spoken languages. Underlying this comparison is the issue of whether what we call agreement in sign languages is the same thing as what is called agreement in spoken languages. Ultimately, the comparison allows us to look at the issue of modality, and to identify properties of the agreement system that are driven or conditioned by the language's modality. Conversely, any commonalities between both types of language may reveal properties that are universal to language, regardless of modality.

The thesis opens with an introduction that provides a general background in terms of the broader issues that motivate this work and previous relevant work in this field, and also provides general information about Spanish Sign Language (chapter 1). What makes sign languages especially interesting to study is not only the possibility of documenting and analysing more languages, but the very fact that these languages are expressed in a different modality. As a result, sign languages have resources available to them that are not, or at least less frequently, used in spoken languages, such as the use of iconicity or the possibility for simultaneity (thanks to the existence of multiple articulators). The use of space in sign languages is another clear effect of modality that pervades the entire language system, from phonology to the organization of discourse. Space is used in many different ways, and this thesis focuses on one particular aspect: the use of space to mark agreement. Spatial agreement involves a verb starting at a point in space associated with the subject and moving to a point in space associated with the object – a phenomenon that has been studied in many different sign languages. In the sign language literature, this mechanism is

generally treated as an instance of agreement. However, this spatial agreement shows some unusual properties that call into question its status as agreement or even as a linguistic process at all. Thus, this thesis sets out to:

1. describe how spatial agreement works in a particular sign language, LSE;
2. compare this use of space in LSE with what has been described for other sign languages;
3. assess how “agreement-like” this mechanism is based on different frameworks developed to describe and account for spoken language data.

The next part of the thesis (chapters 2 and 3) gives details of the conceptual background that provides the theoretical framework for this study. Two different approaches to characterizing agreement from general (spoken language) linguistics are described: linguistic typology and Generative Grammar (chapter 2). While these approaches are quite different, I argue that they provide complementary ways of thinking about agreement that offer useful tools for assessing spatial agreement in LSE. The first, linguistic typology, describes and compares the behaviour of a wide variety of languages based on an established set of concepts and labels that admit the variability that is found across the world’s languages. For the specific case of agreement, the phenomenon is characterized as the systematic covariance between two elements: some aspect of one element (the controller) is reflected in the form of another (the target) in a specific context (the domain), and different types of information (features) may be expressed in the agreement relationship. This chapter introduces these different terms (controller, target, features, etc.) and reviews the different possibilities that have been described for each in the spoken language literature. Within the typological approach, the concept of canonicity describes how agreement-like a given agreement mechanism is, based on the idea that agreement can be more or less prototypical according to a set of criteria.

Generative Grammar offers a way of characterizing language in terms of a system of rules and structures that generate utterances. The latest version of this linguistic approach, the Minimalist Program, considers language to be an optimal system that interfaces with form and meaning. Of relevance to this study, minimalist syntax considers agreement to constitute a fundamental syntactic operation, known as Agree. This operation is defined in very specific terms: Agree takes place in a certain structural context and involves the features of one element valuing the features of another. Furthermore, Agree is

considered to be central to the workings of language. The question then arises: is there anything like Agree in LSE?

After providing the theoretical background based on work on spoken languages, the second background chapter (chapter 3) summarizes how agreement has been described in the sign language literature. This overview concentrates on agreement in the verbal domain, between a verb and its arguments, but also looks at agreement in the nominal domain, such as agreement between an adjective and a noun. As mentioned above, the agreement process depends on the use of points in the signing space to indicate a verb's arguments. This association between a locus and a referent is a basic referential mechanism (which also underlies the pronominal system) and is accomplished by location assignment. Much of the work on agreement in sign languages limits itself to a specific type of verb, known as agreeing verbs. These verbs are directional and generally move from a locus associated with the subject argument to a locus associated with the object argument. The fact that some agreeing verbs, the so-called "backwards verbs", show the inverse relation by starting at the object locus and moving to the subject locus, impedes a straightforward account of this agreement behaviour. However, in addition to these directional verbs, other verbs also make use of space to mark a single argument by being articulated at a locus (rather than moving from one locus to another). This thesis considers whether this use of space, labelled single argument agreement, should also be considered as part of the spatial agreement process available to sign languages.

Various agreement auxiliaries have been described for different sign languages, and these also make use of space to mark a verb's arguments. Furthermore, as well as the manual exploitation of space (by moving signs around the signing space), non-manual markers can also be used to indicate loci in space. There is evidence to suggest that markers such as eye gaze or head tilt may be recruited by the spatial agreement mechanism of sign languages. In the nominal domain, various elements, from demonstratives and adjectives to numerals, may also be spatially marked to agree with the head noun. In sum, in most sign languages that have been studied to date space is used productively to mark relations between different linguistic elements.

The LSE data are presented in the next part of the thesis (chapters 4 and 5). Chapter 4 describes the methodology used. The data for this study were collected from three different signers from the Basque Country in the north-eastern part of Spain. The signers were native or near-native, according to criteria that were developed to overcome the lack of generational continuity that characterizes most sign language communities. The data were collected

using a variety of techniques, including free conversations, elicited narratives (from texts and non-verbal material), guided interviews and grammaticality judgements. In all, around 90 minutes of video data were recorded, transcribed and analysed qualitatively to provide a description of spatial agreement in LSE.

In chapter 5, it is shown that spatial agreement in LSE follows many of the patterns already described for other sign languages: there are agreeing verbs (including backwards verbs) and a selection of agreement auxiliaries. The auxiliaries are of interest as they show properties slightly different to those of other sign languages, including specific uses of the general auxiliary AUX (for marking kinship relations, for example), an auxiliary for comparatives derived from the lexical verb BEAT, and a one-place auxiliary derived from the nominal PERSON. More importantly for this study, LSE shows productive use of single argument agreement: verbs and elements from the nominal domain (such as adjectives and classifiers) may be localized in the signing space to mark agreement with the noun controller. Various observations support the claim that this mechanism of single argument agreement should be treated as a case of spatial agreement, such as the syntactic determinacy of the argument that is marked (the verb's internal argument) and the possibility of plural marking on the arguments. This effectively widens the domain of agreement from a small set of verbs to many other verbs and also beyond the verbal realm, making agreement a much more general process.

Although LSE shows some differences with respect to other sign languages in terms of instantiations of agreement, this variability is heavily restricted. This interplay between variation and overlap is illustrated by looking at the different agreement forms that are available to agreeing verbs in LSE: they differ from the paradigms attested for other languages, but at a more basic level they are subject to the same types of constraints, namely phonological restrictions on the types of forms that are possible. With respect to non-manual agreement markers, the LSE data suggest that eye gaze may play a role in marking agreement, but the data in this study do not make it possible to draw clear conclusions in this respect.

The next part of the thesis analyses the LSE data from the perspective of the two linguistic frameworks introduced in chapter 2: linguistic typology and Generative Grammar. Chapters 6 and 7 use the concepts and tools developed by these approaches to evaluate the general spatial agreement mechanism in LSE, based on the wide range of phenomena described for the LSE data (and not just the behaviour of two-place directional agreeing verbs).

When judged against the characterization of agreement developed in linguistic typology (chapter 6), spatial agreement in LSE falls within the scope of the phenomenon as it has been described for a wide range of the world's languages with respect to the nature of controllers, targets and domains. However, there are two important differences. Firstly, the agreement mechanism does not make use of a person feature, which is invariably present in spoken languages. Secondly, the spatial agreement mechanism shows a high degree of optionality. It seems likely that these two unusual properties are connected and come about because of the underlying (spatial) referential system that a signed language like LSE exploits. Furthermore, an evaluation in terms of canonicity confirms that spatial agreement in LSE is "agreement-like" on many scores, but also highlights that the optionality and the use of space give rise to some less prototypical properties.

Chapter 7 develops a syntactic account of spatial agreement in LSE by applying a formal (minimalist) approach to the LSE data. The framework of minimalist syntax, and especially the Agree operation, provides tools that can characterize the agreement process in LSE in terms of an identity feature that is closely linked to the idea of referential identity (and thus can be seen as a further development of accounts that depicted this use of space in sign languages as referential or R-loci). This account can explain a range of agreement phenomena in LSE, including agreeing verbs, agreeing auxiliaries and single argument agreement (both verbal and nominal). As such, it provides further confirmation that spatial agreement in LSE can be usefully characterized and analysed as an instance of agreement.

The thesis closes with an overview of the findings of this study on agreement in LSE (chapter 8), including a discussion of what the findings tell us about LSE, sign languages, and natural languages in general. The study provides a strong case that this spatial mechanism in LSE (i) is a type of agreement that is similar to what has been described for other sign languages, (ii) is comparable to agreement processes in spoken languages, and (iii) can be accounted for in syntactic terms. However, this is just one specific use of space by a sign language. Not only is more work needed to provide greater cross-linguistic evidence from a wider variety of signed languages, but also greater attention is needed to describe and analyse other ways in which space is used by sign languages. This thesis attempts to map out one aspect of the use of space in sign language but much uncharted territory remains.

Taal en modaliteit: Effecten van het gebruik van ruimte binnen het congruentiesysteem van *lengua de signos española* (Spaanse Gebarentaal) (Samenvatting)

Dit proefschrift onderzoekt congruentie in Spaanse Gebarentaal (*lengua de signos española* – LSE) en biedt een omvattende beschrijving van de congruentiemechanismen die deze taal tot haar beschikking heeft, gebaseerd op verzamelde data van LSE-gebaarders in Baskenland. Deze beschrijving maakt het mogelijk om congruentie in LSE te vergelijken met wat er in de literatuur beschreven is voor andere gebarentalen, en biedt daarnaast mogelijkheden voor een cross-modale vergelijking van congruentie in een gebarentaal en congruentie in gesproken talen. Aan de basis van deze vergelijking staat de vraag of wat benoemd wordt als congruentie in gebarentalen hetzelfde verschijnsel is als wat als zodanig benoemd wordt in gesproken talen. Uiteindelijk zorgt deze vergelijking ervoor dat we naar de rol van modaliteit kunnen kijken, en eigenschappen van het congruentiesysteem kunnen identificeren die gestuurd of beïnvloed worden door taalmodaliteit. Omgekeerd kunnen overeenkomsten tussen beide typen talen eigenschappen blootleggen die taaluniverseel zijn, ongeacht de modaliteit.

Het proefschrift begint met een inleiding die als algemene achtergrond dient voor de bredere kwesties die dit onderzoek gemotiveerd hebben, en waarin daarnaast eerder relevant werk besproken wordt. Ook geeft dit hoofdstuk achtergrondinformatie over LSE (hoofdstuk 1). Wat het interessant maakt om specifiek gebarentalen te studeren is niet alleen de mogelijkheid om meer talen te documenteren en te analyseren, maar juist het feit dat deze talen in een andere modaliteit uitgedrukt worden. Als gevolg hiervan hebben gebarentalen middelen tot hun beschikking, die niet, of in mindere mate, gebruikt worden in gesproken talen, zoals iconiciteit en de mogelijkheid tot simultaneïteit (mogelijk doordat de talen met verschillende articulatoren uitgedrukt worden). Het gebruik van ruimte in gebarentalen is een ander duidelijk effect van modaliteit dat het gehele taalsysteem beïnvloedt, van fonologie tot aan de organisatie van conversaties. Gebarentalen gebruiken ruimte op veel verschillende manieren; de focus in dit proefschrift ligt op één specifiek aspect: het gebruik van ruimte om congruentie te markeren.

Ruimtelijke congruentie houdt in dat een werkwoord dat begint op een locatie in de ruimte die geassocieerd is met het subject van de zin beweegt naar een locatie in de ruimte die geassocieerd is met het object van de zin – een verschijnsel dat voor veel verschillende gebarentalen bestudeerd is. In de gebarentaalliteratuur wordt dit mechanisme in het algemeen geanalyseerd als een vorm van congruentie. Deze ruimtelijke congruentie vertoont echter een aantal ongebruikelijke eigenschappen die de status als congruentie, of überhaupt als taalkundig verschijnsel, in twijfel trekken. Kortom, dit proefschrift heeft als doel om:

1. te beschrijven hoe ruimtelijke congruentie werkt in een specifieke gebarentaal, namelijk LSE;
2. het gebruik van ruimte in LSE te vergelijken met wat beschreven is voor andere gebarentalen;
3. vast te stellen in hoeverre dit mechanisme als congruentie beschouwd kan worden, gebaseerd op verschillende theoretische kaders die ontwikkeld zijn voor het beschrijven en verklaren van data uit gesproken talen.

Het volgende deel van het proefschrift (hoofdstukken 2 en 3) bespreekt de details van het theoretische kader van deze studie. Twee verschillende benaderingen vanuit algemene (gesproken) taalwetenschap om congruentie te karakteriseren, worden besproken: taaltypologie en Generatieve Grammatica (hoofdstuk 2). Hoewel deze twee benaderingen behoorlijk van elkaar verschillen, beargumenteer ik dat ze aanvullende manieren bieden om over ruimtelijke congruentie na te denken en om bruikbare middelen te leveren voor het vaststellen van ruimtelijke congruentie in LSE. De eerste, taaltypologie, beschrijft en vergelijkt het gedrag van verschillende talen op basis van een vastgestelde set concepten en labels waarbij rekening gehouden wordt met de variabiliteit binnen de talen van de wereld. Volgens deze benadering wordt congruentie als verschijnsel gekenmerkt door de systematische covariatie van twee elementen: een bepaald aspect van een element (*controller*) is weergegeven in de vorm van een ander element (*target*) in een specifieke context (*domain*); verschillende typen van informatie (*features*) kunnen worden uitgedrukt in de congruentierelatie. Dit hoofdstuk introduceert deze verschillende termen (*controller*, *target*, *features*, etc.) en bespreekt de verschillende mogelijkheden voor elk zoals beschreven wordt in de literatuur voor gesproken talen. Het concept van canoniciteit binnen de typologische benadering beschrijft in hoeverre een gegeven

congruentiemechanisme daadwerkelijk op congruentie lijkt en is gebaseerd op het idee dat congruentie min of meer prototypisch kan zijn volgens een set van criteria.

Generatieve Grammatica biedt een manier om taal te karakteriseren in termen van een systeem van regels en structuren die uitingen genereren. De meest recente versie van deze taalkundige benadering, het Minimalistische Programma, beschouwt taal als een optimaal systeem dat onderling communiceert met vorm en betekenis. Relevant voor deze studie is dat minimalistische syntax congruentie beschouwt als een fundamentele syntactische functie, die bekend staat als *Agree*. Deze functie wordt als volgt gedefinieerd in heel specifieke termen: *Agree* vindt plaats in een bepaalde structurele context en houdt in dat de kenmerken van één element de kenmerken van een ander element waarde geven. Daarnaast staat *Agree* centraal binnen het functioneren van taal. Dit roept de vraag op of er in LSE zoiets als *Agree* bestaat.

Na presentatie van het op de studie van gesproken talen gebaseerde theoretische kader, vat het volgende hoofdstuk samen hoe congruentie beschreven wordt in de gebarentaalliteratuur (hoofdstuk 3). Dit overzicht concentreert zich op congruentie in het verbale domein, tussen een werkwoord en de bijbehorende argumenten, maar kijkt ook naar congruentie in het nominale domein, zoals congruentie tussen een bijvoeglijk naamwoord en zelfstandig naamwoord. Zoals hierboven aangegeven, is het congruentiesysteem afhankelijk van het gebruik van locaties in de gebarenruimte om de argumenten van een werkwoord aan te geven. Deze associatie tussen een locus en een referent is een standaard referentiemechanisme (dat ook gebruikt wordt door het pronominale systeem) en komt tot stand door het toewijzen van een locatie in de ruimte aan een referent. Veel onderzoek naar congruentie in gebarentaal is beperkt tot een specifiek type werkwoord, ook wel bekend als congruerende werkwoorden. Deze werkwoorden zijn directioneel en bewegen in het algemeen van een locus geassocieerd met het subject-argument naar een locus geassocieerd met het object-argument. Het feit dat sommige congruerende werkwoorden, de zogenoemde 'achterwaardse' werkwoorden, een tegenovergestelde relatie vertonen waarbij de beweging begint bij de locus van het object en eindigt bij de locus van het subject, staat een enkelvoudige verklaring van congruentieverschijnselen in gebarentalen in de weg. Behalve deze directionele werkwoorden, zijn er ook andere werkwoorden die gebruikmaken van ruimte om een enkel argument te markeren door in een locus gearticuleerd te worden (in plaats van zich te verplaatsen van één locus naar een andere locus). Dit proefschrift onderzoekt of een dergelijk gebruik

van ruimte ook gerekend moet worden tot het ruimtelijk congruentiesysteem dat gebarentalen tot hun beschikking hebben.

Verscheidene hulpwerkwoorden voor congruentie zijn beschreven voor verschillende gebarentalen, en deze maken ook gebruik van de ruimte om de argumenten van een werkwoord te markeren. Naast de manuele exploitatie van ruimte (door gebaren door de gebarenruimte heen te bewegen), kunnen bovendien non-manuele markeerders gebruikt worden om loci in de ruimte aan te geven. Er is evidentie dat ruimtelijke congruentiemechanismen oogbewegingen en hoofdkantelingen als markeerders in kunnen zetten. In het nominale domein kunnen verscheidene elementen, van demonstratieven en bijvoeglijke naamwoorden tot getallen, ook ruimtelijk gemarkeerd worden om te congrueren met een zelfstandig naamwoord als hoofd. Kortom, in de meeste gebarentalen die tot op heden bestudeerd zijn, wordt ruimte productief gebruikt om relaties tussen verschillende taalkundige elementen te markeren.

De data voor LSE worden beschreven in het volgende gedeelte van het proefschrift (hoofdstukken 4 en 5). Hoofdstuk 4 beschrijft de gebruikte methodologie. De data voor deze studies zijn verzameld bij drie verschillende gebaarders uit Baskenland in het noordoosten van Spanje. De gebaarders waren moedertaal- of bijna-moedertaalgebruikers van de taal, volgens criteria die waren ontwikkeld om het gebrek aan continuïteit over generaties heen dat de meeste gebarentaalgemeenschappen kenmerkt, te ondervangen. De data zijn verzameld met behulp van verscheidene technieken, waaronder vrije interviews, uitgelokte verhalen (van tekst en van niet-talig materiaal), gestuurde interviews en grammaticaliteitsoordelen. In totaal zijn er rond de 90 minuten aan videomateriaal opgenomen, getranscribeerd en kwalitatief geanalyseerd om een beschrijving van ruimtelijke congruentie in LSE te kunnen geven.

Hoofdstuk 5 toont aan dat ruimtelijke congruentie in LSE veel van de patronen volgt die al beschreven zijn voor andere gebarentalen: er zijn congruerende werkwoorden (inclusief 'achterwaardse' werkwoorden) en er is een selectie aan hulpwerkwoorden voor congruentie. De hulpwerkwoorden zijn van bijzonder belang omdat ze enigszins afwijkende eigenschappen vertonen vergeleken met die in andere gebarentalen, waaronder specifieke functies van het algemene hulpwerkwoord AUX (om verwantschap aan te duiden, bijvoorbeeld), een hulpwerkwoord voor comparatieven dat afgeleid is van het lexicale werkwoord SLAAN, en een hulpwerkwoord met een enkel argument dat afgeleid is van het nominale PERSOON. Van groter belang voor deze studie is dat LSE productief gebruik maakt van congruentie met een enkel argument: werkwoorden en elementen in het nominale domein (zoals

bijvoeglijke naamwoorden en classifiërs) kunnen in de gebarenruimte gelocaliseerd worden om congruentie met het zelfstandig naamwoord als regelaar uit te drukken. Verscheidene observaties ondersteunen de claim dat dit mechanisme voor congruentie met een enkel argument als een vorm van ruimtelijke congruentie moet worden gezien, bijvoorbeeld de syntactische determinatie van het gemarkeerde argument (het interne argument van het werkwoord) en de mogelijkheid tot meervoudsmarkering van de argumenten. Dit heeft als uitwerking dat het congruentiedomein zich uitbreidt van een kleine set werkwoorden naar vele andere werkwoorden en zich ook uitbreidt buiten het verbale domein, en daarmee congruentie tot een veel algemener verschijnsel maakt.

Alhoewel LSE enkele verschillen vertoont ten opzichte van andere gebarentalen in de invulling van congruentie, is de variabiliteit beperkt. Het samenspel tussen variatie en overlap wordt geïllustreerd door de verschillende congruentievormen die beschikbaar zijn voor congruerende werkwoorden in LSE: deze verschillen van de aangetoonde paradigma's voor andere talen, maar op een meer basisniveau moeten ze voldoen aan dezelfde typen randvoorwaarden, namelijk fonologische beperkingen op de mogelijke vormen die congruentie kan aannemen. De data voor LSE suggereren dat, wat betreft non-manuele markeerders van congruentie, oogbewegingen mogelijk een belangrijke rol spelen bij het markeren van congruentie, maar met de data van deze studie is het niet mogelijk om tot eenduidige conclusies hierover te komen.

Het volgende gedeelte van het proefschrift analyseert de data voor LSE vanuit het perspectief van de twee taalkundige theoretische kaders die geïntroduceerd waren in hoofdstuk 2: taalkundige typologie en Generatieve Grammatica. Hoofdstuk 6 en 7 gebruiken de concepten en middelen die binnen deze kaders ontwikkeld zijn om het algemene ruimtelijk congruentiemechanisme in LSE te beoordelen op basis van de grote variatie aan verschijnselen die opgetekend zijn uit de data (en dus niet alleen congruentie van directionele werkwoorden met twee argumenten).

Wanneer ruimtelijke congruentie naast de karakterisering van congruentie volgens de taalkundige typologie gehouden wordt (hoofdstuk 6), dan valt het binnen de scope van het verschijnsel zoals het beschreven is voor een groot aantal talen van de wereld met betrekking tot de aard van *controllers*, *targets* and *domains*. Er zijn echter twee belangrijke verschillen. Ten eerste, het congruentiemechanisme maakt geen gebruik van persoonskenmerken, die zonder uitzondering aanwezig zijn in gesproken talen. Ten tweede, het ruimtelijk congruentiemechanisme vertoont een hoge mate van optionaliteit. Het lijkt aannemelijk dat deze twee ongewone

eigenschappen met elkaar samenhangen en tot stand komen door het onderliggende (ruimtelijk) referentiesysteem dat een gebarentaal zoals LSE gebruikt. Daarnaast bevestigt een evaluatie in termen van canoniciteit dat ruimtelijke congruentie in LSE in vele aspecten voldoet aan de prototypische congruentiecriteria, maar benadrukt het ook dat de optionaliteit en het gebruik van ruimte leiden tot enkele minder prototypische eigenschappen.

Hoofdstuk 7 ontwikkelt een syntactische verklaring voor ruimtelijke congruentie in LSE door een formele (minimalistische) benadering op de LSE-data toe te passen. Het theoretische kader van minimalistische syntax, in het bijzonder de *Agree*-functie, biedt middelen die congruentie in LSE kunnen karakteriseren in termen van een identiteitskenmerk dat sterk gerelateerd is aan het idee van referentiële identiteit (en dus gezien kan worden als een verdere uitwerking van verklaringen die dergelijk gebruik van ruimte in gebarentalen beschrijven als referentiële of R-loci). Deze karakterisering kan een reeks van congruentieverschijnselen in LSE verklaren, waaronder congruerende werkwoorden, congruerende hulpwerkwoorden en congruentie met een enkel argument (zowel verbaal als nominaal). Als zodanig wordt ook wederom bevestigd dat ruimtelijke congruentie in LSE zinvol gekarakteriseerd en geanalyseerd kan worden als een vorm van congruentie.

Het proefschrift sluit af met een overzicht van de bevindingen van deze studie naar congruentie in LSE (hoofdstuk 8), waaronder een discussie over wat deze bevindingen ons leren over LSE, gebarentalen, en natuurlijke talen in het algemeen. De studie maakt een sterk argument dat dit ruimtelijk mechanisme in LSE (i) een type van congruentie is dat vergelijkbaar is met wat beschreven is voor andere gebarentalen, (ii) vergelijkbaar is met congruentieverschijnselen in gesproken talen, en (iii) verklaard kan worden in syntactische benamingen. Dit is echter slechts één specifiek gebruik van de ruimte door een gebarentaal. Niet alleen is er meer onderzoek nodig om meer cross-linguïstische evidentie uit een grotere selectie van gebarentalen te verkrijgen, maar ook is er meer aandacht nodig voor de beschrijving en analyse van andere manieren waarop gebarentalen ruimte gebruiken. Dit proefschrift probeert één aspect van het gebruik van ruimte in gebarentaal in kaart te brengen, maar er is nog veel onontgonnen terrein.

Lenguaje y modalidad: Efectos del uso del espacio en el sistema de concordancia de la lengua de signos española (Resumen)

Esta tesis examina la concordancia en la lengua de signos española (LSE) y ofrece una extensa descripción de los mecanismos que la gobiernan en base a datos recogidos de usuarios de LSE del País Vasco. Esta descripción brinda la posibilidad de comparar la concordancia en LSE con este mismo fenómeno en otras lenguas de signos, además de realizar una comparativa entre modalidades, es decir, una comparativa entre la concordancia en una lengua de signos y la concordancia en las lenguas orales. Esta comparativa nos obliga a preguntarnos si el término “concordancia” tiene el mismo significado cuando lo aplicamos a las lenguas de signos o a las lenguas orales. Así, nos permite profundizar en la cuestión de la modalidad e identificar aquellas propiedades del sistema de concordancia que son producto de la modalidad de la lengua. Por otro lado, es posible que las características comunes a los dos tipos de lenguas representen propiedades universales de lenguaje, sea cual sea la modalidad.

La introducción de la tesis esboza el contexto del estudio en lo referido a las consideraciones generales que motivan este trabajo y a los trabajos anteriores en el campo. También incluye información general sobre la lengua de signos española (capítulo 1). Las lenguas de signos son de especial interés para la investigación lingüística, no solamente por la posibilidad de documentar y analizar más lenguas, sino por el hecho de expresarse en otra modalidad. Como consecuencia, las lenguas de signos disponen de recursos que las lenguas orales no utilizan (o, al menos, utilizan en mucho menor grado) como el uso de la iconicidad o la posibilidad de simultaneidad (gracias a la existencia de múltiples articuladores). El uso del espacio es otro producto de la modalidad que se manifiesta en todos los niveles del sistema lingüístico, desde la fonología hasta la estructura del discurso. Aunque el espacio se utiliza de muchas maneras, esta tesis se centra en una específica: el uso del espacio para marcar la concordancia. La concordancia espacial se observa cuando un verbo empieza en un punto asociado con el sujeto y se traslada a otro punto, asociado con el objeto. Este proceso espacial ha sido objeto de estudio en muchas lenguas de signos. En la literatura, este mecanismo suele

considerarse una manifestación de la concordancia. Sin embargo, exhibe propiedades inusuales que ponen en duda que sea concordancia, o incluso que sea un proceso lingüístico. Por tanto, los objetivos de esta tesis son:

1. describir el mecanismo de la concordancia espacial en una lengua de signos concreta, la LSE;
2. comparar este uso del espacio en LSE con el mismo fenómeno en otras lenguas de signos;
3. evaluar hasta qué punto se puede considerar una manifestación de concordancia, basado en distintos marcos teóricos desarrollados para la descripción y análisis de datos de lenguas orales.

La siguiente sección de la tesis (capítulos 2 y 3) presenta información detallada sobre el trasfondo conceptual que constituye el marco teórico de este estudio. Se describen dos maneras de caracterizar la concordancia desde la lingüística general (de las lenguas orales): la tipología lingüística y la Gramática Generativa (capítulo 2). Estos dos enfoques son distintos, pero ofrecen perspectivas complementarias y cada uno aporta herramientas válidas para evaluar la concordancia espacial en LSE. El primero, la tipología lingüística, describe y compara el comportamiento de una amplia gama de lenguas. Se guía por un conjunto de conceptos y etiquetas ya establecidos que abarcan la variabilidad de las lenguas del mundo. En este ámbito, la concordancia se caracteriza como una covarianza sistemática entre dos elementos: un aspecto de un elemento (el controlador) se refleja en la forma de otro (la meta) en un contexto específico (el dominio), y se expresan distintos tipos de información (rasgos) a través de la relación. Se ejemplifica esta terminología (controlador, meta, rasgos, etc.) a través de un repaso del rango de posibilidades que existe entre las lenguas orales (basado en la literatura existente). Dentro del enfoque tipológico, el concepto de canónico permite desarrollar una serie de criterios para cotejar hasta qué grado un mecanismo de concordancia es prototípico.

La Gramática Generativa es una manera de caracterizar el lenguaje como un sistema de reglas y estructuras que generan oraciones. La última versión de esta tradición lingüística, el Programa Minimalista, mantiene que el lenguaje es un sistema óptimo que interconecta la forma y el significado. Un dato muy relevante para este estudio es que dentro de la sintaxis minimalista, la concordancia constituye una operación sintáctica fundamental, denominada *Agree*. Esta operación se define en términos muy específicos: *Agree* ocurre en un determinado contexto estructural y consiste en

la asignación de los valores de los rasgos de un elemento a los rasgos de otro elemento. Además, *Agree* es primordial para el funcionamiento del lenguaje. De ahí la pregunta: ¿existe algo como *Agree* en LSE?

Habiendo formulado los antecedentes teóricos en cuanto a las lenguas orales, el siguiente capítulo (3) resume los trabajos anteriores sobre concordancia en las lenguas de signos. Este resumen se centra en la concordancia verbal, es decir, entre un verbo y sus argumentos, pero también abarca la concordancia en el dominio nominal, por ejemplo, entre un adjetivo y un sustantivo. Como se ha comentado anteriormente, el proceso de concordancia depende del uso de puntos en el espacio para indicar los argumentos de un verbo. Esta asociación entre un locus y un referente es un mecanismo referencial básico (que también subyace al sistema pronominal) y se consigue mediante la asignación de la localización. La gran mayoría de la investigación anterior sobre la concordancia en las lenguas de signos se ha limitado a un tipo concreto de verbos, los llamados verbos de concordancia. Estos verbos son direccionales y, por lo general, se trasladan desde el locus asociado con el sujeto hacia el locus asociado con el objeto. La existencia de los llamados verbos “invertidos”, con una correspondencia invertida (se trasladan desde el locus del objeto hacia el locus del sujeto), dificulta un análisis sencillo de este mecanismo. Además de los verbos direccionales de este tipo, existen otros verbos que aprovechan el espacio para marcar un solo argumento articulándose en un locus (en vez de moverse de un locus a otro). Esta tesis contempla si este uso del espacio, que denomino concordancia de argumento único, se debe considerar parte del proceso de concordancia espacial de las lenguas de signos.

Se han descrito diversos auxiliares de concordancia para varias lenguas de signos, y estos elementos también utilizan el espacio para marcar los argumentos del verbo. Además de la explotación manual del espacio (por medio de la modificación de los signos en el espacio), los marcadores no-manuales son otra forma de indicar un locus en el espacio. Hay estudios que demuestran que marcadores como la dirección de la mirada o la inclinación de la cabeza están involucrados en la concordancia espacial de las lenguas de signos. En el dominio nominal, varios elementos, desde los demostrativos hasta los adjetivos y los numerales, pueden modificarse en el espacio para marcar concordancia con el núcleo del sintagma nominal. En resumen, en la mayoría de las lenguas de signos que hasta la fecha se han estudiado, se utiliza el espacio de forma productiva para señalar relaciones entre distintos elementos lingüísticos.

Los datos de LSE se presentan en la siguiente sección de la tesis (capítulos 4 y 5). En el capítulo 4 se describe la metodología empleada en este

estudio. Los datos se recogieron de tres usuarios de LSE del País Vasco, en el noreste de España. Eran usuarios nativos o casi nativos según una serie de criterios que se elaboraron para resolver la falta de continuidad generacional que caracteriza a la mayoría de las comunidades lingüísticas de las lenguas de signos. Se emplearon distintas técnicas en la recogida de datos, como conversación libre, narrativas provocadas (desde textos o materiales no-verbales), entrevistas dirigidas y juicios de gramaticalidad. En total, se obtuvieron 90 minutos de grabaciones en vídeo para su posterior transcripción. Los datos se analizaron de forma cualitativa para poder describir la concordancia espacial en LSE.

