
2 Derivation

Summary 2.1 Manual markers of derivation. – 2.2 Non-manual markers of derivation.

The present chapter illustrates the morphological processes that LIS employs to derive new lexemes from existing ones. As a word formation process, derivation differs from compounding [MORPHOLOGY 1] in that it consists of the combination of affixes (i.e. bound morphemes) with a stem, namely a free word or sign functioning as base. The peculiarity of derivational morphology in LIS, and in sign languages in general, is that affixes can be realised both manually [MORPHOLOGY 2.1.] and non-manually [MORPHOLOGY 2.2], and their addition to the stem can be either sequential or simultaneous: i) sequential derivation consists of the concatenation of a base sign and an affix, whereas ii) simultaneous derivation is marked through the modification of one or more phonological parameters [PHONOLOGY 1] of the manual sign (stem modification), or through the addition of specific non-manual markers, simultaneously articulated with the manual sign. Nonetheless, derivational processes can also imply no modification at all, thus realising zero derivation or conversion.

As in other sign languages, simultaneous processes are the most common in LIS, though we find sequential operations as well. In the remainder of this chapter, we will describe and provide examples for each strategy.

2.1 Manual markers of derivation

Derivation can be marked both manually and non-manually, depending on the type of morpheme that is added to the base sign. The present section concerns derivational processes involving manual markers, which can be either i) sequential, when consisting of the addition of a manual segment to the base sign (i.e. the stem), or ii) simultaneous, when involving the modification of the formational parameters of the manual base sign (stem modification).

2.1.1 Sequential derivation

Processes of sequential derivation result in morphologically complex signs composed of a stem, a free lexical element, and an affix, which is a bound morpheme that cannot occur alone. The affix carries a specific meaning and its presence leads to a phonological reduction of the base sign. In so doing, the resulting construction behaves like a single lexical unit.

This process is clearly displayed in the difference between the sign BEAUTIFUL (a) and its intensive counterpart (b). In (b), we see that the presence of the intensive morpheme, glossed 'INT' reduces the articulation of the sign BEAUTIFUL. The intensive morpheme is illustrated in (c) for clarity.

a. BEAUTIFUL



b. BEAUTIFUL-INT
'Really beautiful'



c. Intensive morpheme

Manual sequential processes can be marked by dedicated non-manual markers.

It is important to notice that sequential processes are rare in LIS,

as in other sign languages. However, we do find some examples of manual sequential derivation, which are described below.

2.1.1.1 Agentive

Across languages, agentive markers are employed to derive agentive nouns from verbs or other non-agentive nouns. In LIS, agentive nouns are often distinguished from the corresponding verb by means of simultaneous derivation involving the modification of phonological features (explored in [MORPHOLOGY 2.1.2.1]). As for agentive nouns derived from other non-agentive nouns, instead, LIS can employ the sign PERSON, functioning as agentive marker. Consider the pair below.

- a. CAR 
- 'autista'
- b. CAR ^ PERSON 
'Driver'

In the examples above, we notice some important features: i) the sign PERSON in (b) follows the sign CAR, which is phonologically reduced in movement; ii) the mouthing [PHONOLOGY 1.5.2] of the Italian word *autista* ('driver') spreads on both the signs CAR and PERSON; iii) the signs CAR and PERSON form a lexical unit. In so doing the sign PERSON could either be considered a derivational morpheme deriving an agentive noun from a non-agentive noun, or it could be considered the second member of the compound CAR ^ PERSON since it is a sign that can also occur alone [MORPHOLOGY 1]. Accounting for the morphological nature of PERSON is not straightforward because its articulation is not systematic and not obligatory among signers. As shown in the example below, the sign PERSON is not produced after the sign CAR, it is only the mouthing *autista* ('driver') that allows to identify the agentive noun.

- 'autista'
- CAR IX₃ DRIVE PHONE SPEAK 
- 'The driver talks on the phone while driving.'

Mouthings are also crucial in cases of homophonycity between the sign for the agentive noun and the verb (further details are discussed in [MORPHOLOGY 2.2.4]). In the example below, the two signs are distinguished by the mouthings of the corresponding Italian words, *balle-*

rina ('dancer') and *balla* ('dances') and are articulated in two different points of the signing space.

| | | |
|--------------------------|----------------|---|
| <u>'ballerina'</u> | <u>'balla'</u> | |
| DANCER | DANCE |  |
| 'The dancer is dancing.' | | |

Therefore, it seems that LIS can rely on several means to mark agentivity and does not necessarily need a dedicated element. What is crucial is that PERSON is necessary to convey plurality by being reduplicated, as in the example below.

| | |
|--|---|
| <u>'autisti'</u> | |
| CAR^PERSON++ ALL DRIVE PHONE SPEAK |  |
| 'All the drivers talk on the phone while driving.' | |

The mouthing *autisti* ('drivers') evokes the plural form of the corresponding Italian word and spreads on both CAR and PERSON++. In these instances, PERSON loses its lexical meaning and functions as a morphosyntactic marker of plurality. These instances suggest that in the future, the sign PERSON could grammaticalise into the agentive affix, but these processes are known to take time to happen.

2.1.1.2 Negative

Negative particles can be employed in LIS to realise negative derivation. This morphological process is a word-formation process that derives the negative counterpart of existing nouns or adjectives. Therefore, in this section we do not address negation of predicates or sentences since they are inflectional phenomena explored in [MORPHOLOGY 3.5] and [SYNTAX 1.5].

The most common strategy for negative derivation consists in the articulation of the negative sign NOT after the noun or adjective. Compare (a) with the negative counterpart in (b) below.

| | |
|------------------|---|
| a. ALCOHOLIC |  |
| b. ALCOHOLIC^NOT |  |
| 'Non-alcoholic' | |

The negative marker NEG_S can be employed to convey the meaning 'without'. In the example below, NEG_S follows the sign SUGAR in order to describe which type of candy a person with diabetes can eat.

CANDY_a IX(dem)_a SUGAR[^]NEG_S EAT BE_ABLE
 '(S/he) can eat the sugar-free candy.'



Both the constructions ALCOHOLIC[^]NOT and SUGAR[^]NEG_S form lexical units. The addition of the negative particle can be considered a derivational process in that it is employed to derive a new lexical item. However, the morphological status of the negative particle as suffix or member of a compound is not clear due to the great variability in use and productivity among signers.

2.1.1.3 Attenuative

In LIS, we do not find instances of sequential derivation to convey attenuation. However, LIS can employ a dedicated manual sign (glossed 'ATTENUATIVE') to mark attenuation of colours, conveying that they are vague or less strong with reference to the standard. A few examples are shown below.

_____ fe
 _____ sq
 _____ tp
 a. LIGHT_BLUE ATTENUATIVE
 'Bluish'



_____ fe
 _____ sq
 _____ tp
 b. GREEN ATTENUATIVE
 'Greenish'



As the examples show, the sign conveying the attenuative is marked by specific non-manual markers consisting in furrowed eyebrows (fe), squinted eyes (sq) and tongue protrusion (tp), which convey the concept of vagueness related to the colour. This sign is specifically employed to convey attenuation of colours and thus cannot occur alone. However, it does not show the other properties usually displayed by derivational suffixes (i.e. productivity, phonological reduction), so it is better to consider it an independent lexical sign. It is possible, though, that in future it will grammaticalise in the attenuative morpheme, but this process takes time and LIS, as other sign languages, is still too young to display morphological processes of this kind.

A different strategy attested concerns the possibility to employ the adverb `MORE_OR_LESS` or adjectives like `LIGHT` which convey attenuation following the colour adjective. We provide an example for each strategy below for sake of completeness.

a. `YELLOW MORE_OR_LESS`
'Yellowish'

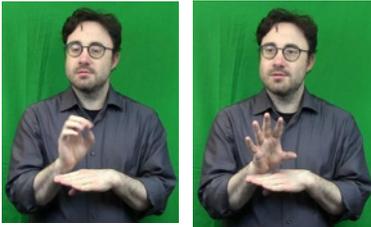


b. `RED LIGHT`
'Reddish'



2.1.2 Simultaneous derivation

Simultaneous derivational processes consist in the modification of one or more formational parameters of the stem (i.e. the manual sign) to derive a new lexeme with a specific meaning. For instance, in LIS some agentive nouns differ from the corresponding verb only in few phonological features, such as the articulation or the occurrence of specific non-manual markers or mouthings. To illustrate, consider the pair below. The verb `TEACH` and the agentive noun `TEACHER`, despite being very similar, differ in the point of contact between the two articulators: the wrist for the verb (a), and the forearm/elbow for the noun (b).



a. `TEACH`



b. `TEACHER`

Further strategies of simultaneous derivation are illustrated in the next sections.

2.1.2.1 Noun-verb pairs

In LIS, it is not always easy to distinguish a noun sign from a verb sign, at least at first sight. Factors that allow us to distinguish if the sign is a noun or a verb are the linguistic context, mouth actions and movement articulation.

Often, the position occupied by the sign within the sentence is a way to understand its syntactic role, whether the sign is a noun or a verb. Below we show an example in which both the noun *SCISSORS* and the verb *CUT_WITH_SCISSORS* appear in the same sentence:

IX₁ DRAW PERSON++ . DRAW DONE THEN SCISSORS
CUT_WITH_SCISSORS 
 ‘I drew some people. After that I cut them with scissors.’

As expected, the instrumental noun *SCISSORS* precedes the sentence-final verb *CUT_WITH_SCISSORS*.

Another factor that can help to distinguish between a noun and a verb sign is the labial articulation of the corresponding Italian word or of part of it (mouthing), which generally appears on nouns or adjectives, rather than on verbs [PHONOLOGY 1.5.2]. Verbs, on the other hand, are often accompanied by mouth gestures [PHONOLOGY 1.5.1] or no labial movement at all. In the examples below, the verb *DRIVE* (a) and the noun *CAR* (b) differ in that the verb is marked by specific non-manuals (puffed cheeks ‘pc’ and lips protrusion ‘lp’), which are usually found with verbs, whereas the noun has no specific non-manual marking nor labial movement. The role of mouthing in noun-verb pairs in LIS is discussed in [MORPHOLOGY 2.2.4].



pc
lp

a. DRIVE



b. CAR

Furthermore, noun and verb signs in LIS can be distinguished by considering the different movement performed by the manual sign. It may concern: i) movement articulation, ii) movement amplitude, iii) movement directionality, and iv) duration.

As for movement articulation, in nouns the movement is usually short, tense, repeated and contained, while in verbs it is never contained and can be single, repeated, or continued. Sometimes the difference is in the virtual absence of movement in the noun and, conversely, movement or more complex movement in the verb sign. For example, this phenomenon has been observed in the articulation of the verb PLAY with respect to the articulation of the noun TOY, as shown in the example below.

SON POSS₁ IX TOY NEW IX₃ PLAY
'My son plays with his new toy.'



As for movement amplitude, the verb movement is wider than the noun movement. For example, this phenomenon has been observed in the pair CHAIR (a) and SIT (b), where the verb is articulated in a broader way.

a. CHAIR



b. SIT



In the ‘open and shut’ signs, the movement is bidirectional when the sign is a noun, while the movement is single and has a monodirectional movement when the sign is a verb. An example is the pair of signs BOOK (a) and OPEN_THE_BOOK (b).

a. BOOK



b. OPEN_THE_BOOK



The execution of the verb tends to be longer than that of the noun. In some cases, the length of the verb may be twice the length of the noun. An example is the pair ROCKET (a) and CL(G): ‘rocket_take_off’ (b).

‘missile’

a. ROCKET

lppcb. CL(G): ‘rocket_take_off’
‘The rocket is taking off.’

The examples above are further evidence that usually stem modification is combined with the simultaneous articulation of mouthings or dedicated non-manual markers. The noun ROCKET (a) is accompanied by the labial articulation of the corresponding Italian word *missile*. On the other hand, the corresponding classifier predicate CL(G): ‘rocket_take_off’ (b) occurs with the mouth gestures puffed cheeks (pc) and lips protrusion (lp).

2.1.2.2 Attenuative

As introduced in [MORPHOLOGY 2.1.1.3], attenuative markers are used to denote that a concept is vague or less strong. The present section describes simultaneous derivational processes in which modifications of manual parameters of the stem and articulation of dedicated non-manual markers occur together to convey attenuation.

