A Grammar of Italian Sign Language (LIS)

edited by
Chiara Branchini and Lara Mantovan

**Edizioni
Ca'Foscari**

A Grammar of Italian Sign Language (LIS)

edited by
Chiara Branchini and Lara Mantovan

A Grammar of Italian Sign Language (LIS)
Chiara Branchini, Lara Mantovan (edited by)

A Grammar of Italian Sign Language (LIS)
edited by Chiara Branchini and Lara Mantovan

Table of Contents

Part II
Phonology

This part deals with the phonological and prosodic organisation of LIS. It is divided into three chapters. The first chapter, Sublexical structure [PHONOLOGY 1], provides an overview of the smallest elements of the language, namely the phonemes. The second chapter, Prosody [PHONOLOGY 2] deals with the main prosodic features of LIS from the syllable to the utterance level. The third chapter, Phonological processes [PHONOLOGY 3], illustrates the main phonological processes occurring both at the lexical and supra-lexical levels.

1 Sublexical structure

Summary   1.1 Active articulators. – 1.2 Location. – 1.3 Movement. – 1.4 Two-handed signs. – 1.5 Non-manuals.

Signs do not represent unanalysable wholes, but rather entities that have an internal structure and can be decomposed into smaller units called *phonemes*. This chapter describes the phonological organisation and the inventory of phonemes in LIS.

As any other language, LIS contains a finite set of phonemic units. These can be grouped into five classes, also known as *phonological parameters*. Four classes are related to the hands: handshape, orientation, location, and movement. Hands are not equally functioning, as one of the two acts as the dominant hand. This is the most active one while signing and it is typically the hand the signer feels most comfortable with. The fifth class is represented by non-manuals, a term that refers to facial expressions, head and body movements. Note that many signs are characterised by neutral facial expressions, hence do not realise a specific phoneme for non-manuals.

To see how the five classes of phonemes are integrated into one sign, we observe the phonological structure of the sign THIN.

THIN

This sign is a one-handed sign because it is realised with the dominant hand only. It can be decomposed into the following phonemes: i) handshape: extended pinky; ii) orientation: wrist side directed toward the endpoint of the movement; iii) location: neutral space (the space in front of the signer's upper body); iv) movement: straight downward; and v) non-manuals: contracted cheeks and/or protruding tongue.

Phonemes do not carry any meaning per se. However, when they combine with each other to form signs, the presence of a phoneme rather than another can produce a change of meaning. When two signs differ in only one phonological parameter, share the others, and have distinct meanings, they form a minimal pair. An example of minimal pair in LIS is provided by the signs FAMILY and FULL.

a. FAMILY

b. FULL

These two signs form a minimal pair because: i) they carry distinct meaning and ii) differ in only one phoneme. As shown in the video examples, they have the same handshape (dominant hand open), orientation (palm directed toward the location), location (non-dominant hand) and non-manuals (neutral facial expression), but different movement (circular in FAMILY and straight in FULL).

Because of their capability to produce change of meaning, phonemes are considered contrastive units. In this chapter, the presentation of the inventory of LIS phonemes is accompanied by relevant minimal pairs showing their contrastive nature. When minimal pairs are not available, near-minimal pairs are shown.

Notice that phonemes in LIS represent a limited inventory which does not include all the possible articulatory forms. For instance, one phoneme may be realised in the language through different articulatory variants called *phones*. Although visually recognizable, they do not cause any meaning difference. Therefore, differently from pho-

nemes, phones are not contrastive. To illustrate, the phonological form extended pinky can have two different phonetic realisations: one with adducted thumb (a) and the other with the thumb crossed over the folded fingers (b).

a. adducted thumb

b. crossed thumb

Crucially, the difference between (a) and (b) is not meaningful: they both can be used to produce the sign THIN (see example above) without any change in meaning. In other words, the sign THIN with handshape (a) and the sign THIN with handshape (b) do not form a minimal pair. Because of their non-contrastive nature, phones are not considered two distinct phonemes, but rather two alternative phonetic realisations of the same phoneme. The use of one or the other may depend on independent factors, such as the form of neighbouring signs and the signing speed. Note that this chapter aims at abstracting away from all the possible phonetic realisations, providing an overview of the distinctive phonological forms only.

In the next sections, the five classes of phonemes are described: handshape and orientation [PHONOLOGY 1.1], location [PHONOLOGY 1.2], movement [PHONOLOGY 1.3], and non-manuals [PHONOLOGY 1.5]. The section [PHONOLOGY 1.4] illustrates the phonological patterns emerging from two-handed signs, namely those signs articulated both by the dominant and non-dominant hand.

1.1 Active articulators

Signs in LIS are expressed by two primary active articulators, namely the two hands. This section aims at providing the inventory of hand configurations of the language. Note that hand configuration includes both handshape [PHONOLOGY 1.1.1] and orientation [PHONOLOGY 1.1.2]: the former is the shape assumed by the hand, while the latter refers to the alignment of the relevant part of the hand with respect to the place of articulation.

1.1.1 Contrastive handshapes

The first phonological parameter discussed here is handshape. The internal structure of handshape is captured by two characteristics: finger selection and finger configuration.

On the one hand, finger selection [PHONOLOGY 1.1.1.1] indicates which finger(s) of the hand is/are active during the articulation of the sign. On the other hand, finger configuration [PHONOLOGY 1.1.1.2] indicates the position assumed by the selected finger(s). For instance, the handshape of the sign EXIST.NOT is characterised by: two selected fingers (thumb and index) and extended configuration.

EXIST.NOT

The distinction between finger selection and finger configuration is relevant because there are signs in LIS that have one set of selected fingers and two distinct finger configurations occurring one after the other. An example is shown below.

GO_AWAY

The sign GO_AWAY is articulated with one set of selected fingers (thumb and index) and two different finger configurations, changing from flat open to closed. Changes in handshape are extensively discussed in [PHONOLOGY 1.3.2].

1.1.1.1 Selected fingers

In the composition of the handshape, fingers do not behave uniformly. An important distinction is that between selected and unselected fingers. In the sign EXIST.NOT, which has been discussed in the previous section, the selected fingers are thumb and index, while the unselected fingers are middle, ring, and pinky.

Selected fingers differ from unselected fingers because of three properties. Selected fingers can: i) change during the articulation of the sign (e.g. opening or closing), ii) contact a location, iii) be specified for marked finger configurations [PHONOLOGY 1.1.1.2]. On the contrary, unselected fingers cannot have internal movement, cannot contact any location, and can only assume two finger configurations, namely fully open or fully closed. The three properties characterising selected fingers are exemplified by the LIS signs GO_AWAY (a), MOON (b), and OBLIGATION (c), respectively.

a. GO_AWAY

b. MOON

C. OBLIGATION

These three signs share the same finger selection because all three of them select the thumb and index as active fingers. In the sign GO_ AWAY the selected fingers are subject to internal movement, from flat open to flat closed. In the sign MOON, the selected fingers contact the signer's face. In the sign OBLIGATION the selected fingers are bent, hence adopt a specific configuration.

As for finger selection, LIS allows for a limited number of combinations. The table below shows that the selected fingers range from one to five and there is a limited number of possible combinations. In most cases, the unselected fingers are flexed, but there are also a couple of cases in which they are extended (3/5, F, and 8 handshapes). For the sake of simplicity, the handshape names are in line with those typically used in LIS dictionaries.

Table 1 Finger selection

No. of selected fingers	Selected fingers	Flexed unselected fingers	Extended unselected fingers
one	thumb	S handshape	/
	index	G handshape	/
	middle	/	3/5 handshape
	pinky	I handshape	/
two	thumb + index	L handshape	F handshape
	thumb + middle	/	8 handshape
	index + middle	V handshape	/
	thumb + pinky	Y handshape	/
	index + pinky	U handshape	/

No. of selected fingers	Selected fingers	Flexed unselected fingers	Extended unselected fingers
three	thumb + index + middle	3 handshape	/
four	index + middle + ring + pinky	4 handshape	/
five	thumb + index + middle + ring + pinky	5 handshape	/

In the remainder of this section, relevant minimal pairs are reported to show how finger selection can create minimal contrasts in LIS signs. To show clear comparisons, all handshapes included in the minimal pairs are in extended configuration, the most common one (except handshapes 3/5 and F, and 8 which, by nature, do not have extended selected fingers).

Handshapes S and 5 are contrastive in the minimal pair TOURNAMENT - PANTOMIME.

a. TOURNAMENT (handshape S)

b. PANTOMIME (handshape 5)

Handshapes V and Y are contrastive in the minimal pair TWELVE - YES.
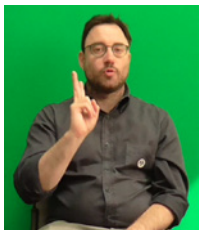
a. TWELVE (handshape V)

b. YES (handshape Y)

Handshapes F and I are contrastive in the minimal pair CORRECT - THREAD.

a. CORRECT (handshape F)

b. THREAD (handshape I)

Handshapes 3/5 and 5 are contrastive in the minimal pair NAUSEA - SATISFACTION.

a. NAUSEA (handshape 3/5)
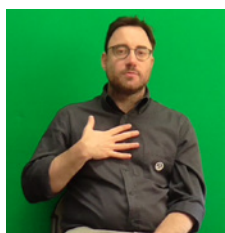
b. SATISFACTION (handshape 5)

Handshapes G and I are contrastive in the minimal pair NOBODY - NEVER.
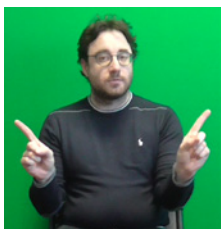
a. NOBODY (handshape G)
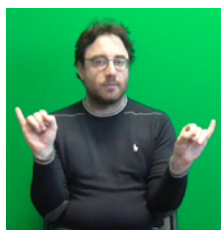
b. NEVER (handshape I)

Handshapes L and 5 are contrastive in the minimal pair LUXURIOUS - INFORMATION.

a. LUXURIOUS (handshape L)

b. INFORMATION (handshape 5)

Handshapes 3 and 4 are contrastive in the minimal pair KING - QUEEN.

a. KING (handshape 3)

b. QUEEN (handshape 4)

Handshapes U and 3 are contrastive in the minimal pair JOKE - FOR-
MULA_ONE.
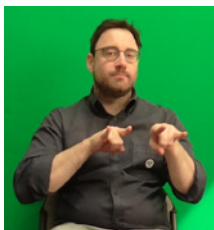
a. JOKE (handshape U)

b. FORMULA_ONE (handshape 3)

Handshape 8 is an exceptional handshape in that it is included on-
ly in some signs articulated with closing and opening hand-internal
movements [PHONOLOGY 1.3.2] and in a few regional lexical variants
used in Trieste.

A few signs allow for two distinct lexical variant forms articulat-
ed with different handshapes. This possibility is exemplified by the
sign TRAIN, which can be realised either with 2 selected fingers (hand-
shape V) or 3 selected fingers (handshape 3).

a. TRAIN (handshape V)
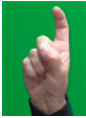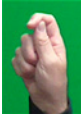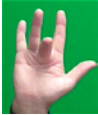
b. TRAIN (handshape 3)

1.1.1.2 Finger configuration

In the composition of handshapes, the selected fingers combine with a specific configuration. The most common configuration in LIS is extended finger(s). Other possible configurations are: i) flat open (base joint flexion with no contact between thumb and fingers), ii) flat closed (base joint flexion with contact between thumb and fingers), iii) curved open (base and non-base joint flexion with no contact between thumb and fingers), iv) curved closed (base and non-base joint flexion with contact between thumb and fingers), and v) closed (full base and non-base joint flexion). Note that certain configurations allow the fingers to be either spread [+S] or unspread [-S]. These special combinations are reported in the table as well.

Table 2 Finger configuration

hand-shapes	extended	flat open	flat closed	curved open	curved closed	closed
S		/	/	/	/	/
G		/	/		/	
3/5	/		/	/	/	/
I		/	/	/	/	/
L					/	/
F	/					/
8	/	/	/	/		/
V	[+S] [-S]	/	/		/	/
Y		/	/	/	/	/

U		/	/	/	/	/
3					/	/
4		/	/	/	/	
5	[+S] [-S]			[+S] [-S]		

In the remainder of this section relevant minimal pairs are reported to show how different finger configurations (flat open, flat closed, curved open, curved closed, closed, and finger spreading) can create minimal contrasts in LIS signs. The flat open configuration is contrastive in the near-minimal pair FORMULA_ONE - CHESS (extended 3 vs. flat open 3, with a slight difference in orientation).

a. FORMULA_ONE (extended 3)

b. CHESS (flat open 3)

However, it should be noted that flat open L, flat open 3, and flat open 5 are selected by a limited number of signs, typically lexicalized signs derived from classifier constructions [PHONOLOGY 1.1.3].

The flat closed configuration is phonologically contrastive in the minimal pair MAY - UNEMPLOYED (extended 5 vs. flat closed F).

a. MAY (extended 5)

b. UNEMPLOYED (flat closed 5)

Flat closed L and flat closed 3 are handshapes used in a limited number of signs, most of which are probably derived by handling classifiers [PHONOLOGY 1.1.3].

The curved open configuration is phonologically contrastive in the minimal pair GESTURE - CONFUSION (extended 5 vs. curved open 5).

a. GESTURE (extended 5)

b. CONFUSION (curved open 5)

The curved closed configuration is phonologically contrastive in the minimal pair SUGGESTION - CIGAR (extended 5 vs. curved closed 5).

a. SUGGESTION (extended 5)

b. CIGAR (curved closed 5)

The closed configuration is phonologically contrastive in the minimal pair LET - REJECT (extended 5 vs. closed 5).

a. LET (extended 5)

b. REJECT (closed 5)

Another contrastive phonological feature is finger spreading. This can be seen in the minimal pair GLASS - MIRROR (spread 5 vs. unspread 5).

a. GLASS (spread 5)

b. MIRROR (unspread 5)

1.1.2 Orientation

Orientation defines the relation between hand(s) and location. More specifically, it indicates which part of the hand is directed toward the place of articulation. Active articulators include six sides: i) palm, ii) back, iii) ulnar, iv) radial, v) wrist, and vi) fingertip side. The six sides of the hand relevant to orientation are illustrated below.
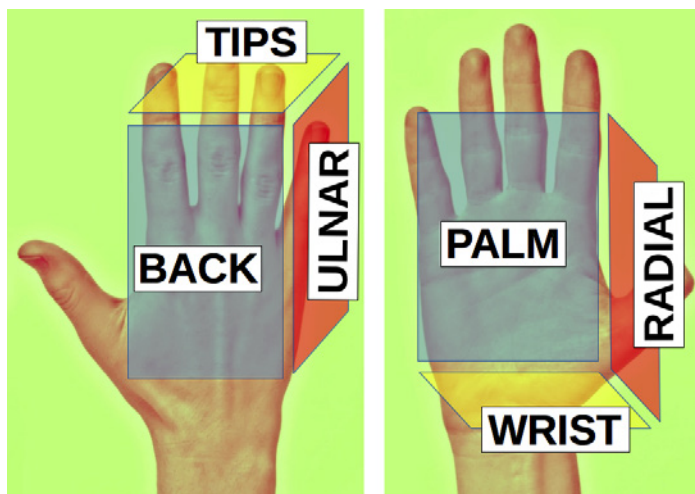
Figure 1 Orientations

Two cases need to be distinguished: signs articulated on the body and signs articulated in neutral space. In signs articulated in a location on the signer's body, orientation consists in the side of the hand facing that location. For example, the sign DEAR is produced on the cheek. The orientation of this sign is palm because the hand faces the cheek with the palm of hand side.

DEAR (palm)

The same approach is adopted for signs articulated on the non-dominant hand. For example, in the sign WOUND the orientation is ulnar because the dominant hand faces the non-dominant one with the ulnar side.

WOUND (ulnar)

In the case of signs articulated in the neutral space, orientation consists in the side of the hand pointing in the direction of the endpoint of the movement. For example, the orientation of the sign STREET is tips because the fingertip side of the articulators face the end of the movement trajectory of the sign.

STREET (tips)

Orientation can be phonologically contrastive. The following pairs of signs show minimal contrasts with respect to orientation: CORRECT - MEASURE (wrist vs. ulnar), COMPLIMENT - EVIDENCE (palm vs. back), and HOUSE - DOOR (tips vs. radial).

  a. CORRECT (wrist)

  b. MEASURE (ulnar)

  c. COMPLIMENT (palm)

  d. EVIDENCE (back)

  e. HOUSE (tips)

  f. DOOR (radial)

A few signs allow for two lexical variants produced with different orientation. For example, the sign PROGRAMME is a two-handed sign in which the dominant hand can touch the non-dominant one either with the radial (a) or ulnar side (b).

a. PROGRAMME (radial)

b. PROGRAMME (ulnar)
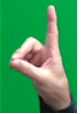
The articulation of some signs involves a hand-internal movement resulting in a change in orientation [PHONOLOGY 1.3.2].

1.1.3 The manual alphabet & number signs

A few handshapes are limited to specific domains. This is the case of handshapes appearing in: i) fingerspelled words, ii) lexicalised signs derived from fingerspelling, and iii) lexicalised signs derived from classifier constructions. Illustrative examples are provided below. No particular handshapes are exclusively used in number signs.

Some handshapes are exclusively used in borrowings from Italian, namely in fingerspelled words and signs derived from fingerspelling. In fingerspelled words, each letter of the Italian word is fingerspelled one after the other [LEXICON 2.2.2]. In signs derived from fingerspelling, the handshape typically corresponds to the first letter of the Italian translation of the sign [LEXICON 2.2.2.1]. The handshapes that are exclusively used in fingerspelled words and signs derived from fingerspelling are shown and described below.

Table 3 Handshapes limited to fingerspelling

handshape P	handshape D (new version)	handshape D (old version)	handshape E
handshape K	handshape R	handshape T	handshape W

Handshape D (new version) and handshape P (same handshape but with different orientation) is realised by extending the index and partially bending the other fingers so that the thumb touches the middle. Handshape D is realised with outward palm orientation and is found in the initialised sign SUNDAY (Ita. *domenica*), as shown in (a). Handshape P is realised with downward palm orientation and is found in the initialised sign POWERPOINT, as shown in (b).

a. SUNDAY - new sign (handshape D, new version)

b. POWERPOINT (handshape P)

Handshape D (old version) is realised by bending the middle over the index. Notice that this handshape was used to represent D in the old manual alphabet and it appears in the old initialised sign SUN-DAY (Ita. *domenica*).

SUNDAY - old sign (handshape D, old version)

Handshape E is realised by bending and hooking all the fingers. It is found in the initialised sign EUROPE (Ita. *Europa*).
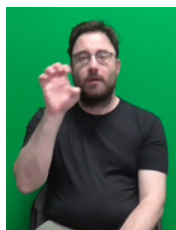
EUROPE (handshape E)

Handshape K is realised by extending the index, bending the middle at base joint, and extending the thumb so that it touches the base of the middle. It is found in the sign OK.

OK (handshape K)

Handshape R is realised by crossing the middle over the index and it is used in the initialised sign RECORD.

RECORD (handshape R)

Handshape T is realised by bending the index at base joint and extending the thumb so that it touches the base of the index. No initialised signs have been found with this handshape.

Handshape W is realised by extending index, middle, and ring. Because of its articulatory complexity, it is not frequently used by LIS signers. In borrowings from English [LEXICON 2.2], the handshape W can be replaced by handshape 4 for ease of articulation (as in the sign WORKSHOP).

a. WORKSHOP (handshape W)
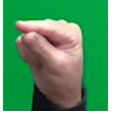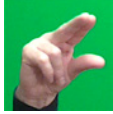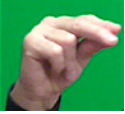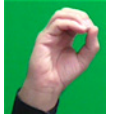
b. WORKSHOP (handshape 4)

Some handshapes are exclusively, or almost exclusively, found in signs derived from classifiers. Notice that, in some cases, the distinction between core lexical elements [LEXICON 1.1] and classifiers [LEX-

ICON 1.2.1] may not be straightforward. This set of handshapes usually represent the referent in the way it looks (Size-and-Shape-Specifiers, [MORPHOLOGY 5.2]) or is handled (handle classifiers, [MORPHOLOGY 5.1.3]). The handshapes that are mostly used in signs derived from classifiers are shown and described below.

Table 4 Handshapes limited to classifiers

Flat open L	Flat closed L	Flat open 3	Flat closed 3
Flat open 5	Curved open 5 [-S]	Curved closed 5	

Flat open L appears in signs referring to thin rectangular objects (e.g. TICKET, FILM, and COLLAR).

COLLAR (flat open L)

Flat closed L appears in signs referring to small sharp objects (e.g. PENCIL, MATCH, and WOODPECKER).

WOODPECKER (flat closed L)

Flat open 3 appears in signs referring to little thin objects (e.g. CHESS).

CHESS (flat open 3)

Flat closed 3 appears in signs referring to small objects handled by the hand (e.g. MAKE_UP and PEN).

PEN (flat closed 3)

Flat open 5 appears in signs referring to voluminous rectangular objects (e.g. WATERMELON, RADIATOR, and VIDEOTAPE).

VIDEOTAPE (flat open 5)

Curved open 5 [-S]: this handshape appears in signs referring to round objects (e.g. DRINKING_GLASS, BOTTLE, and TUBE).

DRINKING_GLASS (curved open 5 [-S])

Curved closed 5 appears in signs referring to small-diameter round objects (e.g. SPYGLASS and CIGAR).

SPYGLASS (curved closed 5)

1.1.4 Other active articulators

In the production of LIS signs, hands play a crucial role. However, there are a few signs in which the most prominent articulator is not the hand, but the arm. Two examples are shown below, the signs TRANSGRESS and MOVE_TO.

a. TRANSGRESS

b. MOVE_TO

According to our informants, in situations where signers do not want some people to see what they are signing, some signs may be produced by non-manual articulators, rather than manual ones. In this way, the linguistic message is less likely to be noticed. For example, instead of producing a manual pointing with the index finger, the signer may direct his/her eye gaze and/or a head tilt toward the object or person of interest.

1.2 Location

Location is defined as the place where the sign is articulated. For ease of production and perception, the possible location distinctions are confined in a delimited area called *signing space*: this area extends from the waist line to just above the head in the vertical plane, from elbow to elbow in the horizontal plane, and from the signer's body to the area immediately in front of the upper body in the midsagittal plane (for more details see [PRAGMATICS 8]). The extension of the signing space might not be perfectly homogeneous among signers: for example, it has been observed that young signers tend to use a slightly smaller signing space than older signers. In some exceptional signs, the place of articulation is outside the signing space: they are usually signs referring to particular body parts or items of clothing. For instance, the sign LEG is articulated below the waist line.

LEG

The main areas in which signs in LIS are located are: head, body, non-dominant-hand, and neutral space. In signs articulated in body locations, it is not necessary that the articulator touches the relevant body part, it is sufficient that it is close enough to it. If it is not close to body locations, the articulation of the sign is in the neutral space (the area of space in front of the upper body).

Considering the four major areas listed above, the relevant location distinctions are: i) head: whole face, upper face, ears, eyes, nose, cheeks, mouth, chin, neck; ii) body: shoulders and upper torso, chest, lower torso, arm, wrist; iii) non-dominant hand: palm, tips, radial, back; and iv) neutral space.

In some cases, location might be directly linked to the meaning of the sign. Location has an iconic motivation if it points toward the body part directly linked to the meaning of the sign (e.g. the noun NOSE signed on the nose, the adjective BLIND signed close to the eyes, the verb HEAR signed close to the ear) or if it is the area in which the referent is used (e.g. the sign CROWN in the upper part of the head).

Location has a metaphoric motivation if it is linked to the meaning of the sign through an abstract or conventional relation (e.g. rational actions like THINK and IMAGINE are signed in the upper face area, whereas emotional states like EXCITEMENT and FALL_IN_LOVE are signed in the chest area).

The location distinctions listed above are phonologically contrastive: indeed, different places of articulation can determine minimal contrasts. As evidence of their distinctive nature, the different locations are presented and exemplified through minimal pairs.

The area of the head includes the highest number of location distinctions. This is not surprising because the head is the area of highest visual acuity. During a conversation in sign language, visual attention generally focuses on the signer's face. The signs whose location is the whole face are not many. This is because signers tend to avoid hiding their facial expressions with their hands, as they play a very important role in the signing stream. The distinctive locations included in the area of the head are represented in the image below.
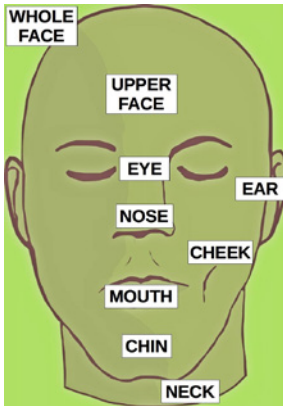
Figure 2 Locations in the area of the face

The minimal pair between a variant form of AFRICA and the sign SATISFACTION shows that whole face and chest are distinctive locations.
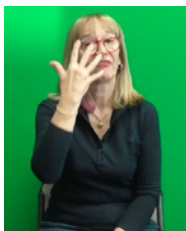
a. AFRICA (whole face)

b. SATISFACTION (chest)

In the case of those parts of the face having two distinct members (i.e. temple, ear, eye, and cheek), one-handed signs are produced near the ipsilateral member (the right temple, ear, eye, and cheek for a right-handed person).

The highest location in the head area involves the upper part of the head, the forehead, and the temples. The central part of the head can be the location of one-handed signs only, whereas in the lateral part of the forehead and the temples both one-handed and two-handed signs can be produced. Lots of signs in the upper face refer to objects worn on the head (e.g. HAT, CROWN), or to cognitive activities (e.g. THINK, REMEMBER). The contrastive nature of this location is shown by the minimal pair MEMORY - HUMAN (upper face vs. cheek).

a. MEMORY (upper face)

b. HUMAN (cheek)

Signs realised in the ear area are usually one-handed signs. Their meaning is typically connected to the ear in some way (e.g. HEARING, LISTEN, EARRING). This location is distinct from the upper head, as shown in the minimal pair HEAR - KNOW (ear vs. upper face).

a. HEAR (ear)

b. KNOW (upper face)

The area of the eye is typically the location of signs whose meaning is linked to the eye or the ability to see (e.g. LOOK, BLIND, GLASSES). This location is distinctive in the minimal pair including a variant form of BLIND and the sign CRAZY (eye vs. upper face).
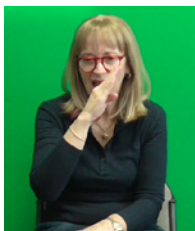
a. BLIND (eye)

b. CRAZY (upper face)

Signs produced close to the nose are (almost) exclusively one-handed signs. They usually have a semantic connection to the nose and its function (e.g. SNIFFLE, FRAGRANCE). Some signs make metaphorical reference to the nose: for example, CURIOUS contains the same metaphor of the Italian idiom *ficcare il naso* 'to stick one's nose into something'. The distinctive nature of this location can be seen in the minimal pair SMELL - LET_S_SEE (nose vs. eye).

a. SMELL (nose)
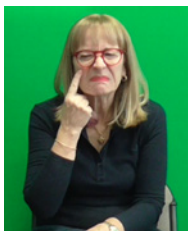
b. LET_S_SEE (eye)

The area of the cheek is typically selected by signs whose meaning is connected to the cheek in some way. For example, the sign SLEEP makes reference to the fact that in a common sleeping position the cheek is pressed against the pillow. Other signs articulated in this location refer to people (e.g. WOMAN, MOTHER, MAN). The fact that the cheek can be phonologically distinctive is shown in the minimal pairs HUMAN - MEMORY (cheek vs. upper face, above) and MOTHER - SORRY (cheek vs. chin).
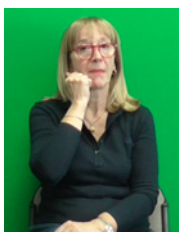
a. MOTHER (cheek)

b. SORRY (chin)

The signs articulated on the mouth are mostly one-handed signs. They typically refer to the mouth and actions performed by it (e.g. SPEAK, MUTE, DRINK). The contrastive nature of this location is shown by the minimal pair SPEAK - BE_FAMILIAR (mouth vs. upper face).

a. SPEAK (mouth)

b. BE_FAMILIAR (upper face)

The chin is a location commonly selected by one-handed signs, too. The fact that this location can be phonologically distinctive is shown in the minimal pairs SORRY - MOTHER (chin vs. cheek, above) and VERB - LAWYER (chin vs. nose).

a. VERB (chin)
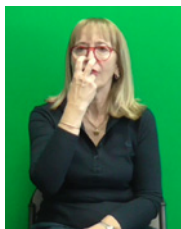
b. LAWYER (nose)

The last distinctive location in the head is the area of the neck. It is selected by signs that usually have a direct connection to the neck (e.g. VOICE, BOW_TIE) or a metaphorical connection to it (e.g. FORCED meaning *preso per il collo*, 'taken by the throat'). The contrastive nature of this location is shown by the minimal pair THIRST - HEADACHE (neck vs. upper face).

a. THIRST (neck)

b. HEADACHE (upper face)

The distinctive body locations in LIS are: shoulders and upper torso, chest, lower torso, arm, and wrist. These locations are illustrated in the image below.
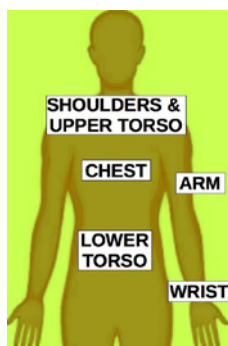
Figure 3 Locations in the area of the body

The shoulders and upper torso represent the location of signs referring to objects carried on the shoulders (e.g. BAG, COAT), signs referring to time (e.g. YESTERDAY, BEFORE), and other signs. One-handed signs produced in this location may select the ipsilateral shoulder (e.g. SOLDIER) or the contralateral one (e.g. FAULT). The contrastive nature of this location is shown by the minimal pair SOLDIER - POSS$_1$ (upper torso vs. chest, with a slight difference in absolute orientation).
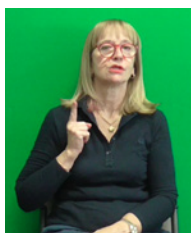
a. SOLDIER (upper torso)

b. POSS$_1$ (chest)

The area of the chest is intended as the central part of the torso. This location is selected by many signs referring to feelings and emotions (e.g. LOVE, SUFFER, JEALOUSY). The chest area can be contrastive in minimal pairs, as shown in POSS$_1$ - SOLDIER (chest vs. upper torso, above) and in BRA - UNDERWEAR (chest vs. lower torso).

a. BRA (chest)

b. UNDERWEAR (lower torso)

The signs produced in the lower part of the torso are not many because this is probably the area of lowest visual acuity. This location is contrastive in some minimal pairs, as shown in UNDERWEAR - BRA (lower torso vs. chest, above) and in HUNGER - DOG (lower torso vs. neck).
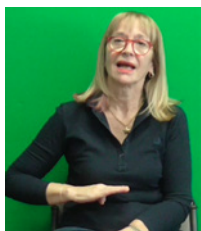
a. HUNGER (lower torso)
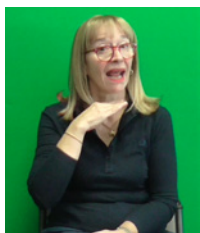
b. DOG (neck)

The area of the non-dominant arm is a large location including the upper arm, the elbow, and the forearm. All the signs selecting the area of the non-dominant arm are one-handed signs. Many of them make reference to special roles or qualifications (e.g. TEAM_CAPTAIN, ASSISTANT, UNION_OFFICIAL). The contrastive nature of the arm is shown by the minimal pair RUDE - PROPRIETY (arm vs. chest).
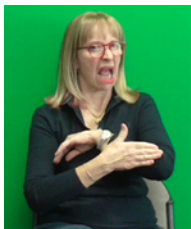
a. RUDE (arm)

b. PROPRIETY (chest)

The non-dominant wrist is selected mostly by signs that are directly or indirectly connected to the wrist. An instance of direct connection is the sign WATCH, whereas an instance of indirect connection is PATIENT (this sign refers to the fact that doctors usually check on patients' wrist pulse). The contrastive nature of the wrist is shown by the minimal pair SICK - HEADACHE (wrist vs. upper face).

a. SICK (wrist)
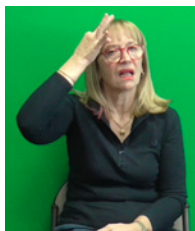
b. HEADACHE (upper face)

In some two-handed signs, the non-dominant hand is not an active articulator. Rather, it is a passive articulator and functions as a place of articulation. To illustrate, in the sign WORK the dominant hand moves in a circular way on the vertical plane and when it moves downwards it touches the location of the sign, namely the non-dominant hand. If this movement occurs in the neutral space rather than on the non-dominant hand, the sign produced is SHEPHERD. The minimal pair WORK - SHEPHERD is shown below.
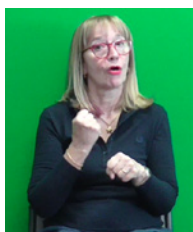
a. WORK (non-dominant hand)
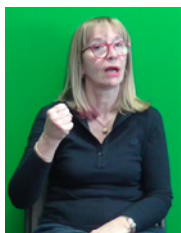
b. SHEPHERD (neutral space)

The sides of the non-dominant hand that can be relevant to the articulation of this type of signs are: palm, back, radial, and tips.
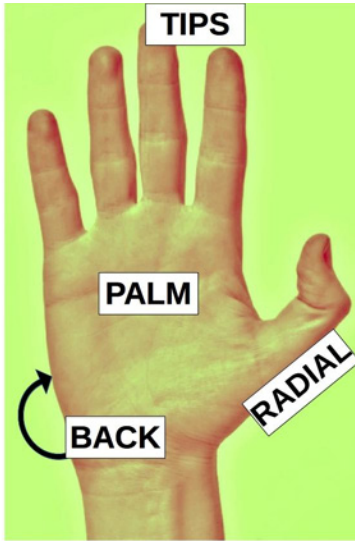
Figure 4 Locations in the area of the non-dominant hand

Below we can see some signs showing the contrastive nature of these location distinctions: the pair SOAP - CHEESE (palm vs. back) and the triplet STOP - HALF - LIMIT (palm vs. radial vs. ulnar).

a. SOAP (palm)

b. CHEESE (back)

c. STOP (palm)

d. HALF (radial)

e. LIMIT (ulnar)

The fourth major area, the neutral space, is the largest area and constitutes the place of articulation of the majority of the LIS signs. Signs in neutral space can be articulated approximately in the middle (PEN), high (GOD), low (FOOT), or in a lateral position (TOILET).
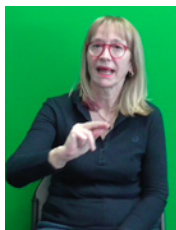
a. PEN (middle)
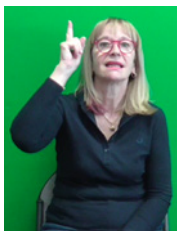
b. GOD (high)
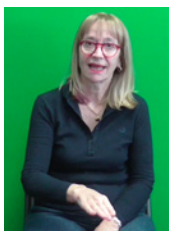
c. FOOT (low)
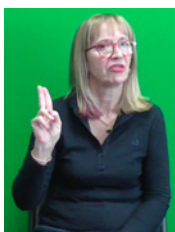
d. TOILET (lateral)

It is not entirely clear whether the neutral space is subdivided into contrastive subareas. According to some informants, differences in height are distinctive. For example, TABLE and FLOOR are very similar signs articulated in the neutral space with the only difference that the former is at chest level and the latter is at waist level.
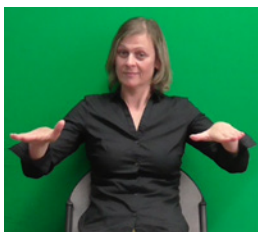
a. TABLE (neutral space, middle)

b. FLOOR (neutral space, low)

A few signs allow two lexical variants produced in two different places of articulation. For example, the sign DOG is a one-handed sign in which the dominant hand can touch either the chin or the neck with a repeated movement.

a. DOG (chin)
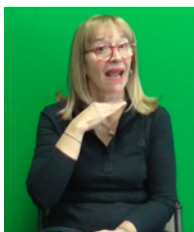
b. DOG (neck)

In some signs, the active articulator(s) move from a location to another [PHONOLOGY 1.3.1].

1.3 Movement

The dynamic nature of signs is captured by the movement parameter. This can be described in terms of path (or primary) movements and secondary movements.

Path movements consist in changes in location. To illustrate, the sign STREET involves a path movement because it requires that the two hands move in the neutral space from a starting location close to the signer's body to a location farther away from it (in front of it).

STREET (path movement)

Secondary movements consist in changes in handshape and/or orientation. Handshape change is here exemplified by the sign IGNORANT, in which the handshape changes from extended 5 [-S] to flat closed 5.

IGNORANT (handshape change)

Orientation change is here exemplified by the sign BREAK, in which the articulatory orientation changes from prone to neutral.

BREAK (orientation change)

The movement component may assume different timing properties. Specifically, signs can include non-repeated or repeated movements. These two possibilities can be phonologically contrastive and are found both with primary and secondary movements.

As for path movement (location change), the phonological contrast between a non-repeated and repeated pattern can be seen in the minimal pair LIFE - LIVE (single vs. repeated).

a. LIFE (non-repeated movement)

b. LIVE (repeated movement)

A minimal pair showing the contrast between single and repeated handshape change is composed by the sign GOOD and a variant form of BE_POSSIBLE (single vs. repeated).

a. GOOD (non-repeated movement)

b. BE_POSSIBLE (repeated movement)

The difference between single and repeated movement can be contrastive in orientation changes, too. This is exemplified by the mini-

mal pair FUNCTION - MOTOR (single vs. repeated).

a. FUNCTION (non-repeated movement)

b. MOTOR (repeated movement)

Combinations of different movement types are allowed. The possible combinations are the following: i) location change + handshape change; ii) location change + orientation change; iii) handshape change + orientation change; and iv) location change + handshape change + orientation change.

One example for each combination is provided below. The possibility to combine location and handshape change is exemplified by the citation form of the sign COPY, which requires both path movement (from a location farther away from the signer's body to a location close to it) and secondary movement (handshape change from extended 5 [-S] to flat closed 5).

COPY (location change + handshape change)

Location change can be combined with orientation change as well. This can be observed in the citation form of the sign FIRST_TIME, which requires both path movement (from the middle of the neutral space to a higher location) and secondary movement (orientation change determining wrist rotation, from prone to supine).

FIRST_TIME (location change + orientation change)

The two different types of secondary movements can be combined in one single sign. This possibility is shown in the sign CASE, in which the handshape changes from F to 5 (opening movement) and the orientation changes from prone to supine (wrist rotation).

CASE (handshape change + orientation change)

The last option combines all three kinds of movements (location, handshape, and orientation change). It is found in only a few signs and it is here exemplified by the sign HURL. As shown below, the movement of this sign undergoes three different changes: from near the signer's body to a high contralateral location far from it (location change), from handshape 5 to G (handshape change), and from prone to supine (orientation change).

HURL (location change + handshape change + orientation change)

1.3.1 Path movement

Path movements are realised by moving the whole articulator(s) from one location to another on the body or in space. In this section, path movements are described in terms of two features: shape (how the hands move) and direction (where the hands move).

As for shape, there are three main possibilities: straight, arc, and circle. We exemplify these three shape types by the minimal triplet MEASURE, GENTLE, and PREPARE.

a. MEASURE (straight)

b. GENTLE (arc)

c. PREPARE (circle)

These three signs share the same handshape (F), location (neutral space), and orientation (ulnar). They differ only in movement shape: MEASURE has a straight movement (the hands move uniformly contralaterally without bending), GENTLE has an arc movement (the hands move contralaterally with a curving trajectory without completing the circle), and PREPARE has a circle movement (the hands move all the way around, possibly more than once).

Another possible shape is represented by waving movements, in which the hands move with an undulating or zig-zagging motion. An example of this is shown in the sign LIGHTNING.

LIGHTNING (zigzag)

Path movements in LIS can occur in six different directions: upward, downward, inward, outward, ipsilateralward, and contralateralward. These six directions are exemplified by the following signs: ADULT (upward), THIN (downward), GRAVE (inward), STREET (outward), KING (ipsilateralward), and AUNT (contralateralward).

a. ADULT (upward)

b. THIN (downward)

c. GRAVE (inward)

d. STREET (outward)

e. KING (ipsilateralward)

f. AUNT (contralateralward)

Diagonal movements can be described as combinations of two primary directions (e.g. ipsilateralward + downward).

Arc and circle movements can receive a further specification: clockwise and counterclockwise. It should be noted that this kind of direction is not intended in absolute terms. It can apply to all spatial planes and it is specified considering the signer's dominant hand: indeed, a clockwise motion for a right-handed person corresponds to a counterclockwise motion for a left-handed person. To illustrate the difference between clockwise and counterclockwise direction, we consider the case of right-handed signers and present two pairs of similar signs, one showing arc motion and the other circle motion. As for arc motion, the clockwise direction is found in the sign CROWN, while the counterclockwise one is found in the sign WORLD.

a. CROWN (clockwise)

b. WORLD (counterclockwise)

Turning to circle motion, the clockwise direction is found in the sign STROLL, while the counterclockwise one is found in the sign PREPARE.

a. STROLL (clockwise)

b. PREPARE (counterclockwise)

Both arc and circle motions can occur in all three dimensional planes. For example, the arc motion in the sign EVERYBODY is articulated on the horizontal plane, in the sign RAINBOW on the vertical plane, and in the sign SON on the midsagittal plane.

a. EVERYBODY (horizontal)

b. RAINBOW (vertical)

c. SON (midsagittal)

To illustrate the three possibilities with circle motion, we show the following examples: the sign SEA is articulated on the horizontal plane, the sign TOURISM on the vertical plane, and the sign KIN on the midsagittal plane.

a. SEA (horizontal)

b. TOURISM (vertical)

c. KIN (midsagittal)

A few signs allow for two distinct lexical variants articulated with different path movements. This possibility is exemplified by the sign SEEM, whose circle movement can be realised either clockwise or counterclockwise, as shown below.

a. SEEM (clockwise)

b. SEEM (counterclockwise)

Crucially, in cases such this, the use of one or the other motion direction does not determine a change in meaning.

1.3.2 Secondary movement

Secondary movements are local or hand-internal movements. As said before, they can result in handshape and/or orientation changes.

The possible handshape changes can be categorized as follows: opening, closing, flattening, bending, wiggling, rubbing, and spreading movements.

In opening movements, the selected fingers change from a closed to an extended configuration. Various handshapes can be involved, for example F (MEDICINE), 8 (GOLD), and 3 (FLOWER).

a. MEDICINE (handshape F)

b. GOLD (handshape 8)

c. FLOWER (handshape 3)

In closing movements, the selected fingers change from an extended to closed configuration. Various handshapes can be involved, for example L (BIRD), 3 (SPEAK), and 5 (UNDERSTAND).

a. BIRD (handshape L)

b. SPEAK (handshape 3)

c. UNDERSTAND (handshape 5)

The selected fingers usually move together, but they can also move separately, one after the other. The former case is exemplified by the sign GRASP, in which the fingers close together. The latter case is exemplified by the sign STEAL, in which the fingers close one after the other. This can occur with opening movement, too, as shown in the sign NUMBER.

a. GRASP (fingers close together)

b. STEAL (fingers close one after the other)

c. NUMBER (fingers open one after the other)

In some signs, the selected fingers flex at base joints. This hand-internal movement is called flattening and is found, for example, in the sign RABBIT.

RABBIT

When the selected fingers flex at the base joint and extend repeatedly in an alternating way, a wiggling movement is produced. To illustrate, this type of secondary movement is found in the sign COMPUTER.

COMPUTER

Another possible handshape change is bending. This secondary movement occurs when the selected fingers flex at non-base joints. For example, it is found in the sign PHOTO.

PHOTO

Rubbing movements characterise signs in which the thumb applies friction to the other selected finger(s). A sign produced with rubbing movement is MONEY.

MONEY

Spreading movements occur when the handshape changes from a spread to an unspread configuration. This type of secondary movement can be observed in the sign SCISSORS, in which index and middle fingers spread and unspread repeatedly.

SCISSORS

Different types of handshape change can be phonologically contrastive. For example, the signs SWITCH_ON and SWITCH_OFF are very similar signs and differ only in internal movement (opening in SWITCH_ON and closing in SWITCH_OFF).

a. SWITCH_ON (opening)

b. SWITCH_OFF (closing)

As shown by the videos above, the sign SWITCH_ON involves an opening movement from closed to open 5, whereas the sign SWITCH_OFF involves a closing movement from open to closed 5.

The presence or absence of handshape change can create phonological contrasts. This can be seen in the minimal pair AUNT - FREE_OF_CHARGE: the only difference between these two signs is that AUNT does not require any hand-internal movement, whereas FREE_OF_CHARGE requires an opening movement from closed 5 to handshape G.

a. AUNT (without handshape change)

b. FREE_OF_CHARGE (with handshape change)

The possible orientation changes can occur in three different ways: i) wrist rotation, ii) pivoting, and iii) nodding.

In wrist rotation, there is a change in palm orientation. This change can be from prone to supine (e.g. BETRAY), from supine to prone (e.g. FORBIDDEN), or repeated from one position to the other (e.g. MUSIC).

a. BETRAY (from prone to supine)

b. FORBIDDEN (from supine to prone)

c. MUSIC (supine/prone repeatedly)

In pivoting, there is a change in finger orientation. This change can be from radial to ulnar (e.g. IMPOSSIBLE_PA_PA), from ulnar to radial (e.g. STUPID), or repeated from one position to the other (e.g. MOTOR).

a. IMPOSSIBLE_PA_PA (from radial to ulnar)

b. STUPID (from ulnar to radial)

c. MOTOR (radial/ulnar repeatedly)

In nodding, there is a change in both palm and finger orientation. This change can be from palm to back (e.g. OPEN), from back to palm (e.g. CLOSED), or repeated from one position to the other (e.g. SPRING).

a. OPEN (from palm to back)

b. CLOSED (from back to palm)

c. SPRING (palm/back repeatedly)

Different types of orientation change can be phonologically contrastive. For instance, the signs HAMMER and KEY are very similar with

the difference that in the former the closed G handshape repeatedly changes from back to palm (nodding), whereas in the latter the closed G handshape changes from prone to supine (wrist rotation).

a. HAMMER (nodding)

b. KEY (wrist rotation)

The presence or absence of handshape change can create phonological contrasts. For example, the two grammatical signs IX(dem) [LEXICON 3.6.1] and PE [LEXICON 3.6.1] and [SYNTAX 3.4.2.1] are almost identical because they share the same handshape (G), relative orientation (tips), location (neutral space), and movement (toward a deictic or anaphoric locus in the neutral space). What distinguishes these two signs is that in IX(dem) no orientation change occurs, whereas in PE the G handshape changes from radial to ulnar (pivoting).

a. IX(dem) (without orientation change)

b. PE (with orientation change)

1.4 Two-handed signs

In LIS, some signs are articulated with one hand only (the dominant hand), while others require the use of both hands. The use of one or two hands can be phonologically distinctive and this is demonstrated by the existence of minimal pairs showing the opposition one-handed vs. two-handed. Two examples are the pairs PLEASURE - CLOTHES and RENT - TEA.

a. PLEASURE (one hand)

b. CLOTHES (two hands)

c. RENT (one hand)

d. TEA (two hands)

As shown above, CLOTHES and TEA are articulated with both hands, while PLEASURE and RENT are made with the dominant hand only.

Despite being both two-handed signs, CLOTHES and TEA differ one from the other in the following respect: the former is symmetrical, while the latter is asymmetrical. In symmetrical two-handed signs, both hands are active articulators and move in an independent location specification. In the case of CLOTHES, both the dominant and non-dominant hand move downward on the chest. Orientation and

handshape are identical in the two hands. In asymmetrical two-handed signs, only the dominant hand moves, whereas the non-dominant hand is a passive articulator functioning as place of articulation. In the case of TEA, the dominant hand moves downward close to the non-dominant hand, which does not move. Moreover, the two hands also differ in terms of orientation and handshape.

Notice that, in some cases, two-handed signs may display articulatory reduction and be produced with the dominant hand only. This particular phenomenon is called weak hand drop [PHONOLOGY 3.1.4].

1.4.1 Symmetrical signs

As previously mentioned, symmetrical signs require that both hands are active articulators and move. The allowed patterns are: simultaneous movement and alternating movement.

In simultaneous movements, the hands move in tandem toward the same direction. For example, the sign DANGEROUS shows a case of simultaneous movement because the hands move in-phase. In alternating movements, the hands move together in an out-of-phase fashion and always point toward different directions. An example of this can be observed in the sign VIOLENT.

a. DANGEROUS (simultaneous)

b. VIOLENT (alternating)

In symmetrical two-handed signs, the non-dominant hand must assume the same handshape of the dominant hand. Indeed, in the signs above both hands share the same handshape (unspread 5). An exception to this restriction is represented by the sign WEEK, in which the hands show the same movement but have different handshapes (5 for the non-dominant and L for the dominant hand).

WEEK

1.4.2 Asymmetrical signs

In asymmetrical two-handed signs, the two hands have different functions: the dominant one acts as active articulator, whereas the non-dominant one functions as place of articulation.

In order to capture the correct articulation of this class of signs, it is important to identify the specific location of the non-dominant hand in which the sign is articulated and the handshape assumed by it. As pre-

viously discussed [PHONOLOGY 1.2], the possible location specifications of the non-dominant hand are back, palm, radial, and tips. The existence of minimal pairs differing in these specifications show that they are phonologically distinctive. The handshape of the non-dominant hand can either be identical to the handshape of the dominant hand or different from it. For example, in the sign MINUTE both hands assume the F handshape, whereas in the sign POTATO the dominant and the non-dominant hand assume different handshapes, F and unspread 5, respectively.

a. MINUTE (same handshape)

b. POTATO (different handshape)

It should be noted that when the two hands share the same handshape, a large set of possible handshapes is available. On the contrary, when the two hands assume different shapes, the handshape of the non-dominant hand is restricted to a limited set of options, which are reported below.

Table 5 Non-dominant handshapes allowed in asymmetrical two-handed signs

5	unspread 5	curved open 5	curved closed 5	closed 5	G

In most asymmetrical two-handed signs, the non-dominant hand assumes either one of these two handshapes: unspread 5 or closed 5. For example, the non-dominant hand assumes the unspread 5 handshape in the signs CHEESE (a) and HALF (b) and the closed 5 handshape in the signs FAMILY (c) and WORK (d).

a. CHEESE (unspread 5)

b. HALF (unspread 5)

c. FAMILY (closed 5)

d. WORK (closed 5)

Although less common, other handshapes are also attested: spread 5 (e.g. MARRIAGE), curved closed 5 (e.g. HOLE), curved open 5 (e.g. TEA), and G (e.g. ANTENNA).

a. MARRIAGE (spread 5)
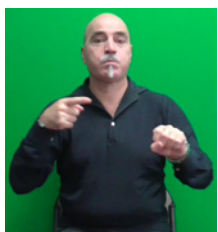
b. HOLE (curved closed 5)

c. TEA (curved open 5)
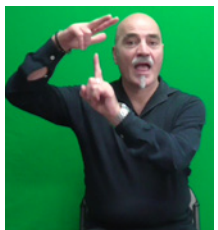
d. ANTENNA (G)

1.5 Non-manuals

The phonological description of lexical signs in LIS does not focus only on hand movements articulated with a certain handshape and orientation in a certain location. Another phonological parameter that needs to be considered is represented by non-manuals. This term includes facial expressions, head and body movements.

Focusing on mouth patterns, LIS signs make use of mouth gestures and mouthings. Mouth gestures are intended as mouth movements that do not have any connection with Italian. Mouthings are mouth movements producing the visual representation of Italian words.

Mouth gestures and mouthings can be phonologically distinctive, as proved by the existence of minimal pairs. For example, FRESH and NOT_YET are both two-handed signs articulated with F handshape and a repeated lateral movement in the neutral space. They differ in non-manuals only: FRESH is accompanied by mouthing (the mouth voicelessly reproduces the equivalent spoken word, i.e. *fresco*), whereas NOT_YET is accompanied by mouth gesture [sss] (the mouth releases air as in sibilant [s] and lateral head shakes.

'fresco'
a. FRESH (mouthing)

[sss]
b. NOT_YET (mouth gesture)

Mouth gestures and mouthings are described in detail in the next sections.

1.5.1 Mouth gestures

Mouth gestures are actions of the mouth that are not derived from spoken Italian. Although LIS signers use less mouth gestures than mouthings, the former appear more uniform than the latter.

The category of mouth patterns is not strictly associated with the mouth. In a broader sense, it involves different components: jaw aperture, position of the cheeks, tongue and lips, and use of air. To give an idea of the variety of mouth gestures attested in LIS, some examples are listed and shown below. Note that position of the lips and use of air often co-occur. Mouth gestures can involve: i) jaw aperture (e.g. lowered jaw and open mouth 'om' in the sign ASTONISHMENT), ii) position of the cheeks (e.g. puffed cheeks 'pc' in the sign FAT), iii) position of the tongue (e.g. tongue protrusion 'tp' and/or contract-

ed cheeks in the sign THIN), iv) position of the lips (e.g. compression of the lower lip performed by the upper teeth 'tl' in the sign BE_SORRY), and v) use of air (e.g. occlusion followed by a sudden release of air in the sign TRANSGRESS).

a. <u>lowered jaw+om</u>
ASTONISHMENT

b. <u>pc</u>
FAT

c. <u>tp</u>
THIN

d. <u>tl</u>
BE_SORRY

e. <u>blow</u>
TRANSGRESS

The relationship between mouth gesture and manual sign can reflect different degrees of iconicity. It can be transparent, translucent, or opaque. In a transparent relationship, the mouth gesture iconically reflects the meaning of the sign. For example, in the articulation of the sign ICE_CREAM_EAT, the tip of the tongue is protruded (tp) as in the action of licking. A translucent relationship is clear to non-signers once it is explicitly explained. For example, in the articulation of the sign LIKE.NOT, the tip of the tongue is visibly protruded (tp), as similarly happens when people belonging to the Italian culture don't like something and stick out their tongue. In an opaque relationship, the link between mouth gesture and manual sign is purely conventional. For example, the sign IMPOSSIBLE_PA_PA and the associated mouth gesture [pa pa] are not semantically related.

a. <u>tp</u>
ICE_CREAM_EAT

b. <u>tp</u>
LIKE.NOT

c. <u>[pa pa]</u>
IMPOSSIBLE_PA_PA

In some cases, the articulatory features of the mouth gesture are associated to the meaning through a metaphorical relation. For instance, protrusion of the tongue frequently suggests negative connotation, occlusives suggest immediacy, and lengthening of the mouth gesture indicates temporal continuity.

Mouth gestures not only contribute to the formation of signs, but they can also be used to convey specific adverbial meanings [LEXICON 3.5].

1.5.2 Mouthings

LIS signs are frequently accompanied by mouthings, the voiceless reproduction of the corresponding Italian words. This fact is probably due to the strong oralist tradition in Italian deaf education. There is an ongoing debate about the status of mouthings. Indeed, it is not yet clear whether they constitute a phonological building block of signs or a case of code blending (i.e. simultaneous use of two languages). Assessing which of these two hypotheses is correct falls out of the scope of this grammar. The section dealing with the non-native lexicon [LEXICON 2.2.3] further discusses the role of mouthings in the lexicon.

It has been observed that, in spontaneous production, LIS signers tend to produce more mouthings than mouth gestures. The use of mouthings along with signing does not appear systematic since it varies from signer to signer and is influenced by various social variables, such as the extra-linguistic context, the interlocutor(s), and the signer's educational background.

As for the linguistic functions, mouthing usually co-occurs more with nouns and adjectives and less frequently with verbs. It should be noted that functional elements of Italian such as plural morphemes and tense morphemes are not reproduced in the mouthings co-occurring with LIS signs. As default, those associated with nouns reproduce the masculine singular form and those associated with verbs reproduce the infinitive or past participle form.

The semantic relationship between mouthing and sign can be of different types. First, the mouthing and the manual sign can be semantically equivalent. For example, the sign MAN (Ita. *uomo*) is accompanied by the mouthing 'uomo'.

<u>'uomo'</u>
MAN

Second, the mouthing can complete the meaning conveyed by the manual sign so that the two components combine with each other and create a complex syntagmatic unit. For example, the sign GO accompanied by the mouthing *casa* 'house' means to go home.

<u>'casa'</u>
GO
'(To) go home'

Third, the mouthing can add a more specific meaning to the manual sign (hyponymy). For example, the mouthing *abete* 'fir' can be combined with the sign TREE to specify which kind of tree is intended.

'abete'
TREE
'fir'

Fourth, the mouthing can disambiguate manually homonymous forms. For example, there is a sign in LIS articulated with both hands with V handshape that can be used to refer to both vegetables and pasta. In this case, the mouthing specifies which of the two meanings is intended (*verdura* 'vegetable' or *pasta* 'pasta').

a.   'verdura'
VEGETABLE/PASTA
'vegetable'

b.   'pasta'
VEGETABLE/PASTA
'pasta'

Fifth, the mouthing can explicitly define what a classifier sign refers to. For example, the classifier CL(flat open L): 'round_small_object' can be accompanied by the mouthing *proiettile* 'bullet' to specify which referent is intended.

         'proiettile'
CL(flat open L): 'round_small_object'
'bullet'

Sixth, the mouthing can explicitly indicate what an initialised sign (a sign whose handshape represents the first letter of the corresponding Italian word) refers to. For example, to refer to the Italian politician Bersani, signers can use the handshape corresponding to letter B and the full mouthing reproducing the name.

'bersani'
BERSANI

This is a case of single-letter sign [LEXICON 2.2.2].

    In spontaneous signing, if mouthing co-occurs with a manual sign, these two components tend to be isochronous, i.e. have the same duration. For this reason, sometimes mouthing undergoes alterations

such as lengthening and truncation to match the timing of the manual sign. For example, the mouthing associated with the sign WASH (*lavo*) may be realised with the lengthening of the first vowel.

1.5.3 Other non-manuals
To be developed.

Information on Data and Consultants

The descriptions in this chapter are based on the references below. The linguistic data illustrated as images and video clips have been checked through acceptability judgments and have been reproduced by Deaf native-signing consultants.

Authorship Information

Lara Mantovan

References

Ajello, R.; Mazzon, L.; Florida, N. (1997). "Gesti linguistici: la labializzazione in LIS". *Quaderni della sezione di glottologia e linguistica*. Chieti-Pescara: Università degli Studi "G. d'Annunzio" Chieti-Pescara, 5-45. [1.5]

Ajello, R.; Mazzon, L.; Florida, N. (2001). "Linguistic Gestures: Mouthing in Italian Sign Language". Braem, P.B.; Sutton-Spence, R (eds), *The Hands are the Head of the Mouth: The Mouth as Articulator in Sign Languages*. Hamburg: Signum-Verlag, 231-46. [1.5]

Amorini, G.; Lerose, L. (2012). *Studi linguistici in Lingua dei Segni Italiana (LIS) Analisi fonologica e le funzioni deittiche ed avverbiali, e aspetti metaforici in parametri formazionali* [PhD dissertation]. Klagenfurt: Alpen-Adria-Universität, (38-111) [1.1-1.3], (122-8) [1.4]

Aristodemo, V.M.V. (2013). *The Complexity of Handshapes: Perceptual and Theoretical Perspective* [MA dissertation]. Venice: Ca' Foscari University of Venice. [1.1.1]

Bertone, C. (2011). *Fondamenti di Grammatica della Lingua dei Segni Italiana*. Milano: Franco Angeli. (19-34) [1.1-1.3], [1.5]

Bianchini, C. (2006). *Analogie ed omologie nell'indicazione delle relazioni spazio-temporali in codici diversi* [MA dissertation]. Perugia: Università degli Studi di Perugia, (56-123) [1.1-1.3], [1.5]

Fontana, S.; Raniolo, E. (2015). "Interazioni tra oralità e unità segniche: uno studio sulle labializzazioni nella Lingua dei Segni Italiana (LIS)". Schneider, G.M.; Janner, M.C.; Élie, B. (eds), *Vox & Silentium*. Bern: Peter Lang, 241-58 [1.5]

Fontana, S.; Roccaforte, M. (2015). "Lo strutturarsi e il destrutturarsi dei suoni nell'interazione con la Lingua dei Segni Italiana LIS". Vayra, M.; Avesani, C.; Tamburini, F. (eds), *Il farsi e il disfarsi del linguaggio. Acquisizione,*

mutamento e destrutturazione della struttura sonora del linguaggio. Milano: Edizioni AISV, 371-81. [1.5]

Fontana, S; Fabbretti, D. (2000). "Classificazione e Analisi delle forme labiali della LIS in storie elicitate". Bagnara, C.; Chiappini, G.; Pia, M.; Ott, M. (eds), *Viaggio nella città invisibile*. Pisa: Edizioni Del Cerro, 103-11. [1.5]

Lerose, L. (2012). *Fonologia LIS*. Tricase: Libellula Edizioni, (4-69) [1.1-1.3], [1.5], (70-6) [1.4]

Radutzky, E. (ed.) (1992). *Dizionario bilingue elementare della lingua italiana dei segni*. Roma: Edizioni Kappa. [1.1-1.5]

Russo Cadorna, T.; Volterra, V. (2007). *Le lingue dei segni. Storia e semiotica*. Roma: Carocci. (59-70) [1.1-1.3]

Volterra, V. (ed.) (2004). *La Lingua dei Segni Italiana. La comunicazione visivo-gestuale dei sordi*. 2a ed. Bologna: il Mulino. (23-158) [1.1-1.3], (159-78) [1.5]

List of authors

Chiara Branchini Lexicon 3.9; Syntax 2.1; Syntax 3.1; Syntax 3.4; Syntax 3.5.1; Syntax 3.5.2; Syntax 3.5.3; Syntax 3.5.4; Syntax 3.5.7.2; Syntax 3.5.7.5

Chiara Calderone Socio-historical background; Syntax 2.2; Syntax 2.6; Syntax 3.2; Pragmatics 1.1; Pragmatics 1.2; Pragmatics 1.3; Pragmatics 1.4; Pragmatics 2; Pragmatics 4; Pragmatics 5; Pragmatics 7; Pragmatics 8; Pragmatics 9; Pragmatics 10; Pragmatics 11

Carlo Cecchetto Syntax 1.1; Syntax 1.2; Syntax 1.3; Syntax 2.5; Syntax 3.3; Syntax 3.5.5; Syntax 3.5.6; Syntax 3.5.7.1; Syntax 3.5.7.2; Syntax 3.5.7.4; Pragmatics 3; Pragmatics 6

Alessandra Checchetto Lexicon 3.1; Lexicon 3.2.1; Lexicon 3.2.2; Lexicon 3.2.3; Lexicon 3.5; Morphology 2.1.2.1; Morphology 2.2.4; Syntax 1.4; Syntax 1.5; Syntax 2.3; Syntax 3.5.5; Syntax 3.5.6; Syntax 3.6; Syntax 3.7

Elena Fornasiero Lexicon 1; Lexicon 3.1; Lexicon 3.2.2; Lexicon 3.3; Morphology 2.1.1; Morphology 2.1.2.1; Morphology 2.1.2.2; Morphology 2.2.1; Morphology 2.2.2; Morphology 2.2.3; Morphology 3; Morphology 4; Morphology 5

Lara Mantovan Phonology; Lexicon 2; Lexicon 3.4; Lexicon 3.6; Lexicon 3.7; Lexicon 3.10; Syntax 2.4; Syntax 4; Syntax 5; Pragmatics 1.5

Mirko Santoro Morphology 1

Affiliation information of authors

Chiara Branchini, Chiara Calderone, Elena Fornasiero and Lara Mantovan	Ca' Foscari University of Venice
Carlo Cecchetto	University of Milan-Bicocca
	SFL (CNRS & Université Paris 8)
Alessandra Checchetto	University of Milan-Bicocca
Mirko Santoro	SFL (CNRS & Université Paris 8)

Deaf consultants

Gabriele Caia
Filippo Calcagno
Nino D'Urso
Anna Folchi

Mauro Mottinelli
Rosella Ottolini
Mirko Pasquotto

A Grammar of Italian Sign Language (LIS) is a comprehensive presentation of the grammatical properties of LIS. It has been conceived as a tool for students, teachers, interpreters, the Deaf community, researchers, linguists and whoever is interested in the study of LIS. It is one output of the Horizon 2020 SIGN-HUB project. It is composed of six Parts: Part 1 devoted to the social and historical background in which the language has developed, and five Parts covering the main properties of Phonology, Lexicon, Morphology, Syntax and Pragmatics. Thanks to the electronic format of the grammar, text and videos are highly interconnected and are designed to fit the description of a visual language.

Università
Ca'Foscari
Venezia