En el capítulo 5, se demuestra que la concordancia espacial en LSE tiene muchas de las características ya descritas para otras lenguas de signos: existen verbos de concordancia (y verbos “invertidos”) y una gama de auxiliares de concordancia. Estos auxiliares son de interés porque se diferencian ligeramente de los de otras lenguas de signos en los usos particulares del auxiliar general AUX (para marcar relaciones de parentesco, por ejemplo), en el auxiliar comparativo derivado del verbo léxico GANAR, y en el auxiliar de un único argumento derivado del sustantivo PERSONA. De relevancia para este estudio, la LSE utiliza de forma productiva la llamada concordancia de argumento único: algunos verbos y elementos del dominio nominal (como los adjetivos o los clasificadores) pueden articularse en una localización específica para marcar la concordancia con un sustantivo controlador. La propuesta de que este mecanismo se considere un caso de concordancia espacial se apoya en varias observaciones, como la determinación sintáctica del argumento que se marca (es decir, el argumento interno del verbo) y la existencia de marcadores de pluralidad. Como consecuencia, el dominio de la concordancia se amplía más allá de un pequeño conjunto de verbos para abarcar un mayor número de verbos y sobrepasar el ámbito verbal, creando así un proceso de concordancia mucho más generalizado.

Aunque la LSE manifiesta algunas diferencias con respecto a otras lenguas de signos en cuanto a la realización de la concordancia, esta variabilidad está sujeta a restricciones. La interacción entre lo distinto y lo común se revela examinando las distintas formas flexionadas de los verbos de concordancia en LSE: el paradigma es distinto al de otras lenguas de signos, pero en un nivel más básico todos los verbos están sujetos al mismo tipo de condiciones, esto es, a restricciones fonológicas sobre las formas lícitas. En cuanto a los marcadores no-manuales, los datos de LSE apuntan a que la dirección de mirada juega un papel en la concordancia, pero los datos de este estudio no permiten llegar a una conclusión firme en este sentido.

En la siguiente sección de la tesis, se analizan los datos de LSE desde el punto de vista de los dos marcos lingüísticos teóricos presentados en el capítulo 2: la tipología lingüística y la Gramática Generativa. En los capítulos 6 y 7, se emplean los conceptos y herramientas de estos enfoques para evaluar el mecanismo generalizado de concordancia espacial en LSE basado en la amplia gama de efectos descritos en la sección anterior (y no solamente en el comportamiento de los verbos de concordancia direccionales de dos argumentos).

De acuerdo con la perspectiva de la tipología lingüística (capítulo 6), la concordancia espacial de la LSE está dentro de los límites del fenómeno según las descripciones de una amplia gama de las lenguas del mundo en lo que se refiere a los controladores, las metas y los dominios. Sin embargo, hay dos divergencias significativas. En primer lugar, la concordancia en LSE no utiliza el rasgo de persona que siempre aparece en las lenguas orales. En segundo lugar, la concordancia espacial es altamente opcional. Parece probable que estas dos propiedades excepcionales tengan relación entre sí y que sean consecuencia del sistema referencial espacial al que una lengua como la LSE recurre. Además, la aplicación de los criterios de concordancia canónica confirma que la concordancia espacial en LSE cumple muchos de estos criterios, pero también revela que el carácter opcional y el uso del espacio dan lugar a algunas propiedades menos prototípicas.

En el capítulo 7 se desarrolla un modelo sintáctico de la concordancia espacial en LSE aplicando un enfoque formal (minimalista) a los datos. El marco teórico de la sintaxis minimalista, y sobre todo la operación *Agree*, proporcionan herramientas que permiten caracterizar la concordancia en LSE con un rasgo de identidad estrechamente vinculado a la idea de identidad referencial (y por tanto, una extensión de los modelos anteriores que consideraban este uso del espacio como un locus-R o referencial). Este modelo da cuenta de varios fenómenos de concordancia en LSE, como los verbos de concordancia, los auxiliares de concordancia y la concordancia de argumento único (tanto verbal como nominal). Por tanto, confirma de nuevo que la concordancia espacial en LSE se puede caracterizar y analizar como un caso de concordancia.

La tesis se cierra con un resumen de los resultados de este trabajo sobre la concordancia en LSE (capítulo 8) y una exposición de la contribución del estudio a nuestros conocimientos sobre la LSE, sobre las lenguas de signos y sobre las lenguas naturales en general. Ofrece argumentos a favor de considerar este mecanismo espacial de LSE (i) una muestra de concordancia parecida a la que se ha descrito para otras lenguas de signos, (ii) comparable a los procesos de concordancia en las lenguas orales, y (iii) compatible con un

modelo sintáctico. No obstante, este mecanismo representa un uso específico del espacio en una lengua de signos concreta. Será preciso contar con evidencia contrastiva de una gama más amplia de lenguas de signos, y también con un mayor esfuerzo para describir y analizar otros usos del espacio en las lenguas de signos. Esta tesis pretende delinear un aspecto del uso de espacio en lengua de signos, pero queda mucho espacio por conquistar.

Hizkuntza eta modalitatea: *lengua de signos española* (zeinu hizkuntza espainiarra)-ren konmuztadura sistemak espazioaren erabileran dituen efektuak (Laburpena)

Tesi honetan zeinu hizkuntza espainiarraren (*lengua de signos española* – LSE) konmuztadura aztertu da eta hizkuntza horrek eskaintzen dituen mekanismoen deskribapen sakona egin da, Euskal Herriko LSE hiztunengandik jasotako datuak oinarri hartuta. Deskribapen horri esker, aurrez aztertuak izan diren beste zeinu hizkuntza batzuenarekin alderatu da LSE-ren konmuztadura, eta aldi berean, fenomenoaren modalitate-arteko konparazio bat egin da; hau da, zeinu hizkuntzan eta ahozko hizkuntzetan konmuztadura modu berean gertatzen ote den aztertu da. Azkenik, konparazio horri esker, modalitatearen auziari erreparatu zaio, eta hizkuntza-modalitateak konmuztadura sistemako zein propietateri eragiten dion identifikatu ahal izan da. Alderantziz ere, hizkuntza modalitateen arteko parekotasunek erakutsi dute zenbait propietate unibertsalak direla.

Tesiari hasiera emateko testuinguru orokor bat aurkezten da; bertan, alde batetik lan hau burutzeko beta eman duten aztergaiak eta eremu honetan aurrez egindako lanak azaltzen dira, eta bestetik zeinu hizkuntza espainiarrari buruzko informazio orokorra ematen da (1.go atala). Zeinu hizkuntzak ikertzea interesgarri gertatzen da, ez beste hizkuntza bat aztertu eta dokumentatzeko aukera delako soilik, baizik eta adierazteko modalitatea bestelakoa delako. Izan ere, zeinu hizkuntzen hainbat baliabide ez dira ahozko hizkuntzetan erabiltzen, edo ez dira horren ohikoak. Adibide garbia da ikonoaren erabilera; bestela esanda, aldiberekotasunerako aukera (artikulatzaile asko egoteak baimentzen duena). Zeinu hizkuntzak espazioa nola erabiltzen duen aztertzean ere argi ikusten da modalitatearen efektua; izan ere, espazioaren erabilerak hizkuntza osoa hartzen du bere baitan, fonologiatik diskurtsoaren antolaketaraino. Espazioak hainbat erabilera ditu zeinu hizkuntzetan, eta horietako bat da tesi honen muina: espazioaren erabilera konmuztadura markatzeko. Espazio-konmuztaduran, aditza subjektuarekin lotutako gune batean hasten da eta objektuarekin lotutako gune baterantz mugitzen da; fenomeno hori hainbat hizkuntzatan aztertua izan da. Zeinu hizkuntzaren literaturan, mekanismo hori konmuztaduratzat

hartu ohi da. Edonola ere, espazio-konmuztadura horrek ezohiko osagaiak ditu, eta ondorioz, zalantzan jar daiteke konmuztadura bat ote den, eta areago hizkuntza-prozesu bat ote den ere. Tesiak honako helburuak ditu:

1. espazio-konmuztadurak zeinu hizkuntza jakin batean, LSE-n, nola funtzionatzen duen azaltzea;
2. LSE-ren espazio-erabilera deskribatu izan diren beste zeinu hizkuntza batzuenarekin alderatzea;
3. neurtzea zenbateraino den mekanismo hau konmuztadura-mekanismo bat, ahozko hizkuntzetan deskribatutako beste egitura batzuen arabera.

Tesiaren hurrengo zatian (2. eta 3. atalak) ikerketa honen testuinguru teorikoa azaltzen da. Hizkuntzalaritza orokorrak (ahozko hizkuntzenak) konmuztadura aztertzeke dituen bi hurbilpen deskribatzen dira: hizkuntza-tipologia eta Gramatika Sortzailea (2. atala). Bi hurbilpenak nahiko desberdinak badira ere, konmuztaduraren inguruko ikusmolde osagarriak eskaintzen dituztela esango nuke, eta oso tresna baliagarriak ematen dituztela LSE-ren espazio-konmuztadura aztertzeke. Lehen hurbilpenean, hizkuntza-tipologian, hizkuntza talde anitz baten jokaera aztertzen da, munduko hizkuntzen aldakortasuna onartzen duten kontzeptu eta etiketetan oinarrituta. Konmuztadurari dagokionez, bi elementuren elkar-eragina bezala azaltzen da: elementu baten (eragilea) aspektua beste elementu baten (hartzailea) forman ageri da testuinguru espezifiko batean (eremua). Horrela, konmuztadura harreman batean informazio mota desberdinak (tasunak) azal daitezke. Atal honetan terminologia aurkezten da (eragilea, hartzailea, tasunak, etab.) eta ahozko hizkuntzen literaturan proposatu diren aukeren errepassoa egiten da. Hurbilpen tipologikoan, kanon batzuei jarraiki, mekanismoak garatu daitezke erabakitzeko konmuztadura bat zenbateraino den prototipikoa.

Gramatika Sortzailearen arabera, enuntziatuak sortzen dituen arau eta egitura sistema da hizkuntza. Hurbilpen linguistiko horren azken bertsioak, Programa Minimalistak, dio hizkuntza dela forma eta esanahia elkar-eragiten dituen sistema optimoa. Sintaxi minimalistaren arabera, konmuztadura ezinbesteko operazio sintaktikoa da, eta *Agree* izena ematen dio. Operazio hori zehatz deskribatzen du: *Agree* egitura eremu jakinetan gertatzen da, elementu batek beste elementu baten tasunak erabakitzen dituenean. Are gehiago, konmuztadurak hizkuntzaren funtzionamenduan paper erabakigarria duela uste da. Hortik sortzen da galdera: ba al dago *Agree* modukorik LSE-n?

Ahozko hizkuntzetan egindako lanen aurrekari teorikoen ondoren, testuinguruaren bigarren atala dator (3.atala), zeinu hizkuntzaren literaturan konmuztadura nola deskribatu izan den azaltzen duena. Sarrera hau aditz-konmuztaduraren ingurukoa da, aditza eta bere argumentuen artekoa alegia. Horrekin batera, izen-konmuztadurari ere erreparatzen dio, adjektiboaren eta izenaren arteko konmuztadurari adibidez. Esan bezala, aditzaren argumentua zeinu-eremuko espazio jakin batean kokatzen da konmuztadura prozesuan. Locus-aren eta erreferentearen arteko harremana oinarrizko erreferentzia-mekanismoa da (aurrizki sistema barne hartzen duena) eta kokapenari esker gauzatzen da. Zeinu hizkuntzan, konmuztaduraren azterketa aditz mota jakin bati mugatu zaio, konmuztadura-aditzei hain zuzen ere. Aditz horiek hurbiltze-aditzak dira eta, gehienetan, subjektuaren argumentuarekin lotutako locus batetik objektuaren argumentuarekin lotutako locusera mugitzen dira. Baina aditz batzuek alderantzizko bidea egiten dute; objektuaren locusetik subjektuaren locus-era mugitzen dira. Horrek kolokan jartzen du konmuztadura-jokaeraren norabide bakarra. Edonola ere, hurbiltze-aditzez gain, badira espazioa erabiltzen duten beste aditz batzuk ere: argumentu bakar bat azaltzeko locus batean artikulatzen dutenak (locus batetik bestera mugitu beharrean). Horri argumentu bakarreko konmuztadura deritza. Espazioaren azken erabilera hori, zeinu hizkuntzen espazio-konmuztadura prozesuaren parte ez ote den planteatzen da tesi honetan.

Konmuztadura-laguntzaile ugari deskribatu dira hainbat zeinu hizkuntzatan; laguntzaile horiek ere espazioa erabiltzen dute aditzaren argumentuak markatzeko. Gainera, espazioa betetzeko eskuak erabiltzeaz gain (zeinuak zeinu-eremuan mugituz), bestelako markatzaileekin ere adieraz daizteke locus-ak. Zenbait ebidentziaren arabera, begiradek edo buru mugimenduek ere zeinu hizkuntzen konmuztadura-mekanismoa osatzen dute. Izenaren eremuari dagokionez, hainbat elementu (erakusle eta adjektiboetatik hasi eta zenbatzaileetara) espazioaren bidez adierazten dira izenarekin konmuztatzean. Laburtzeko, orain arte aztertutako zeinu hizkuntza gehienetan, espazioa askotan erabiltzen da elementu linguistiko anitzen arteko harremana markatzeko.

LSE-ren datuak tesiaren hurrengo ataletan aurkezten dira (4 eta 5. ataletan). Erabilitako metodologia 4. atalean azaltzen da. Ikerketa honetako datuak Euskal Herriko hiru zeinu hiztunengandik jaso dira. Sortzezko zeinu-hiztunak dira edo ia sortzezkoak, zeinu hizkuntza komunitate gehienen belaunaldi arteko jarraipen urria kontutan hartuta. Datuak jasotzeko askotariko teknikak erabili dira, tartean, elkarrizketa irekiak, narrazioak (testu eta ahozko materialetatik hartuak), gidatutako elkarrizketak eta azterketa

gramatikoak. Guztira, bideoan 90 minutu filmatu, transkribatu eta kualitatiboki aztertu dira, LSE-ren espazio-konmuztaduraren deskribapena osatzeko.

5. kapituluaz azaltzen da nola LSE-ren espazio-konmuztadurak beste zeinu hizkuntza batzuen eredu askori jarraitzen dien: konmuztadura aditzak daude (alderantzizko aditzak barne) eta konmuztadura argumentu sorta bat ere bai. Argumentu horiek interesgarriak dira, beste zeinu hizkuntza batzuetan ikusitakoek ez beste ezaugarri batzuk dituztelako. Adibidez, AUX (ahaidetasun harremanak markatzeko) argumentu orokorraren erabilera espezifikoa, IRABAZI aditz lexikaletik datorren eta konparatiboetan erabiltzen den argumentu batean, eta PERTSONA izenetik datorren espazio bakarreko argumentuan. Ikerketa honi begira, LSE-k argumentu bakarreko konmuztaduraren erabilera ugaria erakusten du: aditzak eta izen sintagmako elementuak (adjektiboak edo sailkatzaileak) zeinu-eremuan kokatzen dira, izen eragilerarekin duten konmuztadura markatzeko. Zenbait behaketaren arabera, argumentu bakarreko konmuztadura espazio-konmuztadura kasu bat bezala hartu beharra dago, markatu den argumentuaren determinazio sintaktikoa (aditzaren barne argumentua) edo argumentuen pluralgile funtzioa onartzen diren modu berean. Horri esker, konmuztaduraren eremua ireki egingo da, aditz gehiago hartuko ditu bere baitan, eta are gehiago, aditzaren eremutik haratago joango da, konmuztadura prozesu orokorragoa bihurtzeraino.

Konmuztaduraren gauzatzean LSE-k beste hizkuntza batzuekiko desberdintasunak baditu ere, aldagarritasun hori mugatua da. Aldagarritasunaren eta gainjartzearen arteko harremana ikusteko, LSE-ren konmuztadura-aditzei lotutako konmuztadura-mota desberdinak behatu beharra dago. Beste hizkuntza batzuetan neurtutako paradigmatik desberdinak dira, baina oinarrian baldintza berberen menpe daude; hots, zilegi diren forma fonologikoen menpe. Eskuz-bestelako konmuztadura markei dagokienez, LSE-ren datuetatik ondoriozta dezakegu begiradak bere lekua duela konmuztaduran, baina ikerketa honetarako jasotako datuek ez dute norabide horretan ondorio zehatzik ateratzeko aukerarik ematen.

Tesiaren ondorengo zatian bi testuinguru linguistikoaren ikuspegitik aztertzen da LSE, 2. atalean aurkeztutakoaren ildotik: hizkuntza-tipologiatik eta Gramatika Sortzailetik. 6. eta 7. ataletan, hurbilpen horiek sortutako kontzeptuak eta tresnak erabiltzen dira LSE-ren espazio-konmuztadura mekanismo orokorrak aztertzeko, LSE-ko datuetan bildutako fenomeno ugarien deskribapenetik abiatuta (eta ez soilik bi espazioko norabide-konmuztadura aditzetatik).

Hizkuntza-tipologian garatutako konmuztadura-irudikapenarekin alderatzen dugunean (6.atala), LSE-ren espazio-konmuztadura bat dator munduko hizkuntza askotan deskribatu den fenomenoarekin; eragile, hartzaile eta tasunen arauak betetzen ditu. Halere, bi dira desberdintasun nagusiak: lehenik eta behin, konmuztadura-mekanismoak ez du pertsonatasunik erabiltzen, eta hori ahozko hizkuntzetan ezinbestekoa da. Bigarrenik, espazio-konmuztadura mekanismoak aukera zabala eskaintzen du. Badirudi bi ezaugarri berezi horiek lotuta daudela, eta ezkutuan dagoen erreferentzia (espazio)-sistema LSE bezalako zeinu hizkuntzetan azaleratzen dela. Are gehiago, arauari erreparatuz gero, ikus daiteke LSE-ren espazio-konmuztadura zinez konmuztadura dela, eta aukera aniztasunak eta espazioaren erabilerak hain ohikoak ez diren ezaugarriak azaleratzen dituztela.

7. kapituluan LSE-ren espazio-konmuztaduraren balizko eredu sintaktikoa garatu da, eskuraturako LSE datuei hurbilpen formala (minimalista) aplikatuz. Sintaxi minimalistaren testuinguruari esker, eta bereziki *Agree* eragiketaren tresnei esker, ikus daiteke LSE-ren espazio-konmuztadura identitate erreferentzialari estu lotutako ezaugarri bat dela. Beraz, baliteke zeinu hizkuntzaren espazio-erabilera erreferentzial edo R-loci bezala ikusten zuten ereduaren norabidean pausu bat gehiago izatea. Eredu horrek LSE-ren hainbat konmuztadura fenomeno azaltzeko balioko du, tartean konmuztadura-aditzak, konmuztadura-argumentuak eta argumentu bakarreko konmuztadura (aditzena zein izenena). Hori dela eta, are gehiago baieztatzen da LSE-ren espazio-konmuztadura identifikagarria eta aztergarria dela, konmuztadura mota bat delako.

Tesia amaitzeko, ikerketa honetan LSE-ren konmuztadurari buruzko aurkikuntzen errepeoa egiten da. Aurkitutakoak LSE-ri buruz, zeinu hizkuntzei buruz eta orohar, hizkuntza naturalei buruz zer esaten digun eztabaidatzen da bertan. Ikerketak argudiatzen du: (i) LSE-ren espazio-mekanismo berezia beste zeinu hizkuntza batzuetan deskribatu izan diren konmuztadura moten antzekoa dela, (ii) ahozko hizkuntzetako konmuztadura-prozesuekin alderatu daitekeela, eta (iii) termino sintaktikoekin bateratu daitekeela. Edonola ere, zeinu hizkuntza batek erabiltzen duen espazio-erabilera espezifiko bat da azaldutakoa. Berau osatzeko lan gehiago egin beharko da, arreta berezia jarritz zeinu hizkuntzek espazioa erabiltzeko duten moduan. Tesi honek zeinu hizkuntzaren espazio-erabileraren alderdi bat argitzen du, baina oraindik ere zabala da argitzeke dagoena.