In LIS, attenuative of adjectives can be conveyed through dedicated non-manual markers consisting of furrowed eyebrows (fe),

lips protrusion (lp) and head tilting left- or rightwards (ht-left/right). The manual sign for the adjective with which they occur is slightly hold at the beginning of its articulation and can display a narrower movement. The examples below show the difference between the citation form of the adjective COLD (a) and its attenuative version (b).

a. COLD



fe
lp
ht-left

b. COLD



'Not very cold'

The examples below show the difference between the citation form of the adjective INTELLIGENT (a) and its attenuative version (b).

a. INTELLIGENT



fe
lp
ht-left

b. INTELLIGENT



'Not very smart'

The same non-manuals can also be employed to convey the vagueness of colour adjectives. To illustrate, we provide below the citation form of YELLOW (a), produced by a signer whose dominant hand is the left one, and its vague version (b), produced by a signer whose dominant hand is the right one.

a. YELLOW



lp
ht-left/right

b. YELLOW



'Yellowish'

2.2 Non-manual markers of derivation

Derivational processes can also involve non-manual markers alone. Specifically, in these constructions dedicated non-manual markers are articulated to modify the meaning of the base manual sign, thus functioning as non-manual morphemes. To illustrate, in the example below the negative counterpart of the adjective SATISFIED is derived by adding the non-manual headshake (hs).

| | | |
|------------------------------------|-----------|---|
| <u>top</u> | <u>hs</u> | |
| JOB PE IX ₁ | SATISFIED |  |
| ‘I am not satisfied about my job.’ | | |

Very often the articulation of non-manuals combines with modifications of the manual parameters of the stem. This is particularly evident in morphological constructions conveying diminution or augmentation and intensification. The following sections are devoted to the description of the simultaneous derivational processes involving specific non-manual markers in LIS.

2.2.1 Diminutive and augmentative

Diminution and augmentation of the size of an object can be conveyed in LIS through dedicated non-manual markers which are simultaneously articulated with the noun they modify. In some instances, the manual nominal sign displays a reduced or enlarged articulation to encode diminution or augmentation, respectively. This simultaneous derivational process does not change the lexical category of the base (i.e. the manual sign). We provide some examples below.

| | |
|---------------------------|---|
| <u>sq</u> | |
| <u>tp</u> | |
| a. BOX |  |
| ‘Little box’ (diminutive) | |

| | |
|--------------------------|---|
| <u>fe</u> | |
| <u>tl</u> | |
| b. BOX |  |
| ‘Big box’ (augmentative) | |



sq
tp

c. TIE

'Little tie' (diminutive)

(recreated from Petitta et al. 2015, 160)



fe
tl

d. TIE

'Big tie' (augmentative)

(recreated from Petitta et al. 2015, 160)

e. dom: tp tl tp tl tp
n-dom: STRIPE



'Alternating thin and thick stripes' (diminutive/augmentative)

Focusing on non-manual markers, the examples above show that diminution is encoded through squinted eyes (sq) and tongue protrusion (tp), whereas augmentation is conveyed through furrowed eyebrows (fe) and teeth on the lower lip (tl). Crucially, these non-manual markers are not lexically specified for the adjectives *SMALL* and *BIG*, respectively, therefore they constitute clear examples of non-manual morphemes encoding diminution and augmentation. As far as the manual sign is concerned, it can display modifications involving distalisation (a) or proximalisation (b) [PHONOLOGY 3.1.3.2], a change of the handshape

(c) and (d), or a change in the degree of flexion in the base joint (e).

It is important to notice that both the simultaneous articulation of the non-manual morphemes and the modifications of the manual sign are constrained to some extent. The occurrence of non-manual morphemes involving the mouth is constrained by mouthings [PHONOLOGY 1.5.2]: when the nominal sign is accompanied by the voiceless articulation of the corresponding Italian word, the mouth cannot articulate the non-manual marker dedicated to diminutive or augmentative. Thus, diminution or augmentation are conveyed solely by means of manual modifications. This strategy is illustrated below: the sign STREET is accompanied by the mouthing of the corresponding Italian word (*strada*) and thus it conveys augmentation by enlarging the distance between hands.

'strada'

STREET

'Large street' (augmentative)



The morphological modification of the manual sign is phonologically constrained as well. Nouns whose phonological structure does not allow to encode features of size through modifications of the articulation or of the joints configuration need another element to encode size information, namely a size and shape specifier (SASS) [MORPHOLOGY 5.2]. This strategy is adopted with:

- i) one-or two-handed nouns articulated on the body which cannot modify the handshape to encode size;

_____ sq
_____ tp
a. BED SASS(unspread 5): 'little'
'Little bed' (diminutive)



_____ sq
_____ tp
b. BACKPACK SASS(flat open 4): 'little'
'Little backpack' (diminutive)



- ii) two-handed nouns articulated in the neutral space displaying secondary movement [PHONOLOGY 1.3.2]. Particularly, nominal signs displaying repeated alternating movement (a) or involving a change in wrist orientation (b) do not allow to encode size through manual modifications;

$$\begin{array}{c} \text{sq} \\ \text{tp} \end{array}$$
 a. CAR SASS(unspread curved open 5): 'little'
 'Little car' (diminutive) 

$$\begin{array}{c} \text{fe} \\ \text{tl} \end{array}$$
 b. SHOE SASS(flat open 4): 'big'
 'Big shoe' (augmentative) 

iii) two-handed nouns articulated in the neutral space but displaying a contact between hands.

$$\begin{array}{c} \text{sq} \\ \text{tp} \end{array}$$
 a. BOOK SASS(G): 'little_square'
 'Little book' (diminutive) 

$$\begin{array}{c} \text{fe} \\ \text{tl} \end{array}$$
 b. HOUSE SASS(spread 5): 'big'
 'Big house' (augmentative) 

Simultaneous processes of diminution and augmentation are also semantically constrained. First, nouns referring to animate entities, such as DOG, need a SASS to encode size.

$$\begin{array}{c} \text{sq} \\ \text{tp} \end{array}$$
 DOG SASS(unspread curved open 5): 'little'
 'Little dog' (diminutive) 

Second, abstract nouns cannot convey diminution and augmentation through morphological means. However, the sign PARTY constitutes an exception. As we can see in example (a) below, the manual sign can display a proximalised movement (at the elbow joint) and be marked by furrowed eyebrows (fe) and open mouth (om) to convey the meaning 'big party'. The manual sign can also display movement distalisation (at the wrist joint) but in this case the distalisation of movement encodes pejorative rather than diminutive features, thus conveying the meaning 'boring/awful party'. This is further specified through the non-manuals furrowed eyebrows and mouth corners down (md). We report this example in (b) for completeness.

fe
om
 a. PARTY 
 'Big party' (augmentative)

fe
md
 b. PARTY 
 'Boring/awful party' (pejorative)

2.2.2 Intensive

LIS can convey a high degree on the semantic scale of adjectives through the combination of modifications of the adjectival sign with the articulation of dedicated non-manual markers. Specifically, the movement and articulation of the manual sign differ from the sign in its citation form in that: i) the movement can be slower and slightly hold at the beginning of the articulation; ii) the articulation can be enlarged or reduced. The dedicated non-manual markers are furrowed eyebrows (fe) and, though less often, wide-open eyes (we) or squinted eyes (sq). Usually these non-manual markers combine with the mouthing of the first syllable of the Italian word for the adjective: [fe] for *felice* (Eng. 'happy') in (d), and [ve] for *vecchio* (Eng. 'old') in (e), which spreads over the whole sign. However, some variability is found. We illustrate these strategies with the examples below.

fe
we
 a. TALL 
 'Very tall'

fe
 b. COLD 
 'Very cold'

fe
sq
 c. FAR 
 'Very far'

fe
[fe]
d. HAPPY
'Very happy'



fe
[ve]
e. OLD
'Very old'



Intensification of colour adjectives is slightly different in that it is conveyed through the non-manual marker wide-open eyes simultaneously articulated with the manual sign.

we
a. GREEN
'Bright green'



we
b. RED
'Bright red'



2.2.3 Proximity

Proximity, either temporal or spatial, can be marked in LIS by means of non-manuals alone.

Temporal proximity is conveyed through squinted eyes (sq) and slightly grinding teeth (gt) modifying the sign RECENTLY, conveying that something happened just few seconds before. This is illustrated below.



sq
gt
RECENTLY

lp
pc
 CUT_WITH_KNIFE



In the next figure the sign KNIFE is produced with the mouthing corresponding to the Italian word *coltello* ('knife').

'coltello'
 KNIFE



The phenomenon has been consistently observed with concrete verbs. However, it is also present with abstract verbs, possibly less systematically. We can observe the occurrence of the phenomenon with the abstract verb IMAGINE in the following example.

lp
pc
 IMAGINE



Conversely, in the example below we can observe that the noun IMAGE is accompanied by the mouthing corresponding to the Italian word *immagine* ('image').

'immagine'
 IMAGE



Information on Data and Consultants

The descriptions in this chapter are based partially on the references below and on the elicitation of new data collected by the authors. The linguistic data illustrated as images and video clips have been checked through acceptability judgments and have been reproduced by Deaf native-signing consultants involved in the SIGN-HUB Project.

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