Part 5: **Syntax**

Chapter 0 Preliminary considerations

0.1 What is syntax?

Languages have a component that is responsible for the combination of simple items, such as words or signs, into more complex entities, namely phrases, clauses, and sentences. This combinatorial component of language is called syntax.

Syntax is responsible for how sentences are constructed. Human languages, including of course sign languages, have a recursive hierarchical syntactic organization, by which words and signs are combined to form phrases, which can also be combined to form more complex entities, clauses, which in turn can combine to form sentences.

Sequences of words/signs that conform to the rules of syntax are said to be well-formed or grammatical, and those that violate the syntactic rules are therefore ill-formed or ungrammatical. Conventionally, ungrammatical sentences are signalled by an asterisk preceding the string, as in the following example in LIS.

a. PROFESSOR TEACH NOT
b. *PROFESSOR NOT TEACH (LIS)

As is made clear by the ungrammaticality of (b), part of what syntax does is order words/signs: in LIS, as shown by the example, negation follows the verb and does not precede it, and this is described as a rule of syntax. Many sign languages, LIS included, are known to have a relatively free word order, but constraints like the one illustrated above can always be found, showing that order is indeed a relevant dimension even in those languages.

But word/sign **order** is not the only dimension that is relevant for syntax.

Another crucial syntactic dimension is **agreement**, i.e. the relation by which one constituent shares some properties with some other constituent in the same environment. For example, many verbs in many sign (and spoken) languages can agree with their arguments. In the LIS example above, the orientation of the sign for TEACH can be modified to include the location in space associated to the teacher and/or his/her student.

Both order and agreement are known to be **structure dependent**: syntax does not order and put in relation single words/signs, but rather hierarchically organized constituents.

This part is devoted to outline the various domains of syntactic structure, describing for each of them the principles of their internal organization in terms of order, agreement and other dependency phenomena.

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0.2 Organization of the syntax part

We have chosen to organize the Syntax part in a very traditional way, by first introducing sentence types, then presenting the various aspects of clause structure, and then describing coordination and the various types of subordination. Finally, we devote three chapters to the internal structure of noun phrases, adjectival phrases, and adverbial phrases.

The terminology that we use in most cases is not theory oriented and not particularly technical. Instead, we have used linguistic terms that are as much as possible shared among linguists working on language description, no matter whether this happens from a theoretical, a purely descriptive, or a typological point of view. This is why, for example, in the chapter dedicated to clause structure we did not include any section devoted to the CP (Complementizer Phrase) area, the IP (Inflectional Phrase) area, or the VP (Verb Phrase) area (all concepts defined in the generative grammar framework). The starting point is argument structure, its modifications, its relation to grammatical structure and how this defines word order.

The part might appear as non-uniform in many cases, and this might be due to a number of reasons.

In some cases, the aspect to be described has received much attention both in spoken language linguistics and in sign language linguistics, and there is a lot to start from and a lot to be said in order to guide the grammar writer in his/her description of the relevant aspect of the grammar. This is true, for example, for the section on interrogatives, which is very detailed. At the other extreme, very little is known about exclamatives in sign and spoken languages, and the Manual only contains very general recommendations and descriptive categories that mainly come from research on spoken languages.

In some cases we were able to fill in the gaps and to progress in our understanding of the phenomenon to be described even when no explicit literature was available, and we included original findings as the starting point for the relevant section. This is the case of the imperative section (1.3), an area of sign language grammar about which very little had been published before we launched a specific research project to gather information and provide the guidelines for grammar writers. The same is true for passives (2.1.3.2), where specific research was implemented by a SignGram team. But it was not possible to do this in all cases, and some sections contain generic guidelines not specifically oriented towards sign language linguistics but general recommendations concerning non manual markers, simultaneity, and other modality specific features. Again, exclamatives (1.4) is a good example of an outline section more meant as an incentive for research and descriptive work than as a full-fledged blueprint of a chapter.

0.3 How to use the syntax part

Although we strived to make the discussion of each topic as self-contained as possible, the Syntax part is not an isolated piece of work, and should not be read or used as such. It interacts crucially and fruitfully with the other parts of the Blueprint.

The exact division of labour in particular with the Semantics part has been in many cases difficult and controversial. In all the difficult cases, we opted for the simplest solution: we only briefly mentioned semantic aspects when they were necessary in order to define and delimitate the syntactic phenomenon, and only restricted the treatment to aspects concerning word order and in general grammatical facts. An example of this difficult divide is Section 3.5 on adverbial clauses: each type of adverbial clause needs some semantic information in order to be defined, which we kept to the minimum in this section, and developed in the Semantics part. This entails that the syntax of many phenomena really needs to be completed and integrated with the semantics of the same construction, and we strongly recommend the grammar writer to implement this integration by systematically using the hyperlinks that we provided in this work.

The same interaction and necessary integration holds with the Lexicon and the Morphology parts, although to a lesser degree: in many cases, some syntactically relevant elements are only described here in their syntactic behaviour, while their actual and concrete realization is given and discussed in the Lexicon and/or the Morphology parts. An example of this situation is *wh*-elements, which are described in their syntactic dimension, akin to word order and relation to non-manual markings and their syntactic extension (1.2.3), but are listed and described in the Lexicon part.

Finally, there are phenomena that really belong to all parts of the grammar and could not possibly be assigned to one component without missing some very important aspect. This is in particular the case of negation, which is clearly a syntactic phenomenon in that it has its own distributional and order dimension (described in Section 1.5), but is of course a crucial dimension of the semantics of proposition; it is expressed through morpho-lexical means and might affect prosody and other phonological aspects. In these admittedly few cases, we opted for redundancy, and the reader will find a relevant section in each of the parts of the Blueprint.

Chapter 1 Sentence types

1.0 Introduction

A sentence is a unit in which words are grammatically linked to make a statement or to describe something (typically via a declarative sentence), to express a command (typically via an imperative sentence), to elicit information from an addressee (typically via an interrogative sentence), or to convey surprise (typically via an exclamative sentence). Sentences can be classified according to two main dimensions: their type (declaratives, imperatives, interrogatives, and exclamatives) and their internal complexity. A sentence is simple when it consists of a single independent clause (‘Mohammed arrived on time’), while it is complex when it consists of a main and a subordinate clause (‘I think that Mohammed arrived on time’) or of two (or more) coordinate clauses (‘Mohammed arrived on time, and Sarah arrived late’).

In principle the number of subordinated clauses is unlimited ('John said that I think that Mohammed claimed that Kazuko is convinced that you arrived on time') although in practice there are limitations of the sentence length due to cognitive limitations (for example, working memory).

The dimension of sentence types and of complexity intersects. For example declaratives and interrogatives can be subordinated ('I think that Cheng arrived,' 'I wonder who arrived'). However, typically imperatives cannot be subordinated.

The typical sentence contains at least a predicative nucleus consisting of a subject and of a predicate (for example, in 'John is smart' the property of being smart is predicated of John, and in 'Mary thinks that John is smart' the property of thinking that John is smart is predicated of Mary). However there can be elliptical sentences with a minimal structure. For example, consider the question-answer pair 'Who arrived late? Fatima.' In this case, the single word utterance 'Fatima' can be considered a sentence as long as it is interpreted as the elliptical version of 'Fatima arrived late.' In this chapter the sentence type dimension is explored.

The most prominent categorization of sentences is according to their function: declarative, interrogative, imperative, and exclamative.

1.1 Declaratives

1.1.0 Definitions and challenges

Declaratives are probably the most common type of sentence in any given language. Declarative sentences are used to express statements, to make something known, to explain, or to describe. This means that declaratives are the dominant type of sentences in human communication. Prosodic features are usually neutral unless a specific part of the sentence is stressed for emphasis. In written documents, especially in essays and reports, most of the text consists of declaratives. Hence, when we support an idea or have a discussion or debate our arguments are mostly based on declarative sentences.

The simplest formula to construct a declarative is to use two constituents, a subject and a predicate. This is illustrated below, in English and ASL.

Maria likes cats.
JOHN LIKE CHOCOLATE
'John likes chocolate.' (ASL, Neidle et al. 2000: 81)

Declaratives can be simple sentences as above or more complex constructions with more than one coordinated [Syntax – Section 3.1] / coordinated declarative sentence as in the following English and ASL examples.

Maria likes cats but hates dogs.
We will meet at the bar and then we will go to the theater.

$_{1}$PERSUADE$_{3}$, BUT CHANGE MIND
'I persuaded her to do it but then I/she/he changed my mind.'
(ASL, Sandler & Lillo-Martin 2006: 300)

In terms of meaning, declaratives are subdivided into affirmatives and negatives [Syntax – Section 1.5] / negatives. An affirmative or positive sentence is used to express the validity or truth of a basic assertion while a negative sentence expresses its falsity. This quality of meaning is often referred to as polarity. Positive and negative sentences are illustrated below, in English and ASL.

Maria likes cats.
Maria doesn't like cats.

JOHN BUY HOUSE
'John is buying a house.' (ASL, Neidle et al. 2000: 81)

neg
JOHN NOT BUY HOUSE
'John is not buying a house.' (ASL, Neidle et al. 2000: 44)

Sign languages make use of declaratives just like spoken languages. However, the grammar writer will not easily find studies, journal papers, articles, or book chapters specially devoted to declaratives. As already discussed, declaratives are the most common type of sentences. Therefore, declaratives are the unmarked or most neutral type of sentence in comparison to the other three types. As such, declaratives are the compass for examining various grammatical structures. For instance, basic word order is usually determined by the word order of declarative sentences (Bussmann 1996). Furthermore, declaratives are a point of reference for defining the other three sentence types: interrogative [Syntax – Section 1.2] / interrogative, imperative [Syntax – Section 1.3] / imperative, and exclamative [Syntax – Section 1.4] / exclamative. Any analysis of these three sentence types must explain how they differ from declaratives. Moreover, declaratives feature in various analyses of coordination [Syntax – Section 3.1] / coordination, subordination [Syntax – Section 3.2] / subordination, and negatives [Syntax – Section 1.5] / negatives.

References

Main sources on declaratives in sign languages:

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1.2 Interrogatives

1.2.0 Definitions and challenges

1.2.0.1 Defining an interrogative

The term interrogative refers to a grammatical form that is specialized to elicit information from the addressee (as in the direct interrogative 'What have you done?') or to report a doubt or a similar attitude towards a certain propositional content (as in the indirect interrogative 'I wonder what you did'). Typically, interrogation is expressed by a full sentence, but sometimes a part of the interrogative sentence is unexpressed ('Any problem?' meaning 'Do you have any problem?'). Interrogatives are one of the four recognized sentence types, the other three major types being declaratives [Syntax –Section 1.1], exclamatives [Syntax – Section 1.4], and imperatives [Syntax – Section 1.3].

A potential confounding factor is that sometimes an interrogative can be used to express a command ('Could you pass me the salt, please?') and, conversely, an imperative can be used to elicit information from the addressee ('Tell me the name of the president'). Still, languages develop grammaticalized forms that are *typically* associated with interrogation and these forms are the topic of the present chapter in which we abstract away from the specific uses that these forms can have.

1.2.0.2 Types of interrogatives

It is possible to distinguish between polar interrogatives, alternative interrogatives, and content interrogatives.

Polar interrogatives are sometimes called yes/no interrogatives because they ask whether a certain state of affairs holds or not, so they are naturally answered by 'yes' or 'no'. A direct polar interrogative in English is 'Are you sick?', while an indirect polar interrogative in English is the embedded clause in 'I wonder whether you are sick.'

Alternative interrogatives are so called because they present two or more options for the reply. A direct alternative interrogative in English is 'Do you want coffee or tea?', while an indirect alternative interrogative is 'He asked me whether I preferred coffee or tea.'

Content interrogatives elicit a more elaborate answer than 'yes' or 'no' because they are used to ask the addressee to fill in some specific missing information. In many languages, they contain a specialized set of interrogative words or phrases that have a common morphological marking (*what*, *which*, *who*, *why*, *when,* etc.). Since in English this marking is the morpheme *wh-*, content interrogatives are sometimes called *wh*-interrogatives. The term *wh*-sign will be used for signs which roughly correspond to *wh*-words.

A direct content interrogative in English is 'What do you want?', while an indirect content interrogative is 'He asked me what I wanted.'

It is worth stressing that indirect interrogatives are typically embedded in declarative sentences, so the markers for interrogatives (for example, some of the non-manual markers, *wh*-signs, and interrogative particles) are expected to occur only in the embedded clause and not in the entire sentence. Furthermore, the distribution of *wh*-signs in direct interrogatives and indirect interrogatives may not be the same in a language.

1.2.0.3 Methodological challenges

In some languages interrogative words have systematic non-interrogative uses. This the case with *wh*-words in English, which have at least two well established uses in non-interrogatives, namely in relative clauses / relative clauses [Syntax – Section 3.4] ('the man who you met') and in exclamatives [Syntax – Section 1. 4] ('What a nice dress!'). The use of the same morphology for interrogatives and relatives appears to be an idiosyncratic property of Indo-European languages (and very few other languages). Since sign languages are not typologically related to Indo-European languages, there is no expectation that interrogative signs are used in relative clauses in sign languages. In fact, relativization is not expressed by interrogative signs in the sign languages for which a description of relative clauses is available.

Little is known about exclamatives in sign languages. However, since it is cross-linguistically common to find languages in which exclamatives resemble content interrogatives (Michaelis 2001), it would not be too surprising to find an interrogative sign with an exclamative meaning.

The grammar writer should be aware of the existence of rhetorical interrogatives, which are used more to assert something than to elicit a reply. Rhetorical interrogatives can be used if what is asserted is thought to be obvious or at least shared information in the context of utterance. Examples are 'Who would support cannibalism?' to express the meaning that nobody would support it, or 'Who does not like chocolate?' to assert that almost everybody likes chocolate. Although rhetorical interrogatives may not have a form distinct from the form of true interrogatives, they may have different intonation patterns. Similarly, sign languages may mark rhetorical interrogatives with special non-manual marking. A slightly different case of interrogatives that are not used to elicit information is so-called echo questions, as in 'You did WHAT yesterday?!!': echo questions are typically uttered to express surprise in reaction to a claim by the adressee, or to ask him/her to repeat the part of the previous utterance that causes surprise. Typically, echo questions have both syntactic and prosodic peculiarities.

A final caveat is that the influence of the dominant spoken language might complicate the picture of interrogatives. For example, it is not uncommon to find a sign language in which *wh*-signs are allowed either on the left or the right edge of the clause and the dominant spoken language allows *wh*-words only on the left edge. In these cases, it is conceivable that the possibility of having a *wh*-sign on the left edge of the clause is due to the influence of the spoken language. Although it is not easy

to resolve this issue, there are ways to investigate it. For example, the neutral order of a complex wh-phrase in LSC is noun/*wh*-sign (BOOK WHICH), although the canonical order in Catalan (WHICH BOOK) is also attested. In particular, the Catalan order is possible when the *wh*-phrase is in the left periphery of the clause, the normal position of *wh*-phrases in Catalan. However, when the *wh*-phrase occupies a right peripheral position of the clause (an option that is not available in Catalan) the order noun/*wh*-sign becomes mandatory. This can be taken as indirect evidence that the order with the *wh*-phrase in the left periphery is indeed a borrowing from Catalan. Similar ways to disentangle the issue of syntactic borrowing from the spoken languages can be envisaged.

1.2.0.4 Non-manual marking

When investigating interrogatives, the grammar writer should be aware of the fact that non-manual markers play an important role in interrogatives in sign languages. In many sign languages, the presence versus absence of non-manual markers is the only way to distinguish between declarative and interrogative utterances. Examples of non-manual markers in interrogatives include facial expressions such as eye contact with the addressee, eyebrow raise or lowering, change in head and body orientation, head nod, and head shake. For example, in HKSL, the sentence below without a brow raise would be the declarative sentence 'He will go to watch movies.'

y/n
IX$_3$ GO WATCH^MOVIE
'Will he go watch movies?' (HKSL, Tang 2006: 201)

Researchers have observed that sign languages may employ different non-manual markers for different types of interrogatives. Even for one type of interrogative, usually more than one non-manual marker is observed. The sequence of manual signs a non-manual marker co-occurs with is called the spreading domain of the non-manual marker. The spreading domain of a non-manual marker may be the entire utterance or a smaller constituent. If various *wh* non-manual markers occur in the same interrogative clause, their spreading domains may differ: while one non-manual marker may spread over the entire utterance, another may spread over the predicate and yet another may co-occur only with the interrogative word (in content interrogatives).

Furthermore, each non-manual marker may have a different (prosodic, syntactic, semantic or pragmatic) function.

Finally, non-manual markers may also change depending on the pragmatic conditions within which the interrogative is used; for instance, it has been reported for Israeli SL (Meir 2004: 104) that even though polar interrogatives are usually uttered with raised brows, open eyes, and head and body tilted forward, these may change depending on the intention of the signer. 'Do you have a car?' uttered, for instance, at the end of a social event may actually mean 'Can I have a ride with you?'. In such cases, the

polar interrogatives in Israeli SL is uttered with furrowed brows, a non-manual marker similar to those observed in content interrogatives. Similiarly, pragmatic factors may determine the type of non-manual marker that occurs in a content interrogative as well. For example, it has also been reported for Israeli SL that the facial expression associated with content interrogatives (furrowed brow) is replaced with a different expression if the interrogative does not require an answer but involves reproach (as in 'Why did you just walk out of my store with that shirt without paying?') (Meir & Sandler 2008). Thus, the grammar writer should be aware of the influence of pragmatic conditions on the use of non-manuals in interrogatives.

Interrogatives may also contain constituents that function as topics [Pragmatics – Section 4.2] / topic, i.e. constituents that link the current utterance to the previous discourse. In many sign languages, topics are marked non-manually, and when they occur in interrogatives, they are excluded from the spreading domain of an interrogative non-manual marker. The following ASL sentence (taken from the corpus of the National Center for Sign Laguage and Gesture Resources, available on-line at http://secrets.rutgers.edu/dai/queryPages/) is an example where the *wh* non-manual marking occurs over the entire sentence but for the topicalized constituent, over which the topic non-manual marking occurs.


5_1.2.0.4_1_ASL_who vegetable prefer potato PU

wh	top	wh
WHO	VEGETABLE	PREFER POTATO PALM-UP

'As for vegetables, who prefers potatoes?'

(ASL, adapted from Neidle & Vogler 2012)

1.2.1 Polar interrogatives

Polar interrogatives (or 'yes/no interrogatives') may differ from declaratives by (i) the presence of certain non-manual markers, (ii) word order differences, and (iii) the presence of interrogative particles.

1.2.1.1 Non-manual markers in polar interrogatives

Non-manual markers for polar interrogatives tend to be similar across signed languages. The following markers have been identified for the languages studied so far:

- eyebrow raise
- eyes wide open
- eye contact with the addressee
- head forward position
- forward body posture
- head nod

Sign languages usually employ a combination of non-manual markers, their spreading domains may differ, and each non-manual marker may have different functions.

1.2.1.2 Word order changes between declaratives and polar interrogatives

Some languages mark the difference between polar interrogatives and declaratives by a word order change. For instance, the English examples 'You will go' and 'Will you go?' are distinguished by the position of the auxiliary. The grammar writer should have this possibility in mind, although it does not appear to be common in the sign languages studied up to now.

1.2.1.3 Interrogative particles

An interrogative particle is a sign whose main function is to indicate that an utterance is an interrogative. Interrogative particles may be optional or obligatory, and a language may have more than one such particle. The signs for interrogative particles may derive from lexical signs that have lost the original meaning, they may derive from the interrogative mark used in orthography, or they can be traced back to a tag used in the spoken language.

Genuine interrogative particles may occur in the same prosodic unit as the rest of the interrogative. If there is an intervening break, what seems to be the interrogative particle may be a question tag such as 'right?' in a sentence like 'You never go home, right?'. An example of interrogative particle is found in the following HKSL polar interrogative:

y/n
$\text{IX}_{2\text{-}1}$ FLY BEIJING GOOD-BAD
'Will you and I fly to Beijing?' (HKSL, Tang 2006: 206)

Interrogative particles should also be distinguished from pragmatic interrogative introducers such as 'ask' or 'I ask you.'

The grammar writer should identify what signs can be used as interrogative particles or tags, if they are specific to polar interrogatives, the extent to which they are obligatory or optional, and if they occur with a specific non-manual marking. Yet another issue to be investigated is their position. From what is known (Zeshan 2004), interrogative particles typically occur either sentence-initially or sentence-finally (preferred position) or in both of these positions. Ideally, all of these issues should be investigated in matrix and embedded polar interrogatives.

1.2.2 Alternative interrogatives

In alternative interrogatives, the signer presents more than one (usually two) alternatives to his/her addressee and asks the addressee to choose one. For example, 'Would

you like to stay at home or go to the park?'. Even though in English and many other languages an alternative interrogative has the form of a polar interrogative with the disjunction marker 'or', the person asking this interrogative does not expect 'yes' or 'no' as an answer. The grammar writer may focus on the distribution of non-manual markers, ask whether they are the same as those found in polar interrogatives, and investigate their spreading domain, that is, which manual signs co-occur with them.

Other issues to be investigated include the use of disjunctive particles, interrogative particles, and word order differences between polar and alternative interrogatives. Ideally, all of these issues should be investigated in matrix and embedded alternative interrogatives.

1.2.3 Content interrogatives

1.2.3.1 Non-manual markers in content interrogatives

While non-manual markers used in polar interrogatives are similar across sign languages, there seems to be more variation with non-manual markers in content interrogatives. Brow furrow has been observed to be quite common. However, there are also sign languages with different markings. For example, in HZJ and ÖGS, the main feature of *wh*-NMM is 'chin up', which may be accompanied by a head thrust forward (see Sarac et al. 2007) and in TİD the main feature is 'head backward' accompanied with head shake (see Göksel & Kelepir 2013).

Researchers have observed that in structures with embedded content interrogatives some of the non-manual markers found in direct interrogatives may occur but others may not.

The grammar writer should list all non-manual markers that can be used in content interrogatives, identifying the domain over which they can occur and, if possible, describing the prosodic, syntactic, semantic/pragmatic factors that determine their distribution. Any difference between matrix and embedded content interrogatives should be identified.

1.2.3.2 List of *wh*-signs

A sign language may contain a paradigm of *wh*-signs with meanings such as the following: *who*, *what*, *which*, *where*, *why*, *when*, *how,* and *how many/much*. It has been observed that sign languages differ in terms of the variety of meanings they express with different manual signs. While some languages have only one *wh*-sign, others have a more extensive paradigm. Researchers have also observed that languages may have a general *wh*-sign with a basic meaning such as 'what'. Three groups of sign languages have been identified with respect to the *wh*-sign paradigms they have.

In the first group, there is only one *wh*-sign that covers the entire range of interrogative meanings and must be combined with non-interrogative signs to express

specific meanings (e.g. IPSL, see Aboh, Pfau, & Zeshan 2006). For instance, TIME+ INTERROGATIVE expresses the meaning 'when', and FACE + INTERROGATIVE expresses the meaning 'who'.

In the second group of languages, there is a general interrogative sign, which covers part of the interrogative word paradigm, but there are also many other *wh*-signs. For instance, Libras has special signs for the meanings 'how', 'why', and 'how many', whereas a general *wh*-sign is used for the other meanings (see Quadros 2006).

The third group of languages, including ASL (see Neidle et al. 2000, Petronio and Lillo-Martin 1997) and LIS (see Cecchetto et al. 2009), have an extensive paradigm of *wh*-signs.

It is not uncommon for time distinctions to be expressed with a combination of a *wh*-sign and a non-manual marker or another manual sign. For instance, the distinction between 'when in the past' versus 'when in the future' may be expressed with a combination of the manual sign for 'when' and the non-manual markers for past versus future tense. Combinations such as INTERROGATIVE + DAY / TIME / HOUR are also used to express meanings such as 'on which day', 'at what time', and 'how long/ how many hours' (Libras, see Quadros 2006).

Possessive meanings, such as 'whose', may be expressed with a *wh*-sign plus a possessive pronoun or a combination of WHO and PERSON.

1.2.3.3 Content interrogatives without *wh*-signs

Content interrogatives without *wh*-signs are commonly observed. In such interrogatives, the utterance is marked as an interrogative either by the presence of interrogative non-manual marking or by mouthing.

wh
COLOR LIKE
'What color do you like?' (NS, Fischer & Osugi 1998)

Wh-signs are usually left out when the specific interrogative meaning can be recovered from the context.

1.2.3.4 Non-interrogative uses of *wh*-signs

A number of sign (and spoken) languages employ the same set of words to express interrogative and non-interrogative meanings. The most common non-interrogative meaning of wh-words or signs is indefinite, that is, the same word or sign can, for instance, be interpreted as 'who' or 'someone'. Another possibility is to have the same set of signs for meaning pairs such as 'manner' and 'how' or 'because/ reason' and 'why'. Usually, these signs are disambiguated by the use of non-manual markers.

1.2.3.5 Position of *wh*-signs

The position of *wh*-signs in interrogative clauses has been investigated in several sign languages and three positions have been attested cross-linguistically: sentence-initial, sentence-final, and *in situ*.

The *wh*-phrase (possibly formed only by the *wh*-sign) plays a grammatical function in the interrogative sentence, e.g. subject, direct object, indirect object, or adverbial modifier. There are languages, both spoken and signed, in which the *wh*-phrase sits in the position that corresponds to its grammatical function. This is the position that that phrase would occupy in a declarative sentence with a neutral word order [Syntax – Section 2.3]. For example, if the *wh*-phrase is a subject it occupies the canonical position for the subject, and if it is a direct object it is found where direct objects occur. The *wh*-phrases that stay in this position are called *in situ wh*-phrases.

In many spoken and sign languages, *wh*-phrases must occupy a dedicated sentence-initial or sentence-final position. A *wh*-phrase moves there from the position that corresponds to its grammatical function by virtue of being interrogative. Many spoken languages, including English, illustrate the sentence-initial option. For example, a direct object normally follows the verb in English but it sits in a clause-initial position both in direct and indirect interrogatives, as in 'What did you buy?' and 'I wonder what you bought.' The *in situ* position may be sentence-initial, as in the English sentence 'Who arrived late?'. Thus, in order to distinguish between sentence-initial languages and *in situ* languages, one needs to look at *wh*-phrases whose *in situ* position is not sentence-initial.

In several sign languages *wh*-signs systematically occur in the sentence-final position. One example is LIS, where the neutral order in a declarative sentence is SOV as in (a). In (a), the verb is followed by an aspectual marker, DONE, which indicates that the event is concluded. However, in the corresponding interrogative sentence in (b), the subject *wh*-sign occurs in a dedicated sentence-final position.

a. GIANNI HOUSE BUY DONE
'Gianni bought a house.' (LIS, Cecchetto et al. 2009: 282)

wh
b. HOUSE BUILD DONE WHO
'Who built the house?' (LIS, Cecchetto et al. 2009: 282)

Just like the sentence-initial position, the sentence-final position may also be the *in situ* position. Hence, to establish the sentence-final position as the position of *wh*-signs, the grammar writer must examine *wh*-signs whose *in situ* position is not sentence-final.

Researchers have observed that the distribution of wh-signs in an indirect content interrogative is not necessarily identical to the distribution of wh-signs in direct content interrogatives. Thus, these should be checked independently in both types of constructions.

When more than one positional option is available for wh-signs in direct interrogatives in a sign language, there might be factors that favor or even force one of these options. For example, heavy *wh*-phrases with a rich descriptive content ('Which of those horrible black trousers') might stay *in situ*, while light ones ('what') might have to move. The pragmatic or semantic factors that favor or force the movement option over the *in situ* option should be investigated language by language.

It has been noted that some sign languages disfavor interrogatives in which the *wh*-sign is very far from the position that corresponds to its grammatical function. For example, something like 'Who does John think that Mary loves?' would be less acceptable than 'Who thinks that Mary loves John?' because in the former the *wh*-sign is an argument of the embedded verb while in the latter it is an argument of the main verb. Sign languages might use alternative strategies to avoid the most difficult configurations, like leaving the *wh*-sign *in situ* or using multiple sentences ('John thinks that Mary loves someone. Who is this person?').

When the *wh*-sign moves, it might compete for the sentence-initial or sentence- final positions with other constituents that must also be placed in that position. For example, topics in many languages may appear in a sentence-initial position in order to create a link with the preceding discourse, as in the following ASL sentence.

top	wh
COFFEE	WHERE BUY

'As for the coffee, where did you buy it?'

(ASL, adapted from Petronio & Lillo-Martin 1997: 49)

When this happens, the *wh*-phrase is not in the very initial position of the sentence, since the topic [Pragmatics – Section 4.2] / topic phrase precedes it. Still, the *wh*-phrase is not *in situ*, since its non-*wh* counterpart would be in a position following the verb BUY. The fact is that the dedicated position for topics precedes the dedicated position for *wh*-phrases in that language, so the *wh*-phrase does not come first, although it has moved.

A similar problem may arise in the right periphery of the clause, for example with pronouns [Lexicon – Section 3.7]. In particular, pronominal expressions that double either the subject or the object may appear in the very last position in the sentence in some sign languages. If this happens in an interrogative clause, the pronominal expression may follow the *wh*-sign. Even in this case, it would be a mistake to analyze the *wh*-sign as if it were *in situ*, even if it is not the last sign in linear terms.

If an interrogative particle is found in content interrogatives and it occupies a sentence-initial or a sentence-final position, the interrogative particle and the *wh*-phrase may also compete for the same position and the relative order between them should be investigated.

Finally, there are cases in which another constituent in addition to the *wh*-sign is dislocated to the right edge of the sentence, for example a negative quantifier (LIS)

or a relative clause (LSC). In these cases, there is a competition for the clause-final position. In LIS and LSC, the *wh*-sign is in the very last position of the clause, but this should be investigated language by language.

1.2.3.6 Split between the *wh*-sign and its restriction

A *wh*-sign and its restriction (namely, the noun or the noun phrase that the *wh*-sign may modify) may split. This phenomenon is not found in English (see '*Which did you buy book?') but it is attested in several spoken and sign languages. LIS exemplifies this phenomenon.

wh
BOY$_i$ BOOK STEAL WHICH$_i$ (LIS, Cecchetto et al. 2009: 285)
'Which boy stole the book?'

We expect this phenomenon to be somehow constrained, though. A natural expectation is that, if splitting takes place, then the *wh*-sign moves to the sentence-final or sentence-initial position while the restriction is left *in situ*. We do not expect the opposite to be possible, since the positions in the left or right periphery are dedicated to signs that are inherently interrogative. However, structures can be found where the restriction appears in the left periphery as a topic, whereas the *wh*-sign has moved. Finally, pragmatic or semantic factors might favor or force splitting, but this should be investigated language by language.

1.2.3.7 Doubling of the *wh*-sign

It is also common in sign languages that a content interrogative contains two copies of the same *wh*-sign. The positions of these two copies vary from language to language. This phenomenon has been described in ASL, Libras, LIS, HZJ, ÖGS, NGT, and TİD. The following example is from Nunes & Quadros (2008), who discuss doubling in detail.

5_1.2.3.7_1_ASL_JOHN_SEE_WHO_YESTERDAY_WHO

wh wh
JOHN SEE WHO YESTERDAY WHO
'Who did John see yesterday?' (ASL, Nunes & Quadros 2006)

In a language where leaving the wh-sign *in situ* is preferred, doubled constructions may involve one copy of the wh-sign *in situ* position and another copy in a sentence peripheral position (see TİD, Göksel & Kelepir 2013, Hakgüder 2015).

Typically, if the *wh*-sign has a restriction and forms a complex *wh*-phrase with it, one of the copies may not contain the restriction. It has generally been observed that if one of the copies is *in situ*, then the *in situ* copy contains the restriction while the

sentence peripheral copy only has the *wh*-sign. In the TİD example below the *in situ* wh-phrase is WORK WHAT 'what (kind of) work' but the sentence-final copy is only WHAT.

wh
PERSON WORK WHAT DO WHAT
'What (kind of) work does that person do?' (TİD, Göksel & Kelepir 2013: 14)

In some sign languages doubling is not possible in indirect interrogatives. The following is an ungrammatical example from ASL that illustrates this.

hn
*I KNOW WHO WIN WHO
Intended: 'I know who won.' (ASL, Petronio & Lillo-Martin 1997: 42)

The same restriction has been observed in other languages such as TİD (Hakgüder 2015); however, the possibility of doubling in indirect interrogatives has been reported for some other languages such as LSB (Nunes & Quadros 2006: 11).

Thus, the possibility of doubling should be checked independently in both direct and indirect interrogatives.

1.2.3.8 Multiple *wh*-signs in interrogatives

The doubling of a particular *wh*-sign should not be confused with another phenomenon, the presence of more than one *wh*-sign in a single interrogative when the addressee may be asked to provide multiple pieces of information. One example from English is 'Where did you buy what?' whose answer would be a statement such as 'I bought the vegetables at the grocery store and the meat at the butcher.' ASL is one of the few sign languages that has been studied for multiple *wh*-interrogatives and researchers have observed that prosodic breaks, represented with commas in the examples below, are obligatory and these interrogatives may have focus non-manual marking in addition to *wh*-non-manual marking. It has been argued that the distribution of each of these non-manual markings affects the interpretation. For instance, in (a) below, where the two *wh*-signs have different non-manual markings, the signer expects two different answers such as 'I ate oatmeal, and I ate it because it makes me feel healthy; caviar, because it makes me feel wealthy; mynock, because it makes me feel wise...' In (b), on the other hand, where both of the *wh*-signs have focus non-manual marking, the signer expects one answer such as 'I ate a donut, and I ate because I am horribly unself-disciplined.'

a. wh foc
YOU EAT, WHAT, WHY
'What foods did you eat for what reasons?'

b. wh foc foc
YOU EAT, WHAT, WHY
'What foods did you eat, and why did you eat at all?'

(ASL, adapted from Churng 2011: 10)

1.2.3.9 Interrogative particles

Content interrogatives may contain interrogative particles, but this is less common than with polar interrogatives. The questions raised for interrogative particles in polar interrogatives apply here as well.

The grammar writer should identify what signs can be used as interrogative particles, if they are specific to content interrogatives, the extent to which they are obligatory or optional, and if they occur with a specific non-manual marking. Another issue to investigate is their position, which is expected to be sentence-final or sentence-initial. There may be different interrogative particles for matrix and embedded content interrogatives.

It may not be straightforward to distinguish interrogative particles from *wh*-signs, especially because they may have a similar morphological realization but the particle may have a phonologically reduced form. For example, ASL is reported to have an interrogative particle which is very similar to the sign WHAT (Conlin, Hagstrom & Neidle 2003).

Elicitation materials

Although interrogatives occur frequently in spontaneous production, an in-depth study may require a substantial body of evidence for each interrogative type under investigation. This may not be easy to find in a corpus containing only free conversation. If a general description of the phenomenon is already available, a linguist investigating the grammar of interrogatives may ask for grammaticality judgments or ask the signer to produce a target sentence. This has the advantage that the linguist can focus on the fine-grained aspects for which a detailed investigation is needed. However, it may also be risky. For example, intonation in spoken languages and non-manual marking in sign languages can be omitted in the artificial situations in which the sentence to be judged as grammatical or ungrammatical is later produced by the signer.

For these reasons, it may also be useful to employ specific techniques to elicit interrogatives in semi-naturalistic settings. Eliciting direct interrogatives by involving signers in special games is relatively easy. It is more difficult to elicit indirect interrogatives.

The twenty-question game is particularly suitable for eliciting polar interrogatives. In this game, one player, the *answerer*, chooses an object, a person, or a story but does not reveal this to the others. All the other players are *questioners*. They take turns asking an interrogative which can be answered only by 'Yes' or 'No'.

Eliciting content interrogatives requires the use of materials designed for this task. Göksel and Kelepir (2013) asked the participants to play the game *What is it?/ Who is it?*, where one participant chooses a well-known individual or an object, but does not tell the other participant who or what it is, and the other participant tries to guess the identity of the individual or the object by asking content interrogatives such as 'Where does s(he) live?', 'What does s(he) do?' etc.

Another elicitation technique was used in the LIS Corpus project (see Geraci et al. 2011). All participants performed the task in pairs: a scene depicting a car accident was presented in a picture to one member of the pair. The other member could not see the picture but had to fill a form and recover the information needed by asking the partner. By selecting a type of material that is mostly visual and a form that is familiar to signers, the exchange was kept as natural as possible, even during a semi-structured elicitation procedure. The material was intended to elicit various types of content interrogatives and corresponding answers ('Where?' – 'In Paris' or 'At the corner', 'When?' – 'At 9,30 p.m.', 'How many cars?', 'Who was driving?', etc.).

The researchers working on LIS report a difference between the car accident situation and a different variant of the same task in which the interviewee pretended to be a patient reporting to the emergency room at the hospital, while the interviewer pretended to be a doctor admitting the patient. In this task the 'patient' is given a series of pictures describing the events that led to hospitalization, while the 'doctor' is given a form to fill with information about the patient. While the car accident story worked quite well, since it elicited many question-answer pairs, the emergency room story elicited a reduced number of interrogatives, since the 'patient' typically elaborated over the plot given in the pictures to offer a more complete narration based on his/her experience. Researchers working on LIS speculated that the source of the difference between the two elicitation tasks is that a car accident is an instantaneous event, while events leading to hospitalizations unfold in time, so they trigger an individual elaboration by the signer. Hence, it might be a good idea to use pictorial material describing an event that takes place instantaneously and is fully depicted in the picture rather than an articulated story.

A different type of task to elicit interrogatives is collaborative games in which two deaf consultants ask a third player questions to find out who did something by pretending to be in a crime scene.

Finally, another good way to obtain spontaneous interrogatives is to ask deaf signers to play a game unknown to them and to give them incomplete or ambiguous instructions. In this situation, they will start asking questions to the linguist to understand how the game works exactly and, as they don't think that they are already in the elicitation part since the game has not started yet, the exchange may be very rich and natural.

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1.3 Imperatives

1.3.0 Definitions and challenges

1.3.0.1 What is an imperative?

An imperative is a grammatical form that is specialized to elicit a behavior from the addressee. Imperatives are one of the four well-recognized sentence types. The other three major types are declaratives [Syntax – Section 1.1], which are used to make an assertion; exclamatives [Syntax – Section 1.4], which are used to express surprise; and questions [Syntax – Section 1.2], which are used to obtain information.

A potential confounding factor is that sometimes a question can be used to express a command ('Could you pass me the salt, please?') and, conversely, an imperative can be used to elicit information from the addressee ('Tell me the name of the president.'). Still, languages develop grammaticalized forms that are *typically* associated with imperatives and these forms are the topic of the present section in which we abstract away from the specific uses that these forms may have.

1.3.0.2 Functions of the imperative

Despite its name (imperative, from *impero* 'to command'), the imperative is not used only for commands. In most languages, the same form that is used to give orders is also used for other functions, which may not be obviously related. Typical uses of imperatives include at least:

a. invitations
b. suggestions/advice
c. permission
d. instructions
e. recommendations

1.3.0.3 Orders with no imperative

It is important to bear in mind that imperative sentences are not the only way to express a command in a given language. In English, for example, you can give an order with a simple declarative (a), with a yes/no question / yes/no question [Syntax – Section 1.2.1] (b) or with a deontic modal (c), such as *should* or *must*:

a. You are going to wash your hand!
b. Could you wash your hands(, please)?
c. You should wash your hands.

The imperative can be distinguished from deontic modal constructions in a very simple and cross-linguistically valid way: while modal constructions, which are propositional, can be true or false, imperative sentences cannot. Consider the following pair:

a. Wash your hands!
b. You should wash your hands

While you can say that (b) is true (or false), this simply does not apply to (a).

1.3.0.4 Simultaneous or concatenative morphology in imperatives

Since sign languages can be used to elicit a behavior from the addressee as in commands and in the other uses just listed, we expect them to develop grammaticalized forms associated with these conversational uses. Hence, it is reasonable to look for grammatical forms specialized for imperatives, both in their order use and in their other uses.

Still, the form that these imperatives take in sign languages might be quite different from the form we are used to in more studied spoken languages. For example, given the inherent multidimensionality of sign languages, imperative morphology might be expressed simultaneously with the lexical signs. This means that instead

of finding a specific ending marking the verb as in English, non-manual marking can be the manifestation of imperative morphology. This is not surprising, since non-manual-marking can be seen as the equivalent of intonation and in many spoken languages intonation distinguishes declaratives from imperatives. Moreover, given the way inflection appears to be expressed in most sign languages, we might expect imperatives to be signaled by a separate manual sign, rather than through a simple modification of the verbal sign. It is also possible that more than one manual sign, and more than one non-manual marker are available, possibly distinguishing the various uses of the imperative just mentioned.

1.3.1 Subtypes of imperatives

As previously mentioned, imperatives do not fall into a single class but may be thought of as a sentence type that may take on different pragmatic interpretations and syntactic forms as described in the following sections.

1.3.1.1 Orders

The most obvious subtype of imperatives includes positive and negative orders. Orders express the will of the speaker for someone to do or not do something as in the English sentence 'Eat properly!' or 'Don't pull that rope!'. An example of a sentence expressing an order in LIS is offered below.

 5_1.3.1.1 1__LIS_STOP PLAY STOP EAT PALM-UP

furrowed brows
STOP PLAY STOP EAT PALM-UP (LIS)
'Stop playing, stop. Eat!'

1.3.1.2 Invitations

Imperatives may also take the form of an invitation when someone is warmly encouraged to do something, as in the English sentence 'Have a piece of cake.' As opposed to orders, invitations are expressions of politeness. An example of a LIS sentence expressing an invitation is provided below.

 5_1.3.1.2_1_LIS_IX-j_TAKE_IX-k_PALM-UPIX-j

furrowed brows
$_2$TAKE$_3$ PALM-UP$_2$
'Take it.' (LIS)

1.3.1.3 Suggestions/advice

Suggestions and advice also fall into the wider category of imperatives whose main goal is to advise the addressee on what is best for him/her to do in order to get a better result or to improve his/her situation. A suggestion/advice in English is illustrated by the sentence 'Buy healthy food for your kids!' and by the LIS sentence below.

 5_1.3.1.3_1_LIS_BUY_PALM-UP_(pause)_POWDER_CONVENIENT

furrowed brows
BUY PALM-UP (pause) POWDER CONVENIENT
'Buy it. The powder one is convenient.' (LIS)

1.3.1.4 Permissions

This subvariety of imperatives expresses an authorization, and may be a reply to a request, as in 'May I take your pen?' –'Yes, take it!'. An example of a LIS sentence expressing permission is provided below.

 5_1.3.1.4_1_LIS_IX-k_TAKE_IX-j_PALM-UP_(pause)_PEN

furrowed brows
$_{2}$TAKE$_{3}$ PALM-UP (pause) PEN
'Take it! The pen.' (LIS)

1.3.1.5 Instructions

Another subtype of imperative sentences is produced when the speaker gives instructions guiding his/her interlocutor on how to carry out a specific action such as building, cooking, reaching a destination, or any other performance. An English example of an imperative expressing instructions is 'Take the first street on the left,' while the example below illustrates a LIS sentence.

 5_1.3.1.5_1_LIS_BOX_TAPE-CL_(PAUSE)_CUT

squinted eyes
BOX TAPE-CL (pause) CUT
'Cut the box's tape.' (LIS)

1.3.1.6 Recommendations

The imperative form may also be employed to express a recommendation to do or not to do something, either expressing the speaker's desire for a future situation, as in 'Don't stay away too long!', or the speaker's concern for a possible unfortunate future

event damaging the interlocutor, as in 'Be careful when you cross the street!'. Below is an example of this subtype of imperatives in LIS.

5_1.3.1.6_1_LIS_CL-DRIVE-MOTORBIKE-FAST_NOT_CL-DRIVE-MOTORBIKE_RIGHT_KNOW_CL_RIGHT

furrowed brows

CL-DRIVE-MOTORBIKE-FAST NOT CL-DRIVE-MOTORBIKE RIGHT KNOW CL RIGHT
'Don't go fast with your motorbike, drive at the right speed!' (LIS)

1.3.2 Imperative markers

1.3.2.1 Manual signs

Some spoken languages have been reported to mark the different subvarieties of imperatives with specific syntactic morphemes. This is the case for example of Badiotto (Poletto and Zanuttini 2003), a dialect spoken in Northeastern Italy, where different particles can specify the subtype of an imperative sentence: the particle *mo* is used to give orders, as exemplified in (a) below, while the particle *ma* is used to give advice or permission, as in (b).

a. Arjigneme *mo* cà le bagn!
clean.IMP-me mo yet the shoes
'Polish my shoes!'or 'You still have to polish my shoes!'
(Badiotto, Poletto & Zanuttini 2003: 179)

b. Tèt *ma* n dé de vacanza!
take.IMP-you ma a day of vacation
'Take a day off for vacation!' (Badiotto, Poletto & Zanuttini 2003: 178)

The grammar writer should verify the presence of specific morpho-syntactic manual markings expressing the imperative modality and/or the various subtypes of imperatives [Syntax – Section 1.3.1] and verify whether these specific markers are obligatory or whether they are an alternative to a more general imperative marker.

A manual sign attested in some sign languages like LIS and NGT is the sign conventionally glossed PALM-UP (PU) and produced with both hands open and with the palms facing upwards.

1.3.2.2 Non-manual markers

Imperative sentences in spoken languages are quite often marked with peculiar intonational contours. As non-manual markers [Phonology – Section 1.5] in sign languages have been claimed to be the counterpart of intonation, it is very likely that the imperative mood is signaled in sign languages through specific non-manual markers. The analysis of specific non-manual markers in imperative sentences, as well as their

obligatoriness or optionality, is therefore crucial in describing how imperatives are formed in the target sign language.

Sign languages usually employ a combination of different non-manual markers, including eye contact, body orientation, facial expressions, and head movements. A set of different non-manual markers may be used to mark imperative sentences. A detailed analysis of the non-manuals in imperatives should include the description of their co-occurrence as well as of their potential difference connected to the type of imperatives produced. As with manual signs, specific non-manual markers may mark and distinguish the various types of imperatives listed in section 1.3.1.

The spreading domain of non-manual markers refers to their extension over the manual signs they co-occur with. Non-manual markers tend to spread over the syntactic domain of which they are a direct expression. Spreading of the non-manual markers in imperative sentences should be investigated.

1.3.3 Imperatives and verb classes

In spoken languages, imperatives are typically associated with reduced morphology (Zhang 1990; Mauck 2005). In English, for example, the simple verb root is an imperative (e.g. *go*). The grammar writer should verify whether the various verb classes differ in some way when used in an imperative clause. In particular, the grammar writer should examine agreement verbs [Lexicon – Section 3.2.2] carefully, since we might expect them to display a loss or a modification of their agreement morphology. With other verb classes, the grammar writer should pay attention to possible modifications in width, direction, and timing of the movement of the sign.

1.3.4 Word order in imperatives

The literature on spoken languages reports a marked word order in imperative sentences, such as subject-verb inversion, negation-verb inversion, and object-verb inversion. In Romance languages such as Italian, for example, while object clitics usually precede the verb in declarative sentences (a), they follow it in imperatives (b).

a. Lo leggi.
   it read.2SG
   '(You) read it.' (Italian)
b. Leggi-lo!
   read.IMP-it
   'Read it!' (Italian)

Possible word order changes throughout the different subtypes of imperatives should be detected and described.

Another option, which is reported to be very productive in the syntax of sign languages, is the doubling of constituents. A careful investigation should verify whether doubling of constituents is optional or obligatory in the production of the different subtypes of imperatives

1.3.5 Attention callers

Since imperatives are means for eliciting a specific behavior of the addressee, we expect that imperative clauses are frequently preceded or accompanied by various forms of attention callers. The grammar writer should investigate whether this sign or class of signs is grammaticalized as part of the imperative sentence, and whether there are systematic correlations between specific subtypes of imperatives and (types of) attention callers.

1.3.6 Negation in imperatives

In many languages, imperatives cannot be negated. In order to express a negative order, languages rely on some other resources that act as a surrogate. Typically, languages resort to the infinitive, as in (b) (Italian), or the subjunctive, as in (d) (Spanish).

a. Vai al mare!
   go.IMP to-the sea (Italian)
b. Non andare al mare!
   not go.INF to-the sea (Italian)
c. Ve al mar!
   go.IMP to-the sea (Spanish)
d. No vayas al mar.
   NEG you go-SUBJ to-the sea
   'Go/Don't go to the sea!' (Spanish)

Evidence from other languages shows that imperatives are negated differently from declaratives. In English imperatives, for example, the copula is negated with *do*-support ('Don't be loud!'), an ungrammatical option in English declaratives ('*He don't be loud/He isn't loud').

Negation [Syntax – Section 1.5] is, therefore, an interesting domain to investigate when describing the imperative sentence type.

1.3.6.1 Manual negation

The first issue the grammar writer should describe is whether the imperative predicate can be negated. If it can, it should be further examined what manual sign for negation is employed.

The manual sign for negation might be subject to morphological changes in one or more of its parameters; it might change from a free to a bound morpheme; or it might be substituted by a completely new sign. Negative manual signs, as well as their position in the sentence, might differ depending on the subtype of imperative produced.

Negative imperatives might involve changes in the word order of the sentence. Any change in word order should be described.

1.3.6.2 Non-manual negation

Since negation involves the obligatory presence of specific non-manual markings in most sign languages, negative imperatives should also be described along this dimension. One relevant change, possibly affecting negative imperatives, might involve the presence of different non-manual markings or the use of a different set of non-manuals to mark different subtypes of imperatives.

Changes in the manual signs of negation might also involve changes in the negative non-manual markings. This is often due to the strong association between a negative manual sign and a specific non-manual marking accompanying it.

1.3.7 Subjects in imperatives

Imperatives in spoken languages tend to allow null subjects, even in those languages in which null subjects are usually disallowed. In some languages, only null subjects are possible in imperative clauses, while other languages also allow overt subjects.

The only possible interpretation for null subjects in imperative sentences is a second person interpretation. Overt subjects, in the languages that allow them, are also very restricted: imperatives have a second person pronoun subject, a bare noun phrase (proper name or bare noun), or a quantificational subject, which binds a second person element (as in 'Everyone eat your food'), contrary to what happens in declaratives and interrogatives (as in 'Everyone eats their food').

1.3.7.1 Null and/or overt subjects

The first question to ask is whether imperatives allow for null and/or over subjects, and to check this across the various subtypes of imperatives.

1.3.7.2 The person of the subject

A second step involves identifying the (null or overt) subject. The person feature of both null subjects and (if allowed) overt subjects should be checked, in particular whether only second person (singular and plural) subjects are possible, or whether other persons are also allowed.

1.3.7.3 Anaphoric properties

Imperative subjects in spoken languages display a very peculiar behavior: when allowed, quantificational subjects ('Everyone eat your food!'), proper names ('John bring your book!'), and bare nouns ('Children always tie your shoes!') in imperative sentences can refer to a second person pronoun (while this possibility is sharply excluded in other sentence types). This possibility should be checked in the target sign language as well.

1.3.8 Embedding imperatives

A very robust property of imperatives cross-linguistically is their resistance to embedding. Typically, when an order needs to be embedded under a root predicate, languages resort to some other way of expressing it, such as deontic constructions [Semantics – Section 4.2] or exhortative constructions [Syntax – Section 1.3.10]. The grammar writer should verify whether simple imperative clauses can be embedded, and whether this involves any modification in manual signs, word order, or non-manual markers.

1.3.9 Special constructions: Imperative and Declarative (IaD)

Imperative and Declarative (IaD) (Iatridou 2008) is a very peculiar construction where an imperative is used in conjunction with a declarative clause, without it implying any suggested order or even permission. This construction is illustrated below for English:

Go on like this and you will fail.

In this example, the imperative does not convey any order or suggestion but rather is very similar to a conditional clause ('If you go on like this, you will fail.'). Since this use of the imperative is systematic across languages, and has even been claimed to be a proper test for true imperatives, it is important to establish whether the same construction that is used in more central types of imperatives, and in particular the manual sign(s) that are used then, can also be found in this particular construction. This is the case in LIS. In the example below, the imperative sign PU is used in a IaD construction.

 5_1.3.9_1_LIS_LAUGH_PU_GO_OUT

te

LAUGH PALM-UP GO OUT

'Keep laughing and you go out!' (LIS)

The sentence-initial clause of the LIS sentence above is marked by specific NMM roughly composed of tensed eyes ('te') and cheeks and repeated head

nodding. The non-manuals marking this sentence, together with the sign PU, are responsible for the peculiar interpretation of the sentence as an IaD, thus making it minimally different from the sentence below. This example, a conditional sentence, lacks the sign PU and is marked by the typical non-manuals of conditional clauses in LIS.

 5_1.3.9_2_LIS_LAUGH_GO_OUT

cond
LAUGH GO OUT
'If you laugh, you will go out.' (LIS)

The grammar writer should be aware of the possibility of this peculiar construction robustly associated with the use of imperatives, and verify whether it is attested in the relevant sign language.

1.3.10 Exhortative constructions

Given that imperatives are typically restricted to the addressee, languages use other constructions to express an order or an exhortation involving other participants, that is, first and third persons. Exhortative constructions across languages might either involve a grammaticalized modal (such as *let* in English: 'Let's go!'), or some specific (subjunctive, optative) mood.

The grammar writer should describe the exhortative construction(s) displayed by the target language and pay special attention to manual and non-manual signs, the realization of the subject, and the possibility of embedding.

Elicitation materials

Although imperatives occur quite frequently in spontaneous production, an in-depth analysis may require a substantial body of evidence for each imperative type investigated. This evidence may not be easy to find in a corpus containing only free conversation. If a general description of the phenomenon is already available, a researcher investigating the grammar of imperatives may ask the signer for grammaticality judgments or to produce a target sentence. This method has the advantage that the linguist can focus on the fine-grained aspects for which a detailed investigation is needed. However, it may be risky. For example, intonation in spoken languages and non-manual-marking in sign languages can be omitted in the artificial situations in which the sentence to be judged as grammatical or ungrammatical is later produced by the signer. Moreover, given the variety of uses attested for imperatives, it might be advisable to control the context of utterance

of each imperative form so the exact function of the specific form is observed. For these reasons, it may also be useful to use elicitation techniques that lead to the production of imperatives in a semi-naturalistic setting. Some possible options are described below.

As the various types of imperatives are very sensitive to the discourse context, it is essential that each subvariety is introduced by an appropriate eliciting context. A good elicitation strategy involves designing variety-specific contexts of elicitation presented by a deaf signer in the target sign language, and eventually accompanied by explicative pictures. The interaction of two informants during the elicitation process can be very useful to gather metalinguistic insights into the language phenomena.

In the following examples, possible contexts likely to elicit the various types of imperatives are briefly presented.

1. *Orders*
   Suggested contexts:
   a. Evidence of an approaching or possible danger. The informant is asked to order someone to do or not to do something;
   b. The consultant is involved in a hierarchical relationship (boss-employee kind of relationship) where he has the social authority to give orders.
2. *Invitations*
   Suggested context:
   The consultant is asked to politely invite someone to help himself with something.
3. *Suggestions/advice*
   Suggested context:
   The consultant is required to provide a suggestion or advice in the form of something which should be done in order to improve a situation.
4. *Permissions*
   Suggested context:
   The consultant is asked to provide a positive reply to a request of permission to do something.
5. *Instructions*
   Suggested context:
   The consultant is giving instructions for directions, on cooking recipes, on how to build something, etc.
6. *Recommendations*
   Suggested contexts:
   a. The consultant is required to provide a recommendation from a parent's, lover's, friend's point of view.
   b. The consultant plays the role of a fairy tale character traditionally giving recommendations to another character (as in Little Red Riding Hood when her mother says: 'Don't talk to anyone! Go straight to Granny's house!')

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1.4 Exclamatives

1.4.0 Definitions and challenges

1.4.0.1 What is an exclamative?

By exclamative we mean a grammatical form that is specialized to convey surprise, denoting that all or some part of the content of a clause is unexpected. In other words, the unexpectedness either concerns the entire clause, or one constituent of the clause. In the first case, illustrated for English, (a) shows , a total exclamative; (b) shows a partial exclamative.

a. John has arrived!
b. What a beautiful day!

Exclamatives are one of the four well recognized sentence types. The other three major types are declaratives [Syntax – Section 1.1], which are used to make an assertion; interrogatives [Syntax – Section 1.2], which are used to obtain information; and imperatives [Syntax – Section 1.3], which are typically used to elicit a certain behavior from the addressee.

A potential confounding factor is that any sentence type can be used to express surprise provided that it is uttered with the correct intonation, and there is a great deal of ambiguity in many cases. In English, for example, both a declarative (a) and an interrogative (b) can be uttered with an exclamative intonation and convey surprise.

a. He's so nasty! (declarative)
b. Isn't he the nastiest man on earth?! (interrogative)

Still, most languages develop grammaticalized forms that are *typically* associated with exclamatives and these forms are the topic of the present section. English displays clear examples of unambiguous exclamatives, as exemplified below.

a. What a nasty boy he is! (cf. *What a nasty boy is he?)
b. How very tall she is! (cf. *How very tall is she?)

The two clauses above display an initial wh-constituent [Syntax – Section 1.2.3.] / wh-constituent, like interrogatives, but they differ from interrogatives in that i) they do not feature subject-auxiliary inversion, and ii) the *wh*-phrase contains an extra element that is not possible in interrogatives: 'a' in (a) and 'very' in (b).

According to Zanuttini and Portner (2003), exclamatives can be defined as the sentence type associated to the following properties:
1. exclamatives contain a wh-structure;
2. exclamatives are factive, namely their truth is presupposed.

On the basis of these properties, they propose a set of three tests that can unambiguously tease real exclamatives apart from other sentence types used with an exclamative force. These tests are:
– factivity
– scalar implicatures
– question/answer pair

Let us briefly illustrate them. The grammar writer can use these tests to determine the actual range of constructions to be described as exclamatives in the language under study.

1.4.0.2 Testing exclamatives: factivity

The factivity of exclamatives, namely the fact that their truth is presupposed, is shown by two facts. First, they can only be embedded under factive predicates, as seen below.

Mary knows/*thinks/*wonders how very nasty he is.

Second, when they are embedded under a verb like 'know' or 'realize' in the present tense and with a first person subject, this verb cannot be negated.

*I don't know/realize how very nasty he is.

1.4.0.3 Testing exclamatives: scalar implicatures

Exclamatives convey that something is surprising or noteworthy in some way. Thus, they introduce the implicature that the proposition they denote lies at the extreme end of some contextually given scale that cannot be denied. This is shown by the awkwardness of the continuation below, which is perceived to be a contradiction.

??How very nasty he is! – though he's not extremely nasty.

1.4.0.4 Testing exclamatives: question/answer pairs

The third property distinguishing exclamatives from interrogatives and declaratives is their inability to function in question/answer pairs. Unlike interrogatives, exclamatives may not be used to ask questions.

A: How tall is she? B: two meters.
A: How very tall she is! *Two meters.

Unlike declaratives, exclamatives cannot be used as answers.

A: How tall is her child? B: *How very tall she is!

These criteria can be used to tease real exclamatives apart from other sentence types used with an exclamative force. Going back to the unclear examples (a) and (b), we can show that they fail all the tests just given.

a. Isn't he the nastiest man on earth?
b. He's so nasty!

The rethorical question in (a) can be answered: thus it is not a proper exclamative.

Isn't he the nastiest man? No, he's not.

The declarative exclamative in (b), on the other hand, can be embedded under a non-factive predicate, as below, so it is not a real exclamative.

I think he's so nasty, I don't KNOW he's so nasty

1.4.0.5 An unexplored field

Very little is known about exclamatives in sign languages. Hence, the grammar writer should carefully follow this blueprint, keeping in mind that most of the categorizations and caveats that are suggested come from crosslinguistic investigations conducted only on spoken languages. He/she should be ready to adapt the chapter to the signed modality by modality-specific marking of the exclamative sentence type he/she might observe.

1.4.1 Total exclamatives

Total exclamatives are also called yes/no exclamatives, capitalizing on the formal resemblance that they exhibit with yes/no questions [Syntax – Section 1.2.1.] in many languages. In both cases the illocutionary effect related to the sentence type is associated with the content of the entire event: in the case of exclamatives, this is a connotation of surprise or unexpectedness.

1.4.1.1 Non-manual marking

In spoken languages, total exclamatives can be marked only through prosody, while the syntax is that of a declarative.

He finally arrived!

Similarly, in the few sign languages where the construction has been observed to some degree, an exclamative force can be conveyed solely by the use of a 'surprise' non-manual marking, typically consisting of raised eyebrows (Auslan, Israeli SL, LIS), or wide eyes. The grammar writer should verify whether this is also possible in the language to be described, keeping in mind the possible confounds discussed in the General definitions section [Syntax – Section 1.4.0.]: any sentence type can be used with an exclamative prosody, but this does not make them proper exclamatives. The tests proposed in that section should be particularly useful in this context.

1.4.1.2 Manual signs

Typically, total exclamatives utilize a position in the complementizer area that is not associated with yes/no questions. This is shown by the fact that in many languages, grammaticalized forms of exclamatives include some introducer even in root clauses that can not occur in other sentence types. This is illustrated in the examples below from Italian and English. In both cases, the exclamative is introduced by an interjection followed by an 'if' word.

a. Accidenti, se sa nuotare!
   INTERJECTION if can.3SG swim
   'Boy, if he can swim!' (Italian)
b. Boy, if syntax isn't fun! (Zanuttini & Portner 2013)

The grammar writer should verify whether any manual sign is associated with grammaticized total exclamatives in the sign language under investigation. Notice that in the two examples above the use of the complementizer 'if' requires the presence of an interjection ('boy!', 'accidenti').

As a note of caution, remember that in many sign languages the complementizer might be at the right edge of the clause. Thus, it is quite possible that the manual marker for the exclamative is clause-final rather than clause-initial as in the examples above. In Japanese, for example, the particles associated with exclamatives (*nodaroo*) always come last, just like all the clause-typing complementizers.

1.4.2 Partial exclamatives

Partial exclamatives are typically very similar to *wh*-questions. In many languages, they display a *wh*-element that sits in the typical position it occupies in

interrogatives. In languages like English, where *wh*-elements are moved to the left, the *wh*-elements in exclamatives also appear in the left periphery.

a. What do you think?
b. What a nice guy he is!
c. How tall is he?
d. How very tall he his!

In languages like Japanese that leave *wh*-elements in situ in wh-questions, *wh*-exclamatives also involve *wh*-in-situ.

a. John-wa nante kasiko-i -no-da (-roo)
   John-TOP WH intelligent-FIN-FOC-MOOD
   'How very intelligent John is!' (Japanese)
b. John-wa nante ookina piza-o tabeta-no-da-roo
   John-TOP WH big pizza-ACC ate-FIN-FOC-MOOD
   'What a big pizza John ate!' (Japanese)

This correlation suggests that the same syntactic operation is involved in the two sentence types. The grammar writer should verify whether *wh*-exclamatives are attested in the language to be described, and occupy the same position as they do in interrogatives.

1.4.2.1 Non-manual signs

Typically, prosody alone can disambiguate a *wh*-exclamative from a *wh*-question in many languages. This is the case for example in Italian:

a. Quanto è grande!
   how be.3SG tall
   'How tall he is!' (Italian)
b. Quanto è grande?
   how be.3SG tall
   'How tall is he?' (Italian)

The grammar writer should investigate whether a similar minimal pair is possible in the language under description, and examine in detail what non-manual markings are responsible for the exclamative reading. It should also be verified whether non-manual markings are different in yes/no interrogatives and partial interrogatives.

1.4.2.2 *Wh*-signs

Usually, the paradigm of *wh*-elements available in exclamatives does not overlap with that of interrogative *wh*-elements. In Japanese, for example, only a specialized

wh-element *nante* is possible in exclamatives. In English, only *what* and *how* can form a *wh*-exclamative, at least in root clauses.

a. *Who I love!
b. *When I leave!
c. *Why he left!

Moreover, the *wh*-elements that are allowed both in exclamatives and questions do not always display the same distribution in the two sentence types. In English, for example, *what a* is possible in exclamatives, but not in questions.

a. What a nice girl she is!
b. *What a nice girl is she?

As another example, French *que* can modify an adjective in exclamatives, but not in questions.

a. Qu'il est haut!
   what-he be.3SG tall
   'How tall he is!' (French)
b. *Qu'il est haut?
   what-he be.3SG tall
   (Intended: 'How tall is he?') (French)

The grammar writer should verify which *wh*-elements are possible in *wh*-exclamatives and whether they display any distributional peculiarity.

Wh-exclamatives can also be marked by some particles akin to complementizers, in addition to the *wh*-element. In Japanese, for example, exclamatives are marked by a special marker *nodaroo* that clearly disambiguates exclamatives from interrogatives.

John-wa nante kasiko-i -no-da(-roo)
John-TOP WH intelligent-PRS-FIN-FOC-MOOD
'How very intelligent John is!'

1.4.2.3 Other structures

In many languages, it is also possible to construct a partial exclamative without resorting to a *wh*-construction. In that case, the exclamative may exhibit a structure that makes it very similar to a relative clause [Syntax – Section 3.4] / relative clause. An example is given in English below.

The things that he would do for his children!

The grammar writer should verify whether this option is realized in the language under investigation, taking into account that relativization strategies vary widely from language to language.

1.4.3 Negation in exclamatives

Exclamatives appear to have a special relation with negation [Syntax – Section 1.5] / negation. In many languages, it is indeed possible to form an exclamative from what appears to be a different sentence type by adding a negative word (provided the prosody is right). This is true both in total exclamatives and partial exclamatives, as illustrated by the following examples from Italian.

a. Non si è mangiato tutto!
   NEG REFL be.3SG eat.PTCP all
   'He ate it all!' (Italian)
b. Quanto non abbiamo camminato!
   how.much NEG have.1PL walk.PTCP
   'What a walk we made!' (Italian)

An interesting property of negation in exclamatives like the examples above is that it does not negate the event. The grammar writer should verify whether negation plays some special role in exclamatives in the language to be described.

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1.5 Negatives

1.5.0 Definitions and challenges

1.5.0.1 What is negation?

Every natural language possesses some way to express clausal negation. Natural languages have a multitude of markers such as particles, negative words and affixes in order to express standard or non-standard negation. Although most languages share common aspects regarding the use of particular negative markers, the variety that languages exhibit in the use of these negative markers is quite extensive. This variety is due to the number of negative markers as well as the syntactic status and the position of these markers in clauses. Different negative markers have different effects,

syntactic, semantic and pragmatic. In addition, negation varies in the way it interacts with the various sentence types such as declaratives, interrogatives, imperatives, and exclamatives.

1.5.0.2 Scope of negation and types of negation

The notion of the scope of negation is important. The term scope refers to the actual parts of the sentence that are affected by negation. On the basis of scope, we can distinguish between sentential/clausal negation and constituent/local negation. In sentential/clausal negation the negative marker takes scope over the whole clause (as in 'John didn't finish his paper'), whereas in constituent/local negation the scope is confined to a particular constituent of the clause (as in 'John finished his paper not long ago').

1.5.0.3 Sentential negation

In this section, the grammar writer should describe how the sign language under investigation expresses sentential negation, since sentential or 'standard' negation is the basic means that languages have for negating a declarative clause (Payne 1985). Standard negation is a denial of the truth of a clause or sentence.

Languages employ four strategies for the expression of negation (Payne 1985; Zannutini 2001):

a) a negative marker that has the properties of a verb taking a sentential complement;
   Na´e ´kai [ke ´alu ´a Siale]
   ASP NEG ASP go ABSOLUTE Charlie
   'Charlie didn't go.' (Tongan, Zanuttini 2001: 513)

b) a negative marker that has the properties of a finite auxiliary;
   Bi ə-ə-w dukuwun-ma duku-ra
   I NEG-PST-1SG letter-OBJ write-PART
   'I didn't write a letter.' (Evenki, Zanuttini 2001: 513)

c) a negative affix (prefix, suffix or infix) of the verb;
   Gel-me-yecek.
   come-NEG-FUT
   '(S)he will not come.' (Turkish, van Schaaik 1994: 38)

d) a negative marker in the form of a particle that is usually associated with the verb in pre- or postverbal position. This is the most frequent strategy for spoken European and sign languages.
   a. John **doesn't** eat chocolate. (English)
   b. Jean **ne** mange **pas** de chocolat. (French)
   c. Hans isst **nicht** die schokolade. (German)


5_1.5.0.3_1_LSC_SANTI_MEAT_EAT_NOT

hs
d. SANTI MEAT EAT NOT
'Santi doesn't eat meat.' (LSC, Quer 2012: 318)

hs
e. PAOLO CONTRACT SIGN NON
'Paolo didn't sign the contract.' (LIS, Quer 2012: 318)

hs
f. MOTHER FLOWER BUY NOT
'Mother does not buy a flower.' (DGS, Pfau 2002: 273)

Sign language examples clearly show that sentential negation in sign languages relies both on manual negative markers and non-manual markers such as headshake. How these manual signs and non-manual markers are co-articulated varies among sign languages. In some sign languages, a non-manual marker is sufficient to encode negation even without a manual sign; in other sign languages, the presence of a manual marker is required in addition to the non-manual marker.

1.5.1 Manual marking of negation

Similarly to spoken languages, lexical marking on negation in sign languages refers to the actual signs that are used in negative structures. These signs can be negative particles [Lexicon – Section 3.11.1] having the meaning 'no' or 'not'; negative quantifiers or adverbs having the meaning of 'nothing', 'no one', 'never' etc. and irregular negatives such as 'want-not', 'know-not' etc.

1.5.1.1 Manual negative elements

Manual negative elements [Morphology – Section 3.5.1.1] have already been discussed elsewhere in this manual.

1.5.1.1.1 Negative particles

Uninflected negative particles seem to be the most common negative marker that sign languages use to form standard sentential negation. For many sign languages, the negative particle is realized by a particular sign formed by the index finger handshape (G handshape), the palm facing outward and a slight side-to-side movement of the hand.

Negative particles simply negate the truth of a proposition. However, they may carry some additional pragmatic meaning. In IPSL for example, the negative particle (NEG-CONTR) conveys presupposition (Zeshan 2003):a–b. Similarly, TİD makes use of a negative particle (NO-NO) with contrastive interpretation (Zeshan 2006). In these cases, the presupposition may be implicit or explicit.

a. VILLAGE GOOD CITY NEG-CONTR
'Villages are nice but cities are not.' (IPSL, Zeshan 2003: 193)

b. WORRY NEG-CONTR
'There is no problem (contrary to what has been said/has been implied).'
(IPSL, Zeshan 2003: 193)

neg
c. INDEX_1 FRIEND ALL RESTAURANT PLAY / INDEX_1 INDEX_1 NO-NO
'My friends are all into dining out and entertainment, but I am not.'
(TİD, Zeshan 2006: 156)

In addition, some sign languages make use of specific negation signs in order to express emphasis like 'not at all' or 'absolutely not'. FinSL makes use of such a negative marker with emphatic meaning (Savolainen 2006).

INDEX_1 COME NOT
'I am definitely not coming.' (FinSL, Savolainen 2006: 296)

1.5.1.1.2 Irregular negatives

Irregular negatives [Morphology – Section 3.5.2] can also be labeled negation incorporation (signs that incorporate negation). They refer to a group of predicates that incorporate negation either in a transparent way or opaquely in suppletive forms (Quer 2012). Opaque irregular negatives correspond to existing non-negated signs that have no obvious morphological relation to their counterparts. Transparent irregular negatives, on the other hand, refer to cases where a negative morpheme has been added to a lexical sign, either by simultaneous or sequential morphology.

The majority of these signs derive from predicates expressing cognition ('not know', 'not understand'), emotion or volition ('not like', 'not want'), modals ('cannot', 'need not', 'not understand'), possession/existence ('not have', 'not get') or evaluative judgment ('not right', 'not possible').

An additional group of negatives integrates the grammatical notion of tense/aspect. These negatives express future, as in SSL and HKSL, perfect as in SSL, Israeli SL and HKSL, or past as in Israeli SL.

neg
a. TOMORROW FUT-NEG WORK IX_1
'I won't work tomorrow.' (SSL, Bergman 1995: 89)

neg
b. KENNY PARTICIPATE RESEARCH NOT-YET
'Kenny has not yet participated in the research.' (HKSL, Tang 2006: 219)

c. IX_3 SLEEP NEG-PAST
'He didn't sleep at all.' (Israeli SL, Meir 2004: 114)

In addition, Israeli SL has a negation including tense/aspect and also an emphatic meaning.

a. IX$_1$ EAT MEAT NEVER$_{PAST}$ IX$_1$
'I have never eaten meat.' (Israeli SL, Meir 2004: 110)

b. AGAIN IX$_1$ GO THERE NEVER$_{FUTURE}$
'I will never go there again.' (Israeli SL, Meir 2004: 110)

Aspectual negation is often expressed in sign languages by negative completion markers such as NOT-YET. Negative completion markers usually contrast with a positive completion marker (Zeshan 2006). Thus, Israeli SL has a perfect aspect marker glossed as ALREADY which cannot co-occur with a negative marker. In negation a negative completion marker (NEG-COMPL) is used.

IX$_1$ EAT NEG-COMPL
'I haven't eaten yet.' (Israeli SL, Meir 2004: 109)

Negative imperatives often display some form of irregular negation.

1.5.1.1.3 Negative determiners and adverbials

Negative determiners and adverbial negatives have been reported in all sign languages where a description of negation is available (Quer 2012). Negative determiners are also called negative pronouns or negative quantifiers. These signs are usually glossed as NO, NONE, NO ONE, NOTHING, NOBODY, ZERO, etc.

neg
CONTRACT SIGN NOBODY
'Nobody signed the contract.' (LIS, Geraci 2005: 221)

The best known negative adverbials are NEVER and NOT-YET. The syntactic position of negative adverbial may vary across and within sign languages. For example, in ASL the interpretation of the clause as perfect or modal depends on the preverbal or postverbal position of the adverb (Wood 1999).

a. BOB NEVER EAT FISH
'Bob has never eaten fish.' (ASL, Wood 1999: 31)

b. BOB EAT FISH NEVER
'Bob won't eat fish.' (ASL, Wood 1999: 32)

However, as example (b) shows, the grammar writer should be aware that signs glossed as NOTHING, ZERO and NEVER can also have a simple negative function. Thus, the sign NOTHING in Ugandan SL may be a simple clause negator, a negative existential, and a negative quantifier whereas the sign ZERO can function both as a negative existential and a negative quantifier (Zeshan 2006). Similarly, the sign NEVER in Israeli SL can carry an aspectual/modal reading depending on the position of the sign within the clause (pre- or postverbal position).

The grammar writer should keep in mind these various negative signs and describe in detail their position relative to the predicate and their interaction with non-manual markers of negation.

1.5.1.2 Syntax of negative clauses

In order to understand the syntax of negation it is very important to have some background on the neutral word order of the language to be described.

1.5.1.2.1 Position of negative elements

The first thing to verify is the position that a given negative marker with sentential scope must have within a clause. This position can be pre- or postverbal. For the majority of studied sign languages, the postverbal position is preferred. This position usually coincides with the clause final position (Zeshan 2004).

hs
BOOK IX$_{I}$ TAKE NOT
'I don't/didn't take a book/books.' (IPSL, Zeshan 2004: 39)

The most widely known sign language with a preverbal negative marker is ASL.

neg
JOHN NOT BUY HOUSE
'John is not buying a house.' (ASL, Neidle et al 2002: 39)

Irregular nergatives [Morphology – Section 3.5.2] and negative adverbials are also found in pre- or postverbal position as was shown in the relevant subsection.

1.5.1.2.2 Doubling

Negative doubling is an interesting phenomenon. Negative markers are doubled in structures of emphatic negation (Quer 2012).

neg
NO DRAW HURRY NO
'Don't draw in a hurry'. (CSL, Yang & Fisher 2002: 181)

1.5.1.2.3 Negative concord

Negative concord is a phenomenon where two negations in a sentence are interpreted as a single negation. To illustrate, Italian is a negative concord language, which obligatorily marks negation twice in a sentence like the following:

Gianni	non	ha	incontrato	nessuno.
Gianni	NEG	have.3SG	meet.PTCP	no one

'Gianni met nobody.' (Italian)

There is a limited body of research about negative concord in sign languages and few scattered examples are attested in sign languages such as Libras, CSL, TİD, and VGT (Quer 2012). Negative concord has been divided into two types: i) negative concord between a non-manual and a manual component, and ii) negative concord between two different manual components (Pfau & Quer 2002: 4). These cases are illustrated for LSC in (a) and (b) respectively.

neg
a. IX$_1$ FUMAR NO-RES
'I haven't smoked (at all).' (LSC)

neg
b. IX$_1$ FUMAR NO-RES MAI
I smoke NEG never
'I have never smoked (at all).' (LSC)

The limited data available suggests that most sign languages exhibit the first type of negative concord whereas the second type is much less frequent.

The grammar writer should clearly distinguish between doubling and negative concord. In doubling, the same negative element is repeated/reduplicated within the negative clause, whereas in negative concord two different negative elements co-occur within the clause.

1.5.2 Non-lexical marking of negation

Non-manual marking of negation is universal among sign languages since it has been reported in all sign languages where data is available. However, sign languages vary as to how these types of markers combine and to what extent they are able to convey sentential negation (Quer 2012). The literature reports two main sets of non-manual markers of negation: head movements and facial expressions. For some sign languages, non-manual marking includes mouth gestures and body postures (Zeshan 2004). An inventory will make it easier for the grammar writer to trace non-lexical markers.

1.5.2.1 Head movements

Head movements constitute the main group of non-manual markers of negation. Head movements of negation are: headshake, headturn and head tilt. The most frequent is headshake, which has been reported in all sign languages studied to date (Zeshan 2004). The use, the status within the clause, and the spreading properties of the headshake vary across sign languages. For most sign languages, the headshake must be co-articulated with some manual sign. For example in LSC, the headshake is articulated over the negative particle and may optionally spread over the predicate and additionally the direct object, as represented in (a). When no negative

manual sign is present, the headshake spreads over the predicate and it may spread to the direct object, as shown in (b).

[[ ]] hs
a. SANTI MEAT EAT NOT (LSC, Pfau & Quer 2010: 388)

[ ] hs
b. SANTI MEAT EAT (LSC, Pfau & Quer 2010: 388)

However, there are sign languages like NS where head movement cannot negate the clause without a manual sign.

hs
*WORK FINISH (NS, Zeshan 2004: 18)

On the other hand, the distribution of the headshake in CSL depends on the presence of a manual sign: the headshake co-articulated with the predicate is not sufficient to negate the sentence (a). In the absence of a manual negation, the headshake has to be articulated after the predicate in a free-standing position, unassociated with a manual sign.

hs
a. * UNDERSTAND
(Intended: 'I don't understand.') (CSL, Yang & Fisher 2002: 175)

hs
b. UNDERSTAND
'I don't understand.' (CSL, Yang & Fisher 2002: 175)

In general, the free-standing position of the headshake has been reported in other sign languages as well. This typically occurs in negative answers to real or rhetorical questions, as in (a) (NZSL), or in tags, as in (b) (VGT).

rhet-q hs
a. WORTH GO CONFERENCE
'Is it worth going to the conference? I don't think so.'
(NZSL, McKee 2006: 84)

hs+y/n
b. CAN ALSO SATURDAY MORNING
'It is also possible on Saturday morning, isn't it?'
(VGT, van Herreweghe & Vernmeerbergen 2006: 328)

The grammar writer must be aware that a headshake does not necessarily have a negative meaning. For example, a slow headshake might indicate a strong positive feeling or an extreme degree, as in the following example.

slow hs
IX_3 BEAUTIFUL IX_3
'How beautiful that is!' (NZSL, Zeshan 2004: 20)

Headshakes with a non-negative value also occur in interrogatives for emphasis (LSQ) or as markers of insecurity or politeness (NSL) (Zeshan 2004).

Headturn as a negative marker can be interpreted as a reduced form of headshake. It has been reported in BSL, Irish SL, Greek SL, Flemish SL, LSQ, CSL, and Russian SL (Zeshan 2004).

The third type of negative head movement is a backward tilt of the head. It has been reported in three sign languages of the Eastern Mediterranean: GSL, LIU and TİD. Similarly to headshake, head tilt is mostly co-articulated with a manual sign.

5_1.5.2.1_1_TİD_INDEX-I_SPEAK_KNOW^NOT

ht

IX_1 SPEAK KNOW^NOT

'I can't speak.' (TİD, Zeshan 2004: 25)

However, the headtilt can spread over the predicate or sometimes over the whole sentence for emphatic reasons. Free-standing position of the headtilt has also been reported.

ht

IX_1 AGAIN HELP IX_3

'There is no way for me to help him again.' (GSL, Antzakas 2006: 266)

Be aware that an affirmative use of the head tilt has been reported for LIS (Geraci 2005). In LIS, the head tilt (reported as head nod) is used to mark affirmative responses to questions or for emphasis.

5_1.5.2.1_2_LIS_ARRIVE_SOMEONE

ht

ARRIVE SOMEONE

'Someone did arrive.' (LIS, Geraci 2005: 266)

1.5.2.2 Facial expressions

Facial expressions related to negation include the following:

- frowning, eyebrows lowered
- narrowed or squinted eyes
- nose wrinkling
- spreading of lips
- pursed lips
- mouth corners down

These facial expressions are widespread cross-linguistically (Zeshan 2004). Although facial expressions are believed to be affective features that are optional and more

variable than head movements, there are strikingly few cases where negative facial expressions function as the sole negators in a sentence.

For instance, puffed cheeks function as the only clausal negator in TİD (Zeshan 2004). Similarly, in LSB, negation can be conveyed by the negative facial expression (lowered corners of the mouth or O-like mouth gesture) only (Quer 2012), but not by headshake alone.

neg
IX_1 $_1\text{SEE}_a$ JOÃO_a IX_1 (NOT)
'I didn't see João.' (LSB, Quer 2012: 327)

1.5.2.3 Body posture

There is limited research on body posture related to negation. A back lean of the body is associated with various verbs like DENY, AVOID, DON'T-WANT and DISAGREE in ASL and NGT. In different settings, a backwards lean of the body carries the notion of non-involvement, exclusion and negation/denial. An upward movement of the shoulder (shrug) is considered a variant of the backward lean of the body (Wilbur & Patschke 1998).

1.5.2.4 Spreading domain

Spreading patterns of negative non-manuals vary across sign languages. Summarizing the spreading options illustrated in the examples quoted so far in this section, the following cases emerge:

- head movement spreads over the manual negative sign only;
- head movement spreads over the manual negative sign and the verb;
- head movement spreads over the manual negative sign and the predicate (verb+object);
- head movement spreads over the verb in the absence of a manual negator;
- head movement spreads over the predicate (verb+object) in the absence of manual negator;
- head movement spreads over the whole sentence;
- head movement spreads after the sentence in the absence of a manual negator.

All these variations are controlled by specific syntactic rules that apply to a particular sign language. However, only some evidence is available on the role of syntax in the spreading properties of head movement.

Spreading patterns can be subject to structural restrictions. For example, if a topic or an adverbial clause precedes the negative clause, the topic non-manual blocks the negative non-manual from spreading over the whole sentence. This can be seen in the following ASL example, adapted from the Boston ASL Corpus (Neidle & Metaxas 2015, available online: www.bu.edu/av/asllrp/NM/ File 50 U 6).


5_1.5.2.4_1_ASL_MARY-IX-NOT-VEGETABLE-NO

topic neg
MARY IX_3 NOT VEGETABLES NO
'As for Mary, she doesn't like vegetables.'

Spreading patterns can also be affected by anticipation. Anticipatory movements are attested in ASL and they occur just prior to the articulation of the negative particle (Bahan 1996).

As for facial expressions, their status is unclear in most sign languages (Zeshan 2004). In general, they are considered optional features in contrast to head movements. However, this is not the case for all sign languages, since Libras has negative structures where the negative facial expression is the sole element marking negation by itself.

The grammar writer should be aware that most of the research describes the spreading domain as the scope of non-manual features. However, the term scope is used in the analysis of negation for syntactic and semantic purposes. Syntactic and semantic scope and the scope (spreading) of negative non-manuals are two different terms related to different levels of analysis.

Elicitation materials

Negatives often occur in everyday language production. However, an in-depth analysis requires a considerable body of data for each type of negation. This may be possible to achieve by analyzing a corpus containing only free conversations. However, this may hide a risk. Free conversations include both formal and non-formal structures of negatives. Therefore, the grammar writer may not be able to fully investigate specific structures of negatives, whereas structures such as emphatic negation may be misleading for the analysis. For this reason, it might be useful to develop materials for specific language structure elicitation. Comic books or comic strips, pictures and pictures series, cartoons, and silent movies are suitable materials for elicitation. Of course, the whole process should be video-recorded so that the grammar writer will be able to trace back the data. We recommend that the grammar writer or the person providing the material to the signing consultant during the video recording should be also on camera. This is important for avoiding information gaps whenever the grammar writer needs to reexamine recorded material.

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Chapter 2 Clause structure

2.0 Definitions and challenges

2.0.1 Definition of constituent

In order to describe the internal structure of the clause, the grammar writer is advised that he/she should identify the constituents inside the clause. Informally speaking, a constituent is a natural structural unit within a clause. For example, there is an intuitive sense in which the words 'the keys on the table' form a natural unit in the clause 'the keys on the table belong to John', while the words 'table belong to' are not a unit in this clause. Of course, the grammar writer needs precise methods to segment a clause into the constituents it consists of, since the intuition about what counts as a natural unit is not always a reliable guide. For these reasons, a series of tests to identify constituents have been developed. In this section we discuss whether these tests can be applied to sign languages and whether sign language-specific tests can and need be built (e.g. test that built on non-manuals). While the actual grammar of a given sign language may or may not contain a list of constituency tests, depending on various factors including the level of expertise of the expected audience, knowledge of constituency tests is certainly useful for the grammar writer, as they are techniques to fragment the clause into main categories like noun phrase, verb phrase, etc.

An important clarification is that the concept of constituent is always relative to a given clause since the very same group of words can form a constituent in one clause, but not in another one. To anticipate, one popular constituency test is the pro-form test, namely a group of words can be taken to form a constituent if it can be replaced by a pro-form (typically, a pronoun [Lexicon – Section 3.7). With this in mind, notice that 'old pictures' is a constituent in the clause 'Old pictures are valuable', as witnessed by the fact that 'old pictures' can be replaced by a pronoun ('*they* are valuable') but 'old pictures' is *not* a constituent in the clause 'Old pictures of J.F.K. are

valuable' since it cannot be replaced by a pronoun ('**they* of J.F.K. are valuable'). Here the relevant constituent is the noun phrase 'old pictures of J.F.K.'.

Another caveat is that a constituency test can single out a single word as a constituent, as for the word 'John' in 'John is over there', which can be replaced by a pronoun ('*He* is over there'). So, a constituent can be as small as a word. Conversely, an entire clause can be identified as a constituent. This can be shown by the fact that an embedded clause can be replaced by a pronoun ('I did not say that John is over there' → 'I did not say *that*').

A final caveat is that there can be cases where two constituency tests do not fully match, typically because one test cannot be applied to the relevant clause for various complicating factors. In general, if one test identifies a set of words as a constituent this is considered enough evidence for the constituency of that group of words. In the following subsections, we discuss the following constituency tests in more detail:

- Displacement test
- Pro-form substitution test
- Coordination test
- Non-manual marking test
- Ellipsis test

2.0.2 Displacement test

A first diagnostic for constituency is the following: a group of words/signs can be considered a constituent if it can appear in a different position from where it occurs in a sentence with a neutral information structure [Pragmatics – Section 4]. For example, we can conclude that the noun phrase 'that book' in English is a constituent in the sentence '*That book*, I want to read! (not this one)' because this noun phrase has been moved to a sentence initial position where it receives contrastive focus [Pragmatics – Section 4.1].

The reasons why a constituent can be displaced may vary; focalization is just one example. Wh-phrase / Wh-phrases [Syntax – Section 1.2.3] may also be displaced in dedicated clause-initial or clause-final positions, so they are constituents in the clause. Categories that introduce a topic [Pragmatics – Section 4.2] are another example, as they typically appear in a dedicated position (typically sentence-initial). In (a) a noun phrase [Syntax – Chapter 4] INTERPRETER^SIGN-LANGUAGE is topicalized, while in (b) (Aarons 1994:172) the entire embedded clause is topicalized.

a. INTERPRETER^SIGN-LANGUAGE, GOVERNMENT PAY-THEM NOT-HAVE
'The sign language interpreters, the government does not pay (them).'
(HKSL, Sze 2011: 137)

topic neg
b. JOHN MUST LIPREAD MOTHER, TEACHER NOT REQUIRE
'About John having to lipread Mother, the teacher does not require (it).'
(ASL, Aarons 1994: 172)

Other categories, including the verb phrase and the prepositional phrase, may be topicalized or focalized, as in the English sentences '*Fired by his boss*, John indeed was' or '*With a spoon* you need to eat your soup!'. So, in principle the displacement test is a powerful instrument to identify constituents. However, there are various complications. One problem is that, while it can be relatively easy to decide what order is associated to a neutral informational structure in rigid word order [Syntax – Section 2.3] languages like English, it is more difficult to do so in flexible word order [Syntax – Section 2.3] languages. One way to cope with this problem in sign languages builds on the fact that categories that are displaced typically co-occur with a specific non-manual marking that is not required when they appear in situ.

Another potential problem is that sometimes constituents that are naturally displaced together can also split. The splitting option is attested in *wh*-movement constructions in various sign languages. For example, (a) below shows that the noun phrase BOOK WHICH is a constituent in LIS, as it is displaced as a whole, but (b) shows that the *wh*-sign and the noun BOY do not need to move together but can split.

which
a. PAOLO STEAL BOOK_i WHICH_i
'Which book did Paolo steal?' (LIS, Cecchetto et al. 2009: 285)

which
b. BOY_i BOOK STEAL WHICH_i
'Which boy stole the book?' (LIS, Cecchetto et al. 2009: 285)

2.0.3 Pro-form substitution test

According to another diagnostic for constituency, if a group of words/signs can be replaced by a pro-form, then it is a constituent. Well-known cases of pro-form are pronominal-like expressions, which can replace a noun phrase (*it*, *(s)he* etc.), a prepositional phrase (*there*) or a whole clause (*that*).

The application of this diagnostic to sign language is straightforward in simple cases like the example below, where an INDEX [Lexicon – Section 1.2.2 / Pragmatics – Section 2.1] refers to the individual denoted by the noun phrases PAST PRESIDENT or NOW PRESIDENT. This is confirmed by the fact that the INDEX points to the same locus where the noun phrase is articulated.

IX$_1$ KNOW PAST PRESIDENT IX$_a$ IX$_1$ KNOW NOW PRESIDENT IX$_b$. IX$_b$ SMART BUT IX$_a$ NOT SMART.
'I know the former President and I know the current President. He [= the current President] is smart but he [=the former President] is not smart.'
(ASL, adapted from Schlenker 2011: 350)

However, there are cases where an INDEX refers to ontological categories that may not have a one-to-one association with a specific syntactic constituent. For example, Schlenker (2013) claims that IX$_a$ and IX$_b$ in the example below refer to the situations where it will rain (or it will snow), rather than referring directly to the antecedent of the conditional (the sign points to the locus where the antecedent is articulated, though).

[IF RAIN TOMORROW]$_a$ WILL WARM. [IF SNOW TOMORROW]$_b$ WILL COLD.
re re
IX$_b$ IX$_1$ HAPPY. IX$_a$ IX$_1$ NOT HAPPY
'If it rains tomorrow it will be warm, but if it snows but if it snows tomorrow it will be cold. Then [= if it snows] I'll be happy. Then [= if it rains] I won't be happy.'
(ASL, Schlenker 2013: 215–216)

In fact, in spoken languages pronouns [Lexicon – Section 3.7 / Pragmatics – Section 2.1] can also refer to an entity that is salient in the discourse but does not have a one-to-one mapping with a syntactic constituent. In the example below, the pronoun may refer to any combination of Mary, Jane, and Peter, although these noun phrases are not coordinated, so they do not form a *syntactic* constituent.

a. Mary$_1$ introduced Jane$_2$ to Peter$_3$. Then they$_{1+2+3}$ left
b. Mary$_1$ introduced Jane$_2$ to Peter$_3$. Then they$_{1+2}$ left
c. Mary$_1$ introduced Jane$_2$ to Peter$_3$. Then they$_{2+3}$ left
d. Mary$_1$ introduced Jane$_2$ to Peter$_3$. Then they$_{1+3}$ left

For this reason, the grammar writer may want to avoid plural pronouns and he/she should be aware that pointing signs may refer to entities that have only an indirect relation with syntactic constituents.

2.0.4 Coordination test

A third diagnostic for constituency is coordination [Syntax – Section 3.1]; namely if two categories can be coordinated, then they are two constituents of the same type. Although it is not always straightforward to apply this test to sign languages, because coordination can be done via non-manual markings, which must be previously

identified, the coordination test in principle allows the identification of categories like noun phrases, verb phrases, clauses, adverbials, etc.

2.0.5 Non-manual marking test

At least in some cases, non-manual marking is an effective way to identify constituents. For example, categories that are marked as topic or focus are likely cases of constituents inside the clause. In principle, lexically based non-manual marking (like the facial expression commonly associated to the signs for 'thin' or 'fat') might be an indication of constituency, if the lexical non-manual marking extend to the noun modified by the adjective [Syntax – Chapter 6]. The extension of the lexical non-manual marking is an aspect that might change cross-linguistically, though.

In addition to the problem of disentangling grammatical from affective non-manual marking, another potential challenge arises, namely in cases in which non-manual marking indicates phonological rather than syntactic constituents (Sandler 2012). As the correspondence between phonological and syntactic categories is not perfect, this is a proviso that should be kept in mind.

A different concern specifically applies to *wh*-non-manual marking [Syntax – 1.2.3.1]. The *wh*-sign is always marked by a lexical non-manual marking. However, at least in sign languages like LIS, *wh*-non-manual marking may spread over a bigger portion of the clause and, when it does, it has been claimed not to signal constituents but to play a different grammatical function (Cecchetto et al. 2009).

2.0.6 Ellipsis test

In many spoken languages a category can go unpronounced if a suitable antecedent is present that provides the content for the missing category. A category that can go unpronounced forms a constituent. For sake of explicitness, we indicate the elliptical category by striking it out. In English, categories that go unpronounced include the verb phrase (cf. 'John has already left while I have not ~~already left~~') or the clause out of which a *wh*-phrase has moved (cf. 'John bought something but I don't know what ~~John bought~~').

In other languages, ellipsis [Syntax – Section 2.5] of a subpart of the noun phrase is observed, as shown by the Dutch example below.

Zij heeft een zwarte auto, maar ik heb een groene ~~auto.~~
She has a black car, but I have a green (Dutch, Sleeman: 1996: 13)

Although work on ellipsis in sign languages is still limited, it suggests that ellipsis might be a useful hint to identify constituents inside the clause.

2.1 The syntactic realization of argument structure

2.1.0 Definitions and challenges

2.1.0.1 Argument structure and transitivity

Verbs (and other predicates like adjectives and nouns) combine with a certain number of dependents or participants in order to express a complete predication to refer to a particular event or situation. Dependents that obligatorily co-appear with a predicate are known as *arguments*. The argument-taking property of a predicate constitutes the *argument structure* of that predicate (or valency). Traditionally, the argument structure of a verb has been considered to be derivable from its lexical semantics, which determines the number of arguments (one, two or three) and the type of thematic roles / thematic roles [Semantics – Section 6.1] it has to assign to its participants. It is, though, a prototypical semantic property that necessarily interfaces with syntax (how those arguments are mapped onto syntactic structure) and morphology (how verb morphology encodes argument-structure properties).

Take, for instance, the verb *put* in the following English sentence: the three arguments receive the roles of agent, theme and goal, respectively, and all of them must be realized for the sentence to be grammatical.

*(David) put *(the pullover) *(on the shelf).
David = agent
the pullover = theme
on the shelf = goal

However, sometimes obligatoriness is not a sufficient criterion to determine the argument status of a participant, as the next sentence shows. Syntactically, *at school* may be optional, but semantically it must be (contextually) understood that David arrived somewhere, which derives from the fact that the verb 'arrive' has two semantic arguments and the second one bears a goal thematic role.

David arrived (at school).

By contrast, *loudly* and *in his room* are both syntactically and semantically optional in the next sentence since they are not required by the predicate (the former is a modifier of the predicate and the latter expresses the location where the event takes place). These constituents are called *adjuncts*, because they do not belong to the argument structure of the predicate.

David laughed (loudly) (in his room).

Single-argument predicates are called *intransitives*, since they only require a subject argument; *transitives* are those whose two arguments realize a subject and a direct

object; *ditransitives* feature three arguments, namely subject, direct object and indirect object. Typical examples of these three classes in English are respectively:

a. David sighed. (intransitive)
b. David bought a lollipop. (transitive)
c. David gave the lollipop to his friend. (ditransitive)

However, this characterization is not fully adequate. An important qualification is that intransitive predicates can further be subclassified as either unergative or unaccusative [Syntax – Section 2.1.1.2.]

Determining the argument structure of a predicate is not always an easy task. A basic difficulty arises with implicit arguments, as the case of *arrive* mentioned above illustrates: implicit arguments are semantically obligatory, but syntactically optional. Additionally, two types of factors need to be taken into account when examining argument structures for lexical predicates. On the one hand, the specific morphological and syntactic characteristics of the language under study are crucial when examining argument structure, because they affect the overt realization of arguments. One such characteristic is argument omission, which refers to the fact that arguments (typically subjects, but also objects) can remain covert under certain syntactic or contextual conditions. On the other hand, there are grammatical operations that can affect the realization of the argument structure of a predicate and alter its valency either by reducing it or by increasing it. The most representative cases of this type of operations are passivization / passivization [Syntax – Section 2.1.3.2] and causativization / causativization [Syntax – 2.1.3.1], respectively, which will be discussed below.

Next to these argument-structure changing operations, other systematic regularities have been identified in related pairs of the same predicates within a language, and such regularities recur crosslinguistically. Such correlations for predicate types have been known as argument structure alternations. A well-known argument structure alternation is the one between transitive and unaccusative, as exemplified here for English:

a. The girl broke the glass. (transitive)
b. The glass broke. (unaccusative)

2.1.0.2 Methodological challenges

We would like to draw the attention of the grammar writer to an issue regarding a typological distinction between languages in terms of how they treat different arguments of a predicate, since this may be relevant to the typological status of sign languages and their syntax.

The distinction we would like to discuss is between the so-called Nominative-Accusative languages versus Ergative languages. A typical example of the N-A

languages is English. In English, the subject of a transitive verb such as 'find' and the subject of an intransitive verb such as 'arrive' have the same morphological marker, namely, nominative case. The nominative form of the third person pronoun is 'he', as shown in (a) and (b) below. The object of a transitive verb, on the other hand, is inflected with a different marker, namely, accusative. The accusative of the third person pronoun is 'him', as shown in (c).

a. *He* found her.
b. *He* arrived home late.
c. The police found *him*.

In Ergative languages, on the other hand, the object of a transitive verb and the subject of an unaccusative verb are treated similarly, receiving the same morphological marker. In the Basque examples below, *Martin* is the subject of the unaccusative verb *come* and *child* is the object of the transitive verb *send*, and they are both in absolutive case, which is phonologically null in Basque. The subject of the transitive verb *send*, *Martin*, in (b), however, is marked with a different case, namely, ergative.

a. *Martin* ethorri da.
   Martin-abs came Aux
   'Martin came.'
b. *Martin*-ek *haurra* igorri du.
   Martin-erg child-abs sent Aux
   'Martin sent the child.'

(Basque, adapted from Comrie 1978: 329–336)

Thus, roughly, we can say that Nominative-Accusative languages mark the grammatical function 'subject' morphologically, regardless of its thematic role (agent or patient/theme), and Ergative languages distinguish agents and patients/themes morphologically.

Ergative languages do not always display uniform behavior. We can not go into the details here, but there are two issues that should be noted: (i) some languages are called split-ergativity languages since this ergative behavior is observed in some constructions but not the others, (ii) while some languages show morphological ergativity as illustrated with the Basque examples above, others also show syntactic ergativity. In this latter type of language the theme/patient arguments of predicates pattern together with respect to certain syntactic phenomena such as coordination and relativization [Syntax – Section 3.4] / relativization [Semantics – Section 14.3]. What is crucial to note for our purposes is that for a language to be considered ergative, it does not have to have overt case morphology.

It is often assumed that sign languages do not have case morphology. So, it is not possible to identify ergativity in sign languages based on the distribution of case morphology. However, some researchers have argued that

backward agreement / backward agreement [Morphology – Section 3.1] in sign languages is reminiscent of ergativity since as a result of the reversal of the path movement, the agent is marked like the theme/patient of a forward agreement verb and the theme/patient is marked like the agent of a forward agreement verb (Pfau, Salzmann & Steinbach 2011). Based on various tests involving coordination / coordination [Syntax – Section 3.1] and gapping constructions, Sevinç (2006) also argues that TİD shows syntactic ergativity properties.

Thus, the grammar writer should be aware of the possibility that the sign language under investigation (or all sign languages) may typologically belong to the family of ergative languages, and this may have consequences for its syntax.

2.1.1 Types of predicates

2.1.1.1 Transitive and ditransitive predicates

Transitive predicates are those selecting two arguments, an internal and an external one. The prototypical roles for the two arguments are agent and theme/patient, respectively. Ditransitive predicates select for three arguments: source, theme and goal/recipient, realized as subject, direct object and indirect object, respectively. They often express some notion of transfer, such as 'give' or 'telephone', and, in sign languages, may show overt agreement [Lexicon- Section 3.2.2], whereby subject agreement encodes the agent/source argument and object agreement encodes the goal/recipient argument.

top top
BOOK DAVID IX$_3$ IX$_{1\,1}$GIVE$_3$ ALREADY
'I already gave the book to David.' (LSC)

In this example, the internal theme argument BOOK is not expressed through agreement morphology on the verb (source and goal location of the path movement, and or orientation of the palm/hand). However, hand configuration determined by the theme argument (sometimes identified as handling classifier / handling classifier [Morphology – Section 5.1.3]) can be considered as a sort of agreement as well, or else as an instance of noun incorporation.

2.1.1.2 Intransitive predicates: unergative and unaccusative

Importantly, within the class of intransitive verbs, two classes can be distinguished: unergative verbs and unaccusative verbs.

Unergative verbs have a subject that has the properties of an external argument. Its thematic role is typically that of an agent. Many activity verbs like *dance*, *talk* or *laugh* fall under the class of unergatives.

TEACHER LAUGH
'The teacher laughed.' (LSC)

By contrast, unaccusative verbs are predicates that have a subject that has properties of an internal argument. Its thematic role is that of theme, and it is typically non-agentive:

WOMAN FALL. POLICE CAR CL:car 'pass by'
'The woman fell. A police car passed by.' (LSC)

This holds both for lexical verbs of motion and for classifier constructions expressing movement.

Although some verbs, like *die* or *dance*, are expected to be unaccusative or unergative in all languages due to their semantics, other verbs fluctuate between one class and another from language to language. Therefore language-particular tests to tease apart unaccusative and unergative verbs are useful. These tests build on the fact that the property of being unaccusative or unergative systematically correlates with some syntactic properties. New tests might be needed for the language to be described. This is particularly true for sign languages since tests for unaccusativity/unergativity were first elaborated for spoken languages and only recently have sign language-specific tests been identified.

Some tests that set apart unaccusatives and unergatives include the following:

(a) In some Romance languages (Catalan, French, Italian), the partitive clitic *ne/en* accompanies both objects and subjects of unaccusative verbs, but not subjects of unergative verbs, as exemplified here for Catalan:
   a. N'he comprat moltes.
      PART-have.1SG buy.PRTC many.FEM.PL
      'I bought many (of them).'
   b. N'han arribat moltes.
      PART-have.3PL arrive.PRTC many.FEM.PL
      'Many (of them) arrived.'
   c. (*N')han xisclat moltes.
      have.3PL scream.PRTC many.FEM.PL
      'Many (of them) screamed.' (Catalan)

(b) In Romance and Germanic varieties that use two auxiliaries [Morphology – Section 3.3] ('be' and 'have') for perfective tenses, *be* appears with unaccusative verbs and *have* is used with unergatives, as exemplified here for Dutch:
   a. David is gevallen.
      David be.3SG fall.PTCP
      'Davis has fallen.'
   b. David heeft gebeld.
      David have.3SG call.PTCP
      'Davis has called.' (Dutch)

(c) In ASL the sign for negation NOTHING has been found to target only internal arguments, namely direct objects and subjects of unaccusatives.

(d) In ASL, unergative predicates (but not unaccusative predicates) can combine with the adverb WILLINGLY and with the negative imperative FINISH!. This test taps on the agentivity of the single argument of the predicate: the subject of an unergative verb is an agent, therefore it is possible for this agent to do something willingly and to stop doing it. This is not possible for the subject of unaccusative verbs, that is not an agent ('?? John arrives willingly' or '?? Stop arriving').

(e) Another sign-language specific test involves the distributive morpheme [Morphology – Section 3.1.2.3]. In LIS this morpheme is expressed by a repetition of the verbal root and is always interpreted on the internal argument (the theme) in a transitive construction. For example, the following sentence means that the professor is examining each of them, not that each professor is examining someone.

 5_2.1.1.2_1_LIS_professor examine[distr]

PROFESSOR EXAMINE[distr]
'The professor is examining each of them.'

(LIS, adapted from Mazzoni 2012: 164)

The distributive morpheme is acceptable with unaccusative verbs like *rise* but not acceptable with unergative verbs like *cry*:

 5_2.1.1.2_2_LIS_cake rise[distr]

a. CAKE RISE[distr]
'Every cakes is rising.'
b. *CHILD CRY[distr]
Intended meaning: 'Every child is crying.'

(LIS, adapted from Mazzoni 2012: 164)

2.1.1.3 Psychological predicates

Psychological predicates are those expressing a psychological state. They are known to constitute a heterogeneous class with regards to the syntactic realization of arguments. Given the complexity of the syntactic realization of arguments in this class, it is especially important to pay attention to all the grammatical means the language might have available to mark syntactic functions (agreement, agreement auxiliaries, etc.).

Depending on the type of psychological predicate, the experiencer can be realized as a subject or as an object. This basic property allows the distinction between subject experiencer predicates and object experiencer predicates, as in the following English sentences, exemplifying each class, respectively.

Peter hates broccoli. (Subject experiencer)
The news surprised me. (Object experiencer)

The following sentence is a case of subject experiencer predicate in ASL.

MARY HATE SUE
'Mary hates Sue.' (ASL)

Next to stative psychological predicates we also find causative ones, where an agent intentionally induces the psychological state of the experiencer. Sign languages tend to lexicalize stative and causative psychological predicates as separate lexical entries, as in FEAR (stative) versus SCARE (causative). Some sign languages like LSC and GSL construct psychological predications by means of a causative auxiliary and a sign expressing the psychological state, as in the following GSL sentence:

 5_2.1.1.3_1_GSL_ix2 2give-aux3 burden end

IX_{2} $_{2}$GIVE-AUX$_{3}$ BURDEN END!
'Stop being a trouble/nuisance to him/her!' (GSL)

2.1.1.4 Meteorological predicates

A rather special class of predicates is weather-verbs, which either never take an overt argument, as in Portuguese (i), or simply take a dummy or expletive-like one, as in French (ii):

a. Neva.
   snow.3SG
   'It is snowing.' (Portuguese)
b. Il pleut.
   pro.3SG RAIN.3SG
   'It is raining.' (French)

2.1.1.5 Argument structure alternations

Argument structure alternations have been identified in both spoken and sign languages. For example, the same verbal roots may appear in a transitive or in an unaccusative frame. This is an example from English.

a. I changed my life.
b. My life changed.

A similar alternation has been found in ASL and is further documented in other sign languages like LIS, LSA, LSC, and NGT. The relevant studies focus on classifier constructions, but are extendible to lexical predicates. Classifier constructions are deemed to belong to different argument structure classes according to the handshape used: handling classifiers [Morphology – Section 5.1.3] form transitive predicates; whole entity classifiers [Morphology – Section 5.1.1] form unaccusative predicates;

and body part classifiers [Morphology – Section 5.1.2] form unergative predicates. The main types of attested argument structure alternation are the following:
(i) transitive/unaccusative alternation: handling CL/whole entity CL
(ii) unergative/unaccusative alternation: body part CL/whole entity CL

These alternations are illustrated here for ASL. The following sentences illustrate the transitive/intransitive alternation.

a. BOOK CL:handling: 'grab flat object'+MOVE
'S/he took the (standing) book and laid it down on its side.'
b. BOOK CL:whole-entity: 'flat object'+MOVE
'The (standing) book fell down on its side.'
(ASL, Benedicto & Brentari 2004: 752)

The following sentences illustrates the unergative/unaccusative alternation:

a. ROSIE CL:bodypart 'head'+BOW
'Rosie bowed.'
b. ROSIE CL:whole-entity 'upright human'+BOW
'Rosie bowed.' (ASL, Benedicto & Brentari 2004: 763)

The grammar writer should verify which kind of alternation is possible in the language under investigation, and describe it.

2.1.2 Argument realization

Arguments are canonically realized as noun phrases (NPs), but we also find a whole array of other possible realizations, such as prepositional phrases (PPs) or clauses (finite or non-finite). Determining the whole range of possible argument encoding is a language-particular goal that requires knowledge about specific grammatical properties of the language. Sign languages, for instance, have been shown to possess very few prepositions and virtually no overt case marking, which forces the grammar writer to look for other grammatical clues to diagnose the argument selection properties of a predicate.

2.1.2.1 Overt NPs

The most canonical realization of an argument is an NP. Typically, an NP appears in its argument position in an unmarked word order (i.e. with a neutral information structure [Pragmatics – Section 4]), as in the ASL example (a) and in the DGS example (b):

a. JOHN EAT APPLE (ASL)
b. JOHN APPLE EAT (DGS)
'John ate an apple.'

However, overt NPs appear in non-argument position as a result of syntactic modification often induced by discourse factors, such as topic [Pragmatics – Section 4.2] / topic or focus [Pragmatics – Section 4.1] / focus fronting. In these cases it is very important to examine the non-manual markers that are coarticulated with the argument appearing in a non-argumental position:

top
JOHN TEACHER LIKE
'John, the teacher likes.' (LSC)

The grammar writer should take into account that sometimes one and the same argument can occur as a discontinuous constituent, that is, parts of it appear in non-adjacent positions in the sentence. This is typical for quantified constituents or complex wh-phrases [Syntax – Section 1.2.3] / wh-phrase, as in the following LSC examples:

a. top
BOOK IX_1 LIKE ALL
'I like all books.' (LSC)

b. top wh
BOOK IX_2 LIKE^MORE WHICH
'Which book do you prefer?' (LSC)

2.1.2.2 Pronouns

Pronouns constitute another canonical expression of arguments, just as full NPs. In this category we find personal pronouns [Lexicon – Section 3.7.2], but also demonstrative pronouns [Syntax – Section 4.1.2], reflexive pronouns [Lexicon – Section 3.7.4], etc.

a. top
JOHN IX_1 LIKE
'John, I like.' (LSC)

b. IX_1 PREFER IX_a
'I prefer this one.' (LSC)

2.1.2.3 Verb agreement

Verb agreement [Morphology – Section 3.1] is a strong clue to determine the argument structure of a predicate because it will only involve syntactic arguments, never an adjunct. Under 'verb agreement' two types of inflections that are normally treated separately need to be taken into account: person agreement (with animate participants) and locative or spatial agreement (with arguments of location and movement predicates encoding goal, source, path or location). In addition, non-manual agreement marking has been identified for a sign language like ASL.

2.1.2.3.1 Manual verb agreement

Person agreement predicates are often characterized as ditransitives expressing some notion of transfer, such as GIVE or TELEPHONE, whereby subject agreement encodes the agent/source argument and object agreement encodes the goal/recipient argument.

5_2.1.2.3.1_1_LSC_book david ix3 ix1 1give3 already

top	top	top	top	
BOOK	DAVID	IX_3	IX_1	$_1GIVE_3$ ALREADY

'I already gave the book to David.' (LSC)

Note that in this type of case the internal theme argument is not expressed through agreement morphology on the verb. However, hand configuration determined by the theme argument (sometimes identified as handling classifier [Morphology – Section 5.1.3]) can be considered as a sort of agreement as well, or else as an instance of noun incorporation. Such marking of the theme on the verb is not incompatible with the appearance of the corresponding overt NP/DP in the same clause.

Nevertheless, not all person agreement verbs are ditransitives: some of them are clear transitives where the second agreement marker agrees with the internal argument realized as a direct object, as in LSC SUMMON, for example.

It is important to keep in mind that subject agreement marking has been described as optional in most sign languages. The consequence of this is that object agreement is the one that surfaces obligatorily with agreement verb, even if the verb has an external argument.

There might be other circumstances that induce the absence of overt marking of agreement on agreement verbs, such as certain types of quantified arguments (negative, non-specific, generic), as exemplified here for LSB. In this case the uninflected citation form of the verb occurs.

IX_1 NOT MEET NOTHING
'I didn't meet anyone.' (LSB)

Another case where the verb appears uninflected is when it co-occurs with an agreement auxiliary. Some sign languages have a specialized verbal auxiliary form that encodes subject and object marking. It mainly appears with plain verbs, which cannot carry inflection for subject and object arguments, but it can also accompany inflected agreement verbs with an emphatic interpretation. Moreover, in LSC, for instance, the agreement auxiliary appears naturally with inflected backwards agreement [Lexicon – Section 3.2.2] verbs (note that the path of the auxiliary goes from the subject locus to the object locus).

IX_{3a} IX_{3b} $_{3a}AUX_{3b}$ $_{3b}$UNDERSTAND$_{3a}$ NOT
'She doesn't understand him.' (LSC)

Spatial predicates are the other group of predicates that show manual agreement by means of path movement (motion verbs) or localization at a point (locative verbs). With motion verbs, the initial and final points of the path agree with the locations of the source and goal arguments that define the path, as in the following LSC examples:

 5_2.1.2.3.1_2_LSC_washington ixa bristol ixb amove-homeb

a. WASHINGTON IX_a BRISTOL IX_b $_a$MOVE-HOME$_b$
'He moved from Washington to Bristol.'

 5_2.1.2.3.1_3_LSC_arrive early

b. $ARRIVE_a$ EARLY
'She arrived (there) early.' (LSC)

Non-movement spatial verbs that have a location argument simply agree by localizing the sign in the relevant location or orienting towards it:

$STAY_a$ YEAR^TWO
'He stayed there for two years.' (LSC)

2.1.2.3.2 Non-manual verb agreement

A second way to mark agreement has been identified for ASL, namely non-manual agreement. This type of agreement co-appears with both inflected person agreement verbs such as BLAME and plain verbs such as LOVE. The two non-manual articulations involved are head tilt towards the location of the subject argument and eye gaze towards the location of the object. With intransitive predicates, both articulations can mark subject agreement.

head tilt-3a
eye gaze-3b
a. ANN_{3a} $_{3a}$BLAME$_{3b}$ $MARY_{3b}$
'Ann blames Mary.'

head tilt-3a
eye gaze-3b
b. $JOHN_{3a}$ LOVE $MARY_{3b}$
'John loves Mary.' (ASL)

2.1.2.4 Classifier handshape

A classifier handshape [Morphology – Chapter 5] / classifier handshape [Pragmatics – Section 2.2.2] can show agreement with the direct object of a ditransitive verb. The phenomenon is particularly pervasive in classifier constructions, where

it can stand for some visually salient property of the cross-referenced argument, as in the following example.

CAR CL:vehicle: 'at location a' MAN CL:upright-human 'move to a'
'A man approached the car.' (LSC)

2.1.2.5 Argument clauses

Arguments can also be realized by an argument clause [Syntax – Section 3.3] / argument clause [Semantics – Section 14.1] in sign languages, both as subjects and objects. The following sentence is is an NGT example of an object dependent clause:

 5_2.1.2.5_1_NGT_ix1 know ix2 2come1

IX_1 KNOW $IX_{2\ 2}$COME$_1$
'I know you are coming (to see me).' (NGT)

The following is an example of an LSC sentence where a subordinate clause serves as a subject

 5_2.1.2.5_2_LSC_important ix2 2tell1

IMPORTANT $IX_{2\ 2}$TELL$_1$
'It is important that you tell me.' (LSC)

2.1.3 Argument structure change

2.1.3.1 Extension of argument structures

The basic argument structure of a verb can sometimes be extended with the addition of an extra argument expressing a non-obligatory thematic role. This normally requires some explicit morpho-syntactic marking. A good example of this is offered by the specialized person agreement markers [Morphology – Section 3.1.1] (PAM) in DGS glossed as PAM-ÜBER (PAM-ABOUT) and PAM-FÜR (PAM-FOR), exemplified in the following sentences: in (a) the argument structure is extended with a subject matter and in (b) with a beneficiary.

 5_2.1.3.1_1_DGS_ix1 pam-über2 can chat

a. IX_1 PAM-ÜBER$_2$ CAN CHAT
'We could chat about you.'

 5_2.1.3.1_2_DGS_ix1 can pam-für2 book buy

b. IX_1 CAN PAM-FÜR$_2$ BOOK BUY
'We can buy a book for you.' (DGS)

Causativization is another case of argument extension, where a complex event has a causer and a caused event. The causative event can be encoded lexically or else be expressed analytically with a periphrasis involving a verb of causation like MAKE, DO or CHANGE. As an instance of lexical causatives, handling classifiers can incorporate the change of state, as in the following HKSL sentence.

FATHER ROD CL:handling: 'break'
'Father broke the rod by snapping it.' (HKSL)

However, the resultant state can sometimes require explicit expression by an additional overt predicate in HKSL.

FEMALE PAPER CL:handling: 'tear' CL: size-and-shape: 'long, thin object'
'A female shreds a piece of paper.' (HKSL)

The analytical expression of a causative predication involves the use of an overt causative predicate with its own external argument. It can take stative or eventive complements expressing the caused eventuality. This is illustrated for DTS.

 5_2.1.3.1_3_DSL_ix make/do ix1 angry

IX MAKE/DO IX_1 ANGRY
'This makes me angry.' (DSL)

Some sign languages such as LSC and GSL resort to specialized causative auxiliaries to express a change of (psychological) state, as the following LSC example illustrates.

ARRIVE $_3$AUX-CAUS$_1$ HAPPY
'His arrival makes me happy.' (LSC)

Yet another case of argument extension is applicative. The applicative operation either creates a new argument that is added to the original argument structure of the verb, or it changes the argument structure promoting an indirect object (typically a locative) to the direct object position. The latter case can be illustrated with German, where the verbal prefix *be-* can turn an indirect object into a direct object. The original direct object can be omitted or expressed as an oblique argument (a prepositional phrase). Example (a) is the applicative construction corresponding to (b).

a. IKEA liefert dem Nachbar-n Möbel
   IKEA delivers the neighbour-DAT furniture
   'IKEA delivers furniture to the neighbour.'
b. IKEA be-liefert den Nachbar-n (mit Möbeln)
   IKEA appl-delivers the neighbour-ACC (with furniture)
   'IKEA delivers furniture to the neighbour.' (German, Haspelmath & Sims 2010: 242)

Sign languages are known to have very few prepositions, so we might expect that locatives, instrumentals and the like, which are typically expressed with

prepositional phrases in languages like English, might be expressed through some kind of applicative construction.

Kegl (1990) has argued this holds in ASL in what she calls indeed applicative constructions: in the example below, the locative argument is realized as a direct object, and a locative morpheme is incorporated into the verb form, in a way that is highly reminiscent of the facts just described in German.

(CAR) CL (3) + MOVE_i STORE_i
'The car went to the store.' (ASL)

An applicative may also add an object argument that was not in the argument structure of the verb, which will then be typically interpreted as either a benefactive or a malefactive, or again as a locative, or an instrumental. For example, Chamorro has a benefactive applicative, illustrated in (b).

a. Ha hatsa i acho'.
he. ERG lift ABS stone
'He lifted the stone.'
b. Ha hatsa-yi si Pedro ni acho'.
he-ERG lift-APPL ABS Pedro OBL stone
'He lifted the stone for Pedro.' (Chamorro, Topping 1973: 253)

Similarly, the personal agreement auxiliary (PAM) in DGS can add an extra argument to intransitive verbs, and thus appears to behave like an applicative morpheme. Two examples are given below.

a. IX_1 LAUGH $_1\text{PAM}_2$
'I laugh at you.'
b. IX_1 LETTER WRITE $_1\text{PAM}_2$
'I write a letter to you.' (DGS, Steinbach 2011: 215)

2.1.3.2 Passive

2.1.3.2.0 Definitions and challenges

The argument structure of a predicate can be reduced in certain constructions. The most well-known case of argument reduction is the *passive*, where the agent argument is demoted and the theme/patient is promoted to the subject position ('They stole the painting' → 'The painting was stolen'). The active/passive contrast falls under the grammatical category of voice.

2.1.3.2.0.1 Passive constructions

Typically, a construction is considered to be a passive construction when the patient (or theme) argument [Semantics – Section 6.1] of a transitive [Syntax – Section 2.1.1.1]

or a ditransitive [Syntax – Section 2.1.1.1] / ditransitive verb is in the subject position, the agent argument is absent or expressed optionally, and the verb or the verb phrase is marked in a special way. Passivization is considered to be a sub-type of lexical or clausal change that involves a reduction in the number of arguments of the verb, that is, by means of making only the non-agent arguments obligatory.

2.1.3.2.0.2 Characteristic properties of typical passive constructions

Passive is usually considered to be morpho-syntactically and pragmatically more marked than active. The intuition behind this is that a speaker chooses to convey a message with a passive construction, rather than active, to foreground the patient argument of the verb and to background the agent.

a. The critics praised John.
b. John was praised (by the critics).

Notice that in the passive sentence above, *John* is the foreground and the agent *the critics* may be dropped or expressed by an oblique prepositional phrase.

In terms of the morpho-syntactic properties of the theme and the agent arguments in passive constructions, at least in some languages, the patient displays properties of subjecthood; thus, it occupies the typical subject position and carries the case morphology of subjects of that language. In English, for instance, subjects of both active and passive sentences occupy the subject position and are marked with nominative case regardless of their semantic role (theme versus agent), as shown in the following examples:

a.	She called her father	(subject (agent) of active sentence in the nominative)
b.	She was called by her father	(subject (patient) of passive sentence in the nominative)
c.	Her father called her	(object (patient) of active sentence in the accusative)

Languages express passive by marking the verb or the verb phrase in a special way. In English, for instance, the verb is in its past participial form and it is accompanied by the auxiliary *be*:

The vase was broken by the man.

Other languages inflect the verb with a special passive morpheme. In the Turkish examples below, the semantic role of the subject *çocuk* ('child') is understood by the presence and absence of the passive morpheme *–il* on the verbal stem:

a. Çocuk sev-di.
child love-past
'The child loved.'

b. Çocuk sev-il-di.
child love-passive-past
'The child was loved.' (Turkish)

Some languages allow agent phrases to be expressed optionally in passive constructions, however, in some others agents cannot be expressed at all. So, the impossibility of expressing the agents should not be taken as an indication that the construction under investigation is not passive. In fact, it seems that speakers of most of the world's languages tend to prefer passive constructions without agents (Keenan & Dryer 2007).

Moreover, languages differ in the types of verbs that can be passivized. In some, only active and transitive (and ditransitive) verbs can be passivized, but there are also languages such as German, Dutch and Turkish where stative and/or intransitive verbs are also passivized. The following example is from German where the intransitive verb *tanz-* ('dance') is passivized and the agent is understood to be impersonal.

Gestern wurde getanzt.
yesterday became danced
'Yesterday there was dancing.' (German, Keenan & Dryer 2007: 346, ex. (44))

Finally, if a language has passive constructions with transitive verbs, it usually allows passivization of ditransitives. Those languages differ in terms of which argument(s) they can passivize, though, for example, whether both the patient and the recipient argument or only one of them can be promoted to subject. The following English examples show that both of these non-agent arguments can be passivized in this language (note the nominative marking on the subject). By contrast, in German only the patient can be passivized as is illustrated in (c) and (d).

a. She was given to the animal shelter. *patient*
b. She was given the cat. *recipient*
c. Der Roman wurde dem Mann gegeben. *patient*
The novel-NOM became the man-DAT given
'The novel was given to the man.'
d. *Der Mann wurde den Roman gegeben. *recipient*
The man-NOM became the novel-ACC given
Intended reading: 'The man was given the novel.'

Another typological fact to keep in mind is that passive verbs may exhibit different agreement paradigms than active verbs (Keenan & Dryer 2007). For instance, in a language where active verbs carry subject agreement markers, passive verbs may fail to agree with the subject. In another language, agreement markers may differ depending on whether the verb is in its active or passive form. Finally, it is also possible to come across languages where the theme argument is clearly in the subject position but the verb expresses the features of the theme argument through object-agreement (and not subject-agreement).

Recall that in some languages passive is expressed through a combination of an auxiliary with the participial form of the verb. Typologically, there are four types of passive auxiliaries that have been identified: (i) verbs of being or becoming, as in English; (ii) verbs of reception (e.g. *receive*, *get* or *eat*); (iii) verbs of motion (e.g. *go* and *come*), and (iv) verbs of experiencing (e.g. *suffer*, *touch*, *experience*) (Keenan & Dryer 2007).

2.1.3.2.0.3 Passiveless languages

Researchers have argued that some languages do not have passive constructions at all but may express an event without identifying the agent by constructing active sentences with impersonal subjects with a meaning similar to 'Someone broke the vase' / 'They broke the vase' to express 'The vase was broken'. In the Kru example below the subject is third person plural pronominal, however, it does not refer to a specific, known group of people:

a. Tò pō˛ slā ná
   Toe build house DEF
   'Toe built the house.'
b. I pō slā ná
   3PL build house DEF
   'They built the house.' = 'The house was built.'
   (Kru: Keenan & Dryer 2007, citing personal communication with John Singler)

2.1.3.2.0.4 Methodological challenges

Many languages of the world have constructions that resemble passive constructions in some respects, but differ from them in others, thus, making the identification of the construction as passive or not quite challenging. Recall that one of the identifying properties of passives cross-linguistically is special morphology of the verb / verb phrase (an affix or the participial form of the verb with an auxiliary). In languages with scarce straightforward inflectional marking, the challenge is naturally bigger.

One construction that resembles passives is called 'middle'. In middle-constructions, the theme is in the subject position, similar to passives, but the agent is not implied, in contrast with passives.

a. The ship was sunk.
b. The ship sank. (Keenan & Dryer 2007: 352, ex. (61))

In the passive sentence 'The ship was sunk' the agent is implied, however, in the middle sentence 'The ship sank' the agent is not implied. The ship may have sunk due to a storm and a hole in its body. In the middle sentence the predicate is unaccusative [Syntax – Section 2.1.1.2].

It is *not* possible to add an agent phrase to middle constructions. Consider the contrast in the following:

a. The ship was sunk by the enemy.
b. *The ship sank by the enemy.

Moreover, in some languages the same morphology may be employed for middles, passives and reflexives. In the following Spanish examples, the reflexive *se* occurs in both the middle, as in (a) and the passive, as in (b):

a. Se quemó el dulce
   REFL burn.PAST.3SG the jam
   'The jam burned.' (or 'The jam was burned.')
b. Se complieron las promesas
   REFL fulfil.PAST.3PL the promises
   'The promises were fulfilled.' (Spanish, Keenan & Dryer 2007: 353, ex. (64))

An alternative to passive has been reported from languages where the verb is marked with a pronominal morpheme unspecified or indefinite for person. The following Iroquoian example illustrates this with the prefix *ukw-*.

úhka? ok wa?-ukw-alahs∧tho-?
PRT PRT FACTUAL-UNSPEC.SUBJ:1.OBJ-kick-PUNCT
'Somebody kicked me.'

(Iroquoian: Keenan & Dryer 2007, citing personal communication with Karin Michelson)

2.1.3.2.0.5 Passive in sign languages

Whether or not sign languages that have been studied so far have passive constructions has been a controversial topic in the literature. This is because, in contrast to some well-known spoken languages, but similar to others, in sign languages there is no clear case of passive morphology. In languages without such special passive morphology, it is challenging to differentiate between active, passive and other passive-like constructions.

The clauses that have been in the focus of discussion lack the following more commonly attested morpho-syntactic properties of passive constructions:

(i) special passive morphology;
(ii) obligatory change in word order (promoting the patient to the subject position and optionally expressing the agent in an oblique phrase such as a *by*-phrase as in English), since the sign languages studied so far typically have flexible word order;
(iii) change in case morphology on the noun phrases expressing the agent and the non-agent arguments (since the sign languages that have been studied so far do not show overt case marking; it is not possible, for instance, to determine the subjecthood of the noun phrase with the patient role based on case morphology).

This said, the grammar writer should always keep in mind that morphemes in sign languages do not always have to be realized linearly and manually, but can also be expressed simultaneously and non-manually. As always, a grammar writer of a sign language should look beyond what is known about better-studied spoken languages.

Due to lack of obvious morphological and syntactic clues for the presence of passive constructions, the discussion in the literature focuses rather on semantic and pragmatic properties, which resemble the properties of canonical passive constructions in the world's languages. Some of the morpho-semantic properties that these constructions do display are summarized in the following:

(i) with agreement verbs, the locus of the agent, though required, is semantically empty, not referential;
(ii) the signer depicts the event from the patient's perspective, thus, assumes the role of the patient. Therefore, with agreement verbs, the movement of the verb is toward the signer's body;
(iii) the movement in the articulation of the verb is constrained and minimal;
(iv) with handle classifiers, morphological reduction is observed.

The following is an example of such constructions, 'rs' stands for role-shift [Pragmatics – Chapter 6] / [Syntax – Section 3.3.3] role shift.

 5_2.1.3.2.0.5_1_ASL_POLICEMAN 3-HIT-1

rs:police
POLICEMAN 3-HIT-1
'The policeman got hit.' (ASL, Kegl 1990: 166)

Functionally this sentence is similar to a passive sentence in that the patient argument is foreground and the agent is left unexpressed. However, whether these sentences can be considered the sign language counterpart of passive is still very controversial.

2.1.3.3 Reflexivity

Still another way to modify the argument structure of a predicate is thorough reflexivity [Lexicon – 3.7.4]. A reflexivity relation is the one that typically establishes coreference between two arguments of the same predicate. This is realized by the use of anaphoric expressions such as reflexive pronouns often glossed as SELF, but also by plain pronouns, as in RSL. An example of a reflexive pronoun in ASL is the following.

j-o-h-n- HURT SELF
'John hurt himself.' (ASL)

Note that signs marking reflexivity are also often used as emphatic markers.

2.1.3.4 Reciprocity

A reciprocal relation [Lexicon – 3.7.4] arises when a plural argument is coreferential with another one in the same predication and the individuals referred to are basically both agents and undergoers of the action, or more generally, realize both ends of the predicative relation (Langendoen 1978; Pfau & Steinbach 2003). Reciprocity has been shown to be marked in different ways in sign languages, depending on the morphophonological properties of the language and the lexical predicate at play (simultaneous versus sequential duplication and conversion of the predicate, repetition of agreement auxiliary, zero marking, or overt marking with signs like TOGETHER).

Note that some predicates might be inherently reciprocal, such as DISCUSS or MEET in LSC, which can be also reflected in the morphophonology of the verb (bimanual with reciprocal orientation).

 5_2.1.3.4 _1_LSC_ ix^three discuss always

IX^THREE DISCUSS ALWAYS
'Those three are always discussing (with each other).' (LSC)

2.1.4 Non-verbal predication

2.1.4.1 Copular constructions

In addition to verb phrases, adjectival phrases [Syntax – Chapter 5] adjectival phrases [Lexicon 3.4] can also be predicates. In the following example of non-verbal predication the property '(being) tall' is predicated of the argument 'John', much like the property 'snoring' is predicated of John in a case of verbal predication like 'John snores'.

John is tall

In some languages, like English, non-verbal predicates are typically introduced by a copula, but the presence of a copula should be not taken to be a necessary condition for (or a reliable indication of) the presence of non-verbal predication. First, even languages that normally require a copula in non-verbal predicates, do not always do that. For example, in the following sentence the property of '(being a) good teacher' is predicated of 'John' but no copula is present.

I consider John a good teacher

Second, and most importantly for the grammar writer, many languages do not have, or at least do not systematically use, a copula to express non-verbal predication. For example, Russian does not have a copula in the present tense, as the following example indicates.

Ivan vysokij
Ivan tall
'Ivan is tall.' (Russian, Geist 2007: 83)

In languages which have a copula, its use ranges from cases of adjectival predication like 'John is tall' to cases of predication like the following one:

John is at school

Although one can say that the property '(being) at school' is predicated of John, these types of copular sentences are sometimes called locative sentences to stress their peculiarities, for example the fact that the post-copular category is a prepositional phrase.

A case of copular use whose predicative status is controversial is illustrated by the following sentence, which is sometimes called specificational.

The winner is John

It seems that in uttering this sentence the speaker specifies who the winner is instead of ascribing a property to the winner. The issue of distinguishing between a truly predicational and a specificational reading is not trivial. There are cases in which the very same copular sentence is ambiguous between these two readings.

His supper is food for the dog (den Dikken 2006: 17)

In the predicational reading the sentence means 'his supper serves as food for the dog' while in the specificational reading the sentence means 'he eats food for the dog for his supper'. The grammar writer should be aware of this distinction because in principle a sign language might use different forms for predicational and specificational readings.

The available evidence indicates that in most sign languages non-verbal predication does not require a copular sign, as the following LSE example shows:

MY JACKET WHITE
'My jacket is white.' (LSE, Herrero Blanco & Salazar García 2005: 288)

However, the lack of copula identification might be due to the limited number of studies that have addressed this issue in sign languages. Furthermore, in at least one sign language, namely FinSL, a sign that is functionally similar to the copula has been identified. This is glossed as PI, based on the mouth gesture associated with the sign.

A-N-I-S PI SPICE PLANT
'Anis is an aromatic herb.' (FinSL, adapted from Jantunen 2007: 122)

The order of the noun phrases can be switched, suggesting that PI is an independent sign and is not part of one of the two noun phrases (Jantunen 2007).

FRANCE OWN HEAD CITY PI PARIS
PARIS PI FRANCE OWN HEAD CITY
'Paris is the capital of France.' (FinSL, adapted from Jantunen 2007: 132)

PI is reported to be optional but in its absence a proper modification of non-manual markers is required, suggesting that a combination of manual and non-manual strategies marks non-verbal predication in FinSL. So, the grammar writer should not assume that a copula is necessarily absent in the language he/she is describing or that it needs to be expressed by a manual sign.

2.1.4.2 Secondary predication

Another case of non-verbal predication is secondary predication. A secondary predicate is an expression that attributes a property to the subject (or to another argument of the verb) but is not the main predicate of the clause. In all the following sentences, the secondary predicate is in boldface, while the primary predicate (a verb phrase which contains the secondary predicate) is in italics.

a. The boys *arrived home* ***exhausted***
b. I *consider her a* ***genius***
c. He *painted her house* ***blue***
d. His *decision left me* ***skeptical***
e. John *was walking* ***naked***

Unfortunately systematic studies of secondary predication in sign languages are lacking, so the grammar writer cannot start from expectations on how other sign languages express this configuration.

2.1.5 Existentials and possessives

2.1.5.0 Definitions and challenges

As the name suggests, existentials are sentences that assert the existence of some entity, e.g. *a dog*, as in the following example from English. Note that this example displays two functional elements that are absent from most sign languages of the world, an expletive (*there*) and a copula (*is*).

There is a dog in my garden

Existentials are related to possessives [Lexicon – Section 3.7.3] / possessives [Semantics – Chapter 11]. For example, the following existential sentence expresses the meaning that the museum possesses ancient paintings.

There are ancient paintings in the museum

Furthermore, the link between existentials and possessives is clearer in other (spoken as well as signed) languages of the world. For example, in most of the 27 sign languages included in the survey reported in Zeshan & Perniss (2008) the same

sign (glossed as HAVE in ASL) may occur in predicative possession and existential constructions:

HAVE MEDICINE
'There is medicine.' (ASL, Chen Pichler & Hochgesang 2008: 226)
FATHER HAVE OTHER FAMILY
'(My) father has another family.' (ASL, Chen Pichler & Hochgesang 2008: 222)

The grammar writer should be well aware of the fact that not only a sign language may employ a possessive sign to denote existence, as ASL does, but the converse is also attested: for example, ÖGS uses an existential sign to denote possession (Chen Pichler & Hochgesang 2008).

2.1.5.1 Possessives

Predicative possession [Semantics – Chapter 11] has been studied fairly extensively in ASL, in which it is usually expressed with the sign glossed HAVE. However, another less common option is to employ spatial mechanisms such as displacement or the use of classifiers [Morphology – Chapter 5] / classifiers The negative counterpart of HAVE is the unrelated sign NONE, which is often accompanied by a head shake and the mouth pattern 'oo.' The word order is usually possessor-HAVE-possessum, consistent with the SVO order of ASL. The sign HAVE denotes a variety of possessive relations, including alienable as well as inalienable possession, just like English *have*:

 5_2.1.5.1 _1_ASL_father have other family

a. FATHER HAVE OTHER FAMILY
'(My) father has another family.'
q
b. IX_2 HAVE TIME
'Do you have time?'
c. SUE HAVE HOUSE IX BRAZIL
'Sue has a house in Brazil.'
d. IX_2 HAVE M-E-A-S-L-E-S
'You have measles.' (ASL, Chen Pichler & Hochgesang 2008: 222–223)

The grammar writer should be aware of the fact that a possessive verb may be sensitive to the kind of possessor or possessum involved. It is also important to keep in mind that the position of the verb that is used to denote possession is likely to reflect the basic word order of the language. Thus, in DGS, an SOV language, the verb used in possessives comes after the possessum (and not before it as in ASL):

 5_2.1.5.1 _2_DGS_pro1 car exist

IX_1 CAR EXIST
'I have a car.'
(DGS, adapted from an ÖSG example in Chen Pichler et al. 2008: 446)

The verb HAVE is not necessarily present in predicative possessives in ASL. As exemplified below, HAVE can be dropped and this is particularly common with kinship terms modified by a number:

L-A-R-R-Y FOUR KID
'Larry has four kids.' (ASL, Chen Pichler & Hochgesang 2008: 222)

Zeshan & Perniss (2008) observe that using suppletive negation is very common in possessive and existential constructions across sign languages of the world. The suppletive sign used in ASL to negate a possession is glossed NONE. This sign is usually sentence-final, thereby following the possessor and the possessum:

IX_1 PAGER NONE
'I don't have a pager.'/ 'I have no pager.'
(ASL, Chen Pichler & Hochgesang 2008: 224)

As discussed by Cormier & Fenlon (2009), BSL uses the sign HAVE-NEG_{poss} for negation of possession, a sign which is phonologically related to HAVE. Interestingly, this sign is not used for the negation of existence. However, the sign NOT-HAVE (which is unrelated to HAVE) can be used to negate both possession and existence and the same applies to the general negator NOTHING.

2.1.5.2 Existentials

A common way to express existence is to use a verb like HAVE, but other strategies can also be used. In an SVO language like ASL, HAVE typically precedes the object whose existence is asserted:

HAVE MEDICINE
'There is medicine.' (ASL, Chen Pichler & Hochgesang 2008: 226)

By contrast, in an SOV language like LSC, the existential sign follows the object whose existence is asserted:

 5_2.1.5.2 _1_LSC_mountain snow there-be

MOUNTAIN SNOW THERE-BE
'There is snow on the mountains.' (LSC, Quer & GRIN 2008: 46)

Existentials in ASL tend to be accompanied by a head nod that is strongest over the sign HAVE but it may extend to the rest of the clause. In fact, existentials in ASL can be only expressed by head nod over the object in the absence of HAVE:

hn
PROBLEM
'There is a problem.' (ASL, Chen Pichler & Hochgesang 2008: 226)

Negative existentials commonly use a syncretic sign like NONE. Even in ASL this sign appears most commonly after the object whose existence is negated:

PROBLEM NONE
'There is no problem.' (ASL, Chen Pichler & Hochgesang 2008: 227)

The grammar writer should be aware that if in his/her data an expression like NOT HAVE appears in addition to the syncretic sign like NONE, this may due to influence from spoken language.

In languages that use HAVE both for possession and existence, it is expected that we find sentences that are ambiguous between the two readings. For instance, the following example can be translated in two ways:

POSS_1 OFFICE HAVE WINDOW
'My office has a window.'/ 'There is a window in my office.'
(ASL, Chen Pichler & Hochgesang 2008: 223)

Elicitation materials

Passive-like constructions

It may not be easy to detect passive or passive-like constructions in unstructured, freely occurring data, since use of passive is more frequent in written text than spoken/signed. Thus, structured elicitation tasks may be needed. The tasks may involve asking informants questions that guide them to answer from the patient's perspective. Another possibility is using visual materials depicting scenes where agents are not identifiable, and the patient role is more prominent. It is known that in some languages passive can only be used for completed events rather than ongoing (Keenan & Dryer 2007). So the grammar writer should be aware of this during the preparation of the elicitation tasks and materials.

Earlier studies that have been done on passive in sign languages concentrated on agreement verbs, and animate agents and patients. Here we summarize Sze's (2010) observations regarding methodology of data collection in HKSL: her informants tended to report the events where the agent is not identifiable using an indefinite pronoun such as 'someone', which will be the agent of an active clause, not passive. She then asked the informants whether they could describe the situation without using 'someone'. She reports that when the informant sees the agent in the picture, even without a face or partially, there is still a strong preference for the use of 'someone'. So, to elicit a potential passive clause, the visual material of the scene should present the result of the event without the agent. She also reports that the elicitation of agentless, potentially passive constructions requires very specific pragmatic contexts, with sufficient contextual clues, that

is, non-manuals, to clarify that the signer (who describes the visual scene) is not the agent.

Possessive and existential constructions

Zeshan & Perniss (2008) discuss several strategies to elicit possessive and existential constructions. They suggest to involve pairs of signers in the following four games.

The family tree game targets inalienable possession in the domain of kinship ('I have a sister'). One signer asks another signer about his/her family and fills out a family tree chart across multiple generations based on the signer's descriptions.

In the doctor-patient game, one signer (in the role of the doctor) 'diagnoses' the illness of the other signer (in the role of the patient) by inquiring about the patient's symptoms. The game is designed to elicit attributive (e.g. *my head*) and predicative (e.g. *I have a headache*) possessive constructions.

The picture comparison game elicits possessive and existential expressions. Each participant is given a picture that the other cannot see. The game requires signers to find the differences between the two pictures through statements and questions such as "On my picture, there is a man carrying a bucket. Does the man in your picture have a bucket?"

In the picture matching game, signers are asked to assign belongings to people by matching pictures of objects to pictures of people. For each match, signers are asked to give an explanation for why they have assigned a particular object to a particular person. The game targets mainly alienable possession (e.g. 'The bicycle belongs to the girl', 'the girl has a bike').

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2.2 Grammatical functions

2.2.0 Definitions and challenges

2.2.0.1 What is a grammatical function?

Grammatical functions are *syntactic* entities and should not be confused with semantic categories like thematic roles / thematic roles [Semantics – Section 6.1] (theta-roles or semantic roles). Still, it is important to note that theta-roles relate to grammatical

functions in a systematic way. For instance, if a verb has an agent and a patient, in an active clause the agent will always be the subject and the patient will be the object. This can be seen with the verb *eat*, as in the following example where *John* is the subject and *the apple* is the object:

John ate the apple

More generally, agents are always subjects in active clauses but not vice versa. Subjects can bear a variety of theta-roles as shown by the following examples.

a. Mary (*experiencer*) loves classical music
b. The car (*patient*) broke down
c. The winner (*recipient*) received a gold medal
d. The ball (*theme*) rolled down the hill

2.2.0.2 Methodological challenges

It is easy to distinguish subjects from objects in languages with a fairly rigid word order [Syntax – Section 2.3], or with clear subject agreement or clear case marking, but this is more difficult in languages with relatively free word order, like many sign languages. Still, it is usually assumed that all sign languages have grammatical functions (but see Engberg-Pedersen 2002, and Bouchard 1996 for a different view), although they do not necessarily display exactly the same properties across all sign languages.

It may be harder to pinpoint subject properties in sign languages than spoken languages because some subject properties that are familiar from spoken languages do not apply to sign languages. For instance, case marking in many spoken languages is based on grammatical functions such that nominative case typically marks subjects and accusative case marks direct objects. This can be seen in English:

a. He (*nominative*) knows them (*accusative*)
b. They (*nominative*) know him (*accusative*)

This does not apply to sign languages because they do not have morphological case (but see Meir (2002) for a discussion of an object-marked pronoun in Israeli SL).

Another well-known subject property of many spoken languages is that (nominative) subjects trigger person and number agreement with the finite verb, whereas objects do not. This is shown in the following examples from German where the form of the (boldfaced) finite verb changes according to the person and number of the subject but the person and number of the object (*ein Buch* 'a book' versus *many books* 'viele Bücher') makes no difference:

a. Ich (1p.sg.) **habe** (1p.sg.) ein Buch/viele Bücher
'I have a book/many books.'

b. Du (2p.sg.) **hast** (2p.sg.) ein Buch
'You have a book.'
c. Er/Sie (3p.sg.) **hat** (3p.sg.) ein Buch
'He/She has a book.' (German)

This does not straightforwardly carry over to sign languages, where agreement is only found with a certain class of verbs, namely, agreement verbs [Lexicon – Section 3.2.2] / agreement verbs. Still, there is a contrast between subjects and object with respect to agreement in sign languages. Thus, Meir (2002) argues that the orientation or facing of the hands with agreement verbs is determined by the grammatical functions of the arguments (for regular as well as backward agreement verbs): the facing is towards the direct object of transitive verbs and towards the indirect object of ditransitive verbs.

2.2.1 Subject and object identification

2.2.1.1 Specific position(s) for subject and object

The clearest evidence for grammatical functions in sign languages comes from basic word order. Most sign languages that have been studied to date are either SVO (e.g. ASL, LSB, HKSL, and SSL) or SOV (e.g. NGT, DGS, IPSL, LIS, VGT, and Irish SL). In other words, the basic word order is either subject – verb – object or subject – object – verb. This means that the subject precedes the object in the basic word order of these sign languages. This is illustrated by the following example:

FATHER LOVE CHILD
'The father loves the child.' (ASL)

Various deviations from the basic word order are possible in ASL and other sign languages, but these tend to be marked in some way or restricted to certain contexts. For instance, the object of the verb can be moved in front of the subject by topicalization [Pragmatics – Section 4.2]. A topicalized object is usually accompanied by some non-manual marker, such as brow-raise, a forward head-tilt and a pause:

 5_2.2.1.1 _1_ASL_child father love

top
CHILD FATHER LOVE
'The father loves the child.' (ASL)

Note that object topicalization shows that pragmatic relations like topic (and comment) must be distinguished from grammatical relations like subject and object.

OSV word order can also arise in some sign languages as a result of subject pronoun copying [Lexicon – Section 3.7] / pronoun copying [Syntax – Section 2.2.1.3] in sentence-final position accompanied by subject pro-drop:

 5_2.2.1.1_2_NGT_book buy ix3a

BOOK BUY IX$_3$
'He buys a book.' (NGT, Perniss et al. 2007: 15)

Objects may precede subjects with agreement verbs without any special marking on the object. Aspectual [Lexicon – Section 3.3.2] / Aspectual [Morphology – Section 3.3] / Aspectual [Semantics – Chapter 2] / Aspectual marking or the use of a classifier may also license movement of the object past the subject, resulting in OSV order (see Quadros and Lillo-Martin 2010 and references cited there for examples).

Evidence for grammatical functions based on word order is not restricted to established sign languages. Even in very young sign languages word order is sensitive to grammatical functions. Thus, Padden et al. (2010) argues that the SOV order of ABSL involves subjects as the first element and cannot be explained by pragmatic principles such as 'background first' or discourse principles such as 'topic first'.

Subjects differ from objects not only in that subjects precede objects in neutral word order. There is also a distinction with respect to hierarchical relations. The base position of objects is inside the verb phrase (VP) headed by the transitive verb whereas subjects are outside the VP:

a. Subject [$_{VP}$ Verb – Object]
b. Subject [$_{VP}$ Object – Verb]

Note that a transitive verb and its object form a VP whether the verb precedes the object, as in (a), or the object precedes the verb, as in (b). This means that VPs are found both in SVO languages and SOV languages.

Evidence for a VP constituent in sign languages comes from various syntactic phenomena where VPs behave like syntactic units. The fact that VPs can be topicalized in sign languages is probably the most obvious evidence for a VP constituent. Further evidence comes from the fact that the spreading of negative non-manuals is sensitive to syntactic constituents like VPs. Pfau (2002) shows that, if the negative headshake of DGS spreads in the absence of a manual negation, it must spread to the whole VP and cannot spread to a subpart of the VP. The distribution of temporal and frequency adverbs in LSB and ASL also indicates that transitive verbs form a VP with their objects. Quadros & Lillo-Martin (2010: 229–230) point out that adverbs like YESTERDAY or SOMETIMES cannot break up the string verb + object, although they have a relatively free distribution. This restriction follows naturally if verbs and their objects form an indivisible syntactic constituent.

The grammar writer should use this kind of evidence to establish what the basic position of subject and object is in the relevant sign language.

2.2.1.2 Special anaphoric properties for subject and object

The term anaphor [Pragmatics – Chapter 2] refers to noun phrases that are referentially deficient and can only be used if they refer to another noun phrase, the so-called antecedent. A typical example of an anaphor is a reflexive pronoun,

e.g. *himself* in English. This pronoun requires an antecedent as shown by the contrast between the following sentences:

a. *Himself went home (*no antecedent*)
b. John hurt himself (*'John' is the antecedent*)

The reflexive in the second sentence is understood as referring to *John*. In other words, the meaning is: 'John hurt John'. By contrast, the reflexive lacks an antecedent in the first sentence and this example is therefore ungrammatical.

Reflexives [Lexicon – Section 3.7.4] in spoken languages display a clear subject-object asymmetry. Whereas a reflexive object can refer to a subject antecedent, the opposite pattern is ruled out: A reflexive subject cannot have an object antecedent. This contrast is illustrated by the following examples from English and NGT:

a. He likes himself
b. *Himself likes him

 5_2.2.1.2_1_NGT_ix-a talk about self+ix-a

c. IX$_3$ TALK ABOUT SELF+IX$_3$
d. *SELF-$_3$ TALK ABOUT IX$_3$
'He talks about himself.' (NGT, Kimmelman 2009: 32)

Moreover, in many other sign languages, a pronoun in object position cannot be bound by a subject within the same clause. Instead, a reflexive must be used:

MARY IX NOT LIKE CRITICIZE SELF/*PRONOUN
'Mary does not want to criticize herself ' (ASL, Koulidobrova 2009: ex. (10))

The grammar writer should test for the existence of these asymmetries in anaphoric relations between subject and object in the sign language under investigation.

2.2.1.3 Strategies of pronoun copying for subject and object

One syntactic phenomenon that may distinguish subjects from objects is Subject Pronoun Copy (Padden 1988). In this construction, which is found in some sign languages, a clause-final pronoun refers to the subject of the clause. This pronoun is often accompanied by a head nod:

WOMAN BUY CAR IX3
'The woman is buying a car, she is.' (Auslan, Johnston & Schembri 2007: 204)

The constituent which the sentence-final pronoun refers to can be either a full noun phrase or a pronominal. It can also be omitted:

DANCE IX3
'She is dancing.' (Auslan, Johnston & Schembri 2007: 204)

Pronoun copy seems to be restricted to subjects in Auslan. By contrast, both subject and object pronoun copies are possible in ASL. In fact, the same clause in ASL can have two copies as in the following example. Still, there is a distinction here as the subject copy precedes the object copy.

JOHN$_i$ LIKE IX$_j$, IX$_i$, IX$_j$
'John likes her, him, her.' (Neidle et al. 2000: 172)

Crasborn et al. (2009) argue that pronoun copy in NGT actually refers to the topic of the sentence, including spatio-temporal elements.

The grammar writer should try to establish whether pronoun copies exist in the sign language under investigation and whether they are restricted to subjects or not.

2.2.1.4 Null arguments for subject and object

It is very common in sign languages for subjects and objects to be unexpressed, in which case they are often referred to as null arguments [Syntax – Section 2.1.2]. Context plays a crucial role in licensing null arguments in sign languages, at least with plain verbs. This is nicely illustrated by the following example, where both subject and object are omitted because the context makes it clear that the subject is the speaker and the object is TEA:

re
a. WANT TEA
'Do you want tea?'
b. WANT
'Yes, I do.' (Auslan, Johnston & Schembri 2007: 208)

Null subjects have been investigated more extensively than null objects in sign languages. Wulf et al. (2002) found that subjects of plain verbs in ASL are actually more often null than overt. In their corpus, only 35% of the pronominal subjects were marked with a manual sign. They also found that the use of overt versus null subjects correlates with various linguistic factors. For instance, first person singular subjects were more likely to be overtly expressed than other kinds of subjects. Manual pronominal subjects also occurred more often in case of switch-reference [Semantics – Chapter 2] than if the subject was coreferential with the preceding subject. By contrast, dialogue was found to disfavour overt subjects. McKee et al. (2011) obtained fairly similar results in their study of overt and covert subjects in Auslan and New Zealand Sign Language.

The grammar writer should be aware of the possibly extensive use of subject and object omission in the language under investigation, and describe the phenomenon.

2.2.2 Other grammatical functions: arguments versus adjuncts

Of course subjects and objects, that is, arguments, are not the only constituents that a clause can display. Each predicate can combine as well with other dependents that

are typically not obligatory and thus do not belong to the argument structure / argument structure [Syntax – Section 2.1] of the predicate, but nevertheless express important information concerning the predicate itself, the event, the attitude of the subject or that of the speaker and so on and so forth. This type of constituent is called an *adjunct* because it is optionally *added* on the top of the required arguments. Typically adjuncts can be distinguished from arguments by at least two criteria: the first is optionality. Arguments are usually not optional, since they belong to the structure of the predicate. Adjuncts are optional, in that, even if they are absent, the sentence is not incomplete.

This optionality criterion should, however, be handled with care, since there are cases in which constituents that truly belong to the argument structure of a predicate, and thus qualify as arguments, can be omitted in the clause. This is particularly true in sign languages, where arguments can be left unexpressed if the content provides the relevant (and required) information (see null arguments [Syntax – Section 2.2.1.4]). Still, an adjunct can be defined as an element that is both syntactically and semantically optional in a clause. By contrast, null arguments are semantically active – they are either licensed in the context or receive an indefinite [Pragmatics – Section 1.3] or generic interpretation.

This brings us to another factor to keep in mind, namely the distinction between syntactic and semantic arguments. A category like 'at school' is optional in the sentence 'David arrived (at school)', so it does not qualify as a syntactic argument, but semantically it must be (contextually) understood that David arrived somewhere.

The second criterion for distinguishing adjuncts from arguments is that the former are typically less constrained in their distribution. While it makes sense to try to establish an unmarked word order for subject and object [Syntax – Section 2.3.1.1], this is less clear for adverbs. This relative freedom of adjuncts is illustrated below in English: the adjuncts, the adverb *loudly* and the preposition phrase *in his room*, seem to distribute rather freely.

a. David laughed loudly in his room
b. David loudly laughed in his room
c. In his room David laughed loudly.

The grammar writer should describe whether in the language under investigation free distribution qualifies as a criterion for distinguishing arguments and adjuncts, and describe adjuncts defined along these terms.

2.2.3 Types of adjuncts

Typically adjuncts can be classified along two dimensions: The first dimension concerns their categorical status. Typically in English adjuncts can be adverbial phrases

[Syntax – Chapter 6] (a), prepositional phrases [Lexicon – Section 3.8] (b), noun phrases [Syntax – Chapter 4] (c), and (adverbial) clauses [Syntax – Section 3.5; Semantics -Section 14.2] (d).

a. David sleeps heavily
b. David sleeps in his room
c. David sleeps all day
d. David sleeps because the shades are closed

The grammar writer should check whether the sign language expresses the same variability in the syntactic realization of adjuncts, and how this typology correlates with the second classification described below.

The second dimension of classification concerns their function: adjuncts can be classified according to the constituent they modify: there are thus low adjuncts, as those illustrated below, that modify the predicate.

David sleeps profoundly, completely, well, with his mouth open, snoring, ...

A second class of adjuncts modify the event expressed by the verb, as those given in the next example below, that modify in various ways the spatial or temporal location of the event.

David sleeps from nice to nine, every day, twelve hours, in his bed, with his teddy bear,

Adjuncts modifying higher portions of the clause typically contain aspectual information [Semantics – Chapter 2], or subject oriented modifications, as shown below.

David sleeps because he is tired, in order to rest, happily, willingly, ...

Finally, adjuncts that attach to the highest clausal level modify the speech act [Pragmatics – Chapter 3] / speech act itself, and typically express the attitude of the speaker.

David sleeps, probably, because the shades are closed, fortunately, in my opinion, ...

This coarse classification of adjuncts according to the constituent they modify reflects in fact what has been argued to be a universal hierarchy of functional positions of the clause, where prototypically adverbs are realized.

We reproduce below the particular version of this hierarchy as proposed by Cinque (1999) for spoken languages; each position in the hierarchy is filled by an adverb that can be taken as a representative of the relevant adjunct class.

[Mood speech-act *frankly*
 [Mood evaluative *fortunately*
  [Mood evidential *allegedly*
   [Mood epistemic *probably*
    [Tense past *once*
     [Tense future *then*

[Modality irrealis *perhaps*
[Modality necessity *necessarily*
[Modality possibility *possibly*
[Aspect habitual *usually*
[Aspect repetetive *again*
[Aspect frequentative(I) *often*
[Modality volitional *intentionally*
[Aspect celerative(I) *quickly*
[Tense anterior *already*
[Aspect terminative *no longer*
[Aspect continuative *still*
[Aspect perfect(?) *always*
[Aspect retrospective *just*
[Aspect proximative *soon*
[Aspect durative *briefly*
[Aspect generic/progressive *characteristically*
[Aspect prospective *almost*
[Aspect sg.completive(I) *completely*
[Aspect pl.completive *tutto*
[Voice *well*
[Aspect celerative(II) *fast/early*
[Aspect repetetive(II) *again*
[Aspect frequentative(II) *often*
[Aspect sg.completive(II) *completely*

The function of an adjunct typically affects its realization, in addition to its distribution. For example, typically adverbs of the lower level can be realized non-manually in sign languages, while higher adverbs are more robustly realized manually.

To illustrate, non-manual markers can convey manner information, as in the following LIS example: the non-manual marking 'mm' produced with closed lips simultaneously to the verbal sign WALK expresses a manner adjunct that we can translate as 'quietly'.

 5_2.2.3_1_LIS_daniele walk

mm
DANIELE WALK
'Daniele walks quietly.' (LIS)

This means that the two criteria of classification of adjuncts that have been introduced above, namely the category of the adjunct and its function, are likely to interact significantly: an adverb [Lexicon – Section 3.5] expressing time, for example, will tend to come first in many sign languages (see below for an example in LSE), while this is not necessarily so with adverbial temporal *clauses* [Semantics – Section 14.2.2]

PAST WEEK MEETING START TEN END QUARTER TO THREE
'Last week the meeting started at ten and ended at a quarter to three.'
(LSE, Cabeza Pereiro & Fernández Soneira 2004: 69)

For this reason we strongly recommend that the grammar writer describe the relevant adjuncts in relation to their realization, and thus devote a separate description to clausal adjuncts (see adverbial clauses [Syntax – Section 3.5]), adverbial adjuncts (see adverbial phrases [Syntax – Chapter 6]) and nominal adjuncts (see noun phrases [Syntax – Chapter 4]).

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2.3 Word order

2.3.0 Definitions and challenges

2.3.0.1 Order between subject, object and verb

Although the notion of word order in principle applies to all constituents in a clause, in practice the investigation of word order in a given language usually starts from the

identification of the order of the constituents bearing the grammatical function of subject and object with respect to the verb.

Languages of the world vary a lot as far as word order is concerned. Some languages are quite strict, so it is easy to identify a word order as the basic one. English is a good example. In the following sentences, the noun phrase that precedes the verb is interpreted as the agent, while the noun phrase that follows the verb is interpreted as the theme.

a. A teacher saw John
b. John saw a teacher

If a verb obligatorily takes both an agent and a theme, the agent will be the subject and the theme will the object. So the English sentences in the example above provide evidence that the basic word order of English is S(ubject)-V(erb)-(O)bject. However, even in rigid word order languages like English the word order can be affected. For example, in the following sentence, where the object *a teacher* is contrastively focused [Pragmatics – Section 4.1], the word order becomes OSV.

A TEACHER John saw

Other languages have a much more flexible word order than English, though. In fact, most sign languages studied up to now seem to belong to this group. For these languages, even the identification of the basic word order can be a challenge, so it is important to be clear on the very notion of *basic* word order.

2.3.0.2 Identifying the basic word order

One possibility is to identify the basic word order as the most frequent one. Another possibility is to identify it as the least pragmatically marked (i.e. unmarked), namely the most neutral one. Still another possibility is to spot the basic word order as the one that requires less morphological marking. As these factors may diverge, a proper combination of them has also been suggested (Hawkins 1983).

Various considerations converge in suggesting that word order frequency may not be the most promising approach for sign languages. On the one hand, few sign languages have large annotated corpora, and even for sign languages that do have a corpus, its dimension is not comparable to annotated corpora for major spoken languages. So it would be practically difficult to use the frequency criterion. A second caveat is that the search for the most frequent order should not be uninformed of the syntactic structures of the language under consideration. One example can illustrate this point. In Germanic languages like German and Dutch, a specific rule, called Verb Second, applies in matrix declarative clauses. According to this rule, the finite verb must immediately follow the first constituent in the sentence, but there is no restriction on what type of constituent can come first. This rule has the power to override the basic word order in matrix clauses. For these reasons, some researchers have proposed that in order to identify the word order of German and Dutch one should look

at embedded clauses, where the Verb Second rule does not apply. As matrix sentences are more frequent than embedded clauses, the existence of rules that re-arrange word order in matrix clauses can jeopardize the prospect of identifying the basic word order as the most frequent one. The same concern applies to other types of structures. For example interrogative clauses or imperatives may have a special word order. In principle, one might look at the most frequent word order by keeping these factors under control (for example, not considering constructions with special word order rules). In practice, however, the grammar writer is likely to start his or her investigation of the syntax of a given sign language by word order, so at this early stage it might be impossible for him/her to have the necessary command of the language to keep confounding factors under control.

Given these difficulties, some researchers have proposed that there are languages that lack a basic word order. This has been proposed for spoken languages (cf. Mithun 1992) and for sign languages as well (cf. Bouchard & Dubuisson 1995).

However, although not without problems, the criterion that identifies the basic word order as the least pragmatically marked is easier to implement. There are ways to identify sentences that have a neutral word order. For example, usually the first sentence in a narrative is the most neutral one, since it presupposes no preceding context. Another rule of thumb is to look at sentences that are the answer to questions like "What happened?". These questions require that the entire answer, not just a part of it, be in focus. More precisely, there is broad focus [Pragmatics – Section 4.1] / broad focus instead of narrow focus [Pragmatics – Section 4.1]. For example, if I ask "What happened?", the sentence in (i) is a natural answer in English while the sentences in (ii) and (iii), which have a marked word order because the constituent 'Bill' is a narrow focus or a topic, are weird.

What happened?
(i) John kicked Bill
(ii) BILL, John kicked
(iii) As for Bill, John kicked him

Finally, the last criterion that has been proposed is to look at sentences where there is less morphological marking. The rationale behind this proposal is that morphology can convey information that word order conveys in other cases. For example in English the SVO word order indicates that *John* is the subject in the sentence "John likes Mary". However in languages like Latin or Japanese where there is a morpheme for nominative and accusative, word order is more flexible since it is not necessary to set subject and object apart by looking at the linear order. Although sign languages typically do not have a rich concatenative morphology, they can use non-manual marking to indicate that a constituent is a topic [Pragmatics – Section 4.2] / topic or a focus [Pragmatics –Section 4.1]. For this reason, the grammar writer should be aware that sentences with special non-manual marking might be cases where the word order is marked, because it is affected by the informational structure.

Of course, word order investigation inside the clause should not be restricted to subject, object and verb. The position of adverbial expressions [Lexicon – Section 3.5] and functional signs like temporal and aspectual auxiliaries, agreement markers, modal verbs [Morphology – Section 3.4], negation [Morphology – Section 3.5] signs and subordinating conjunctions should also be investigated.

A debated issue in the linguistic literature is whether the order between verb and object correlates with the order between the verb and these functional words. Researchers have observed that in the languages in which the verb follows the object, these functional words tend to follow the verb, while in the languages in which the verb *precedes* the object, these functional words tend to precede the verb (Dryer 1992). The grammar writer may investigate if in his/her sign language such correlation holds or not.

A general concern regarding the investigation of word order is that non-grammatical factors may play a role. The first issue is the possible influence of the spoken language that is dominant in the area where the sign language under investigation is used. The usual precautionary measures should be taken, like excluding (or analyzing separately) exchanges involving hearing people, especially if these are not fluent in the sign language.

Another important factor affecting word order is the genre of the text which is analyzed. For example, a dialogue naturally builds a context that is presupposed among the participants of the dialogue and facilitates establishing certain constituents as topic or focus categories. As mentioned, the onset of a narrative may neutralize this.

2.3.0.3 The challenge of simultaneity

Spoken languages are intrinsically linear: coming through the oral channel, spoken words are produced linearly, one after the other and there is virtually no possibility for simultaneous productions during speech (with the limited exception of prosodic suprasegmental features [Phonology – Chapter 2]). On the contrary, sign languages exploit more articulators simultaneously: in particular, the two hands can sometime provide simultaneously two different bits of information, and the non-manual components can vehicle grammatical features that are not necessarily represented on the co-occurring manual signs. This modality-related specificity makes it difficult or even pointless to discuss about word *order* in some cases. The grammar writer should be aware of this possible complication in assessing the word order tendencies of the language under investigation.

We can descriptively distinguish three types of simultaneity that should be handled with care in trying to account for ordering restrictions in a given sign language.

1. Full simultaneity: In this type of simultaneous construction, each of the hands of the signer is active, each producing morphemes of separate lexical entities. At least

one of the hands is actively moving in signing space. The example below illustrates a typical full simultaneous construction (Sallandre 2007; Miller 1994):

dh: CL:1 (person: approaches) CL:1 (person: moves away)
ndh: KNOWLEDGE-INCREASE KNOWLEDGE-DIMINISH
'When I'm around them (i.e. ASL) signers, (my ability) increases and when I'm not around them, it decreases.' (LSQ, Miller 1994: 88)

This example can be described as the simultaneous production of two related clauses, which are thus not ordered.

Typically, we might expect that the two hands perform one of the following functions (Sallandre 2007):

- they describe simultaneous actions (as in the example above)
- they represent two different referents
- one represents a topic [Pragmatics – Section 4.2] while the other expresses the rest of the clause
- one hand expressed the cause of an event while the other depicts the result

In many cases simultaneous constructions make use of classifiers [Morphology – Chapter 5] / classifiers, in classifier constructions [Lexicon – Section 1.2.1] / classifier constructions [Semantics – Chapter 7].

2. Perseverations: In some other cases, both hands are active but one holds a sign introduced previously while the other hand goes on signing. Typically, after a two-handed sign the non-dominant hand might retain the handshape of that sign throughout the next sign or signs. In the example below there is perseveration of the sign CAR/DRIVE on the non-dominant hand, while the dominant hand signs what happens during the driving.

DRIVE GO IX-forward RECOGNIZE IX-BUILDING
(2 handed) ----------(2 handed)
'She drove around and recognized the building over there.'
(JSL, Vermeerbergen et al. 2007: 248)

The syntactic function of this type of simultaneity is not clear, and many assume that it is purely a prosodic effect. Nevertheless the grammar writer should be aware of this possible confound in assessing the dimension of word order in the language under investigation.

3. Partial simultaneity: A source of partial simultaneity is given by pointing signs, which frequently double referential expressions on the non-dominant hand. An example is given below (Liddell 2003: 255).

dh: BUT FOOD DELICIOUS
ndh: IX-food (ASL)

Another frequent case of partial simultaneity is given by numerals, which are frequently held by the non-dominant hand while the dominant hand goes on describing what is associated to the given numbering.

Some of these cases of simultaneity are not unique to sign languages, but also happen in spoken languages with gestures accompanying speech. Gestures in general constitute a grey area in the description of sign languages, and the grammar writer should be aware of the difficulty in some cases of teasing apart purely grammatical constructions from mere gestural phenomena.

2.3.1 Identification of the basic order of constituents in the main declarative clause

2.3.1.1 Order of subject, object, and verb

The investigation of word order may start from the identification of the unmarked order of constituents in a main declarative clause. Although the order of subject, object and verb may not be rigid, the grammar writer might try to identify the order which is more natural as an answer to the question "What happened?" or in the first sentence of a narrative, where no constituent is likely to be given special prominence.

In many sign languages the subject or the object can be null, so not all the sentences with a transitive verb are suitable for the identification of the basic word order.

In sign languages that have been studied to date the basic word order has been identified as either SVO (e.g. ASL, LSB, HKSL, and SSL) or SOV (e.g. NGT, DGS, IPSL, LIS, VGT, and Irish SL).

Also in spoken languages, the two most common orders are by far SVO and SOV, although VSO is also fairly well attested (the other orders are very rare).

A potential complication is raised by the fact that the position of a pronominal subject may be different from the position of a full noun phrase subject. NSL can illustrate this. In NSL the basic word order is SVO as shown by the following sentence.

BOY DRINK MILK
'The boy drinks milk.' (NSL)

However, if the subject is a pronominal index, it can appear sentence finally. The VOS order is not attested when the subject is a full noun phrase.

DRINK MILK IX
'He drinks milk, (he does).'
*DRINK MILK BOY (NSL)

The VOS order is acceptable only if there is a pause between MILK and BOY and the pronominal index is repeated.

DRINK MILK. BOY IX-IX (NSL)

The investigation of word order should also mention the order between the subject and an intransitive verb. The basic order is expected to be SV, at least if the language is SVO or SOV. However, as in the case of transitive verbs, pronominal subjects may be special. We illustrate this with NSL, where the order is SV with a full noun phrase subject, unless the subject is pronominal. In the latter case the order can be VS.

a. MAN SLEEP
   'The man is sleeping.'
b. *SLEEP MAN
c. SLEEP IX
   'He is sleeping.' (NSL)

Finally the grammar writer should investigate whether there are differences between the order of the subject and an unergative [Syntax – Section 2.1.1.2] / unergative verb and the order of the subject and an unaccusative [Syntax – Section 2.1.1.2] / unaccusative verb.

2.3.1.2 Order of auxiliaries (i.e. agreement, tense, and aspectual markers) with respect to the verb

In this section the grammar writer should describe the relative order of auxiliaries [Morphology – Section 3.3] with respect to the verb, verifying in particular whether they precede of they follow it.

2.3.1.3 Order of modals with respect to the verb

Modal [Morphology – Section 3.4] verbs are known to display a distribution in many languages that does not overlap with lexical verbs. In this section the grammar writer should verify whether modal verbs display any specific distribution in the language under investigation.

2.3.1.4 Order of negation with respect to verb, modals and auxiliaries

When the sentence contains functional signs that indicate agreement, tense or aspectual information, and negation [Lexicon – 3.11.1] / negation [Morphology – Section 2.1.1.2], it is useful to describe the possible positions of these functional signs with respect to the verb and its argument. For example, in DGS and other sign languages an agreement auxiliary [Lexicon – Section 3.3.4] (also called Person Agreement Marker or PAM) combines with a plain verb which cannot express agreement overtly (cf. Rathmann 2003). In DGS PAM may appear sentence-finally or it may occur between the subject and the object, possibly depending on dialectal variations.

 5_2.3.1.4_1_DGS_i poss cat like 1pam3

a. I POSS CAT LIKE $_1$PAM$_3$
'I like my cup.'

 5_2.3.1.4_2_DGS_hansi ipamj mariej like

b. HANS$_i$ $_i$PAM$_j$ MARIE$_j$ LIKE
'Hans likes like Marie.' (DGS, Rathmann 2003: 183)

Other functional signs are aspectual markers [Lexicon – Section 3.3.2], for example the sign glossed as FINISH in ASL and the one glossed as DONE in LIS. In ASL, which has SVO as its basic order, the perfect marker FINISH precedes the verb. In LIS, which has SOV as its basic order, the perfect marker DONE follows the verb.

a. JOHN FINISH VISIT MARY
'John has visited Mary.' (ASL, Zucchi et al. 2010: 199)

 5_2.3.1.4_3_LIS_gianni house buy done

b. GIANNI HOUSE BUY DONE
'John has bought a house.' (LIS, Zucchi et al. 2010: 204)

Although tense [Lexicon – Section 3.3.1] / tense [Semantics – Chapter 1] information is typically conveyed by time adverbials, some sign languages contain tense auxiliaries. These signs often derive from time adverbials (Aarons et al. 1995 for ASL) or from modal verbs. The grammar writer may investigate the position of these signs and study if there are differences when they are used as auxiliaries and when they are used as modals (or time adverbials).

The position of negation [Lexicon – Section 3.11.1] / negation [Morphology-Section 2.1.1.2] / negation [Semantics – Chapter 12], with respect to the verb, modals and auxiliaries should also be verified. In LIS, a SOV language, negation follows the verb, modals and aspectual markers [Lexicon – Section 3.3.2], while in ASL, a SVO language, it precedes the verb.

a. GIANNI ARRIVE NOT
'Gianni doesn't arrive.' (LIS)
b. JOHN NOT BUY HOUSE
'John has not bought a house.' (ASL)

The grammar writer should also consider that many sign languages display different signs of negation carrying different pragmatic meanings, such as negative particles [Lexicon – Section 3.11.1], negative words, and negative adverbials. The position of these different signs of negation may vary in the sentence and should therefore be investigated in the target sign language.

2.3.1.5 Order of arguments of ditransitive verbs

Ditransitive verbs / ditransitive (*give* or *send*) take three arguments. The grammar writer may want to describe the possible orders between them. Many languages admit a permutation between the theme argument and the goal [Semantics – Section 6.1], so this is an aspect that should be taken into consideration.

2.3.1.6 Position for different types of adverbs and adjuncts

Although it is not unusual for the same adverb [Lexicon – Section 3.5] to be found in more than one position in the sentence, each type of adverbs may be associated to one non-marked position, as with any adjunct [Syntax – Section 2.2.3]. The grammar writer should see if there are different positions for (among others) the following types of adverbs: adverbs of time (*yesterday*), adverbs of place (*outside*), adverbs of manner (*slowly*), adverbs of frequency (*often*) and sentential adverbs, which conveys the attitude of the speaker toward the content of the sentence (*probably*).

However, the grammar writer should consider that in sign languages some adverbs are naturally realized non-manually on the verb, so their order in the clause is by definition the same as the verb.

The grammar writer should keep in mind that adjuncts can also be realized through other means, such as adverbial clauses [Syntax – Section 3.5; Semantics-Section 14.2] and noun phrases.

2.3.2 Basic order of constituents in other clauses

2.3.2.1 Basic order in the different types of sentence

After analyzing the word order in declarative sentences [Syntax – Section 1.1; Semantics – Section 13.1], the grammar writer may want to see if in the other sentence types (question [Syntax – Section 1.2] / question [Semantics – Section 13.2], imperative [Syntax – Section 1.3] / imperative [Semantics – Section 13.3] / imperative and exclamative [Syntax – Section 1.4] / exclamative [Semantics – Section 13.4]) / exclamative the order is different. In particular, in many sign languages wh-signs [Syntax – Section 1.2.3] / wh-signs are found in a position which does not correspond to their grammatical function (typically sentence finally or sentence initially). If a language uses a special sign to convey imperative force, its position should be detected. Also, since a a change in word order is a property of imperative clauses observed in many spoken languages, the grammar writer should investigate if such a change also applies to the target sign language in the imperative mode.

2.3.2.2 Basic order in the different types of subordinate clauses

Two types of clauses can be embedded: declarative [Syntax – Section 1.1] and interrogative clauses [Syntax – Section 1.2] (also called indirect questions). The basic word order in embedded declaratives and interrogatives may or may not be the same as the word order in matrix declaratives and interrogatives, even more so considering that some (spoken) languages have special word order rules for matrix clauses (cf. Verb Second in Western Germanic languages). It may be interesting to study if the position of the wh-signs [Syntax – Section 1.2.3] is the same in matrix and embedded clauses. Finally, if the sign language under study has signs for subordinating conjunctions, these should be detected.

2.3.3 Deviations from the basic order of constituents

Although most known sign languages have a flexible word order, it is not the case that anything goes. So, after analyzing what is the basic, unmarked word order in the language, it is important to analyze the possible and impossible order permutations. In doing so, the grammar writer should try to determine which factor makes possible or favors these changes. Since, topic [Pragmatics – Section 4.2] / topic or focus [Pragmatics – Section 4.1] / focus constituents are often dislocated in specific positions in the sentence and are often accompanied by specific non-manual markers, attention should be given to these factors. For example, in NSL, which is usually SVO, the order may be reversed to OSV, if the object is focalized and a pause intervenes between the object and the rest of the clause:

CAR GRANDPA HAVE
'A car is what grandfather has?' (NSL)

2.3.3.1 List of attested and unattested permutations

After analyzing what is the basic, unmarked word order in the language, the grammar writer should analyze the possible and impossible order permutations for the language under investigation.

2.3.3.2 Non-manuals accompanying the deviations from the basic word order

In describing permutations, the grammar writer should try to determine which factor favors these changes. Topic [Pragmatics – Section 4.2] or focus [Pragmatics – Section 4.1] / focus constituents are known to be often dislocated in specific positions in the sentence and are often accompanied by specific non-manual markers. In this section the grammar writer should describe which specific non-manual markers correlate with any given permutation.

2.3.3.3 Specific order for topicalized elements

In this section the grammar writer should describe the permutations that correspond to topicalization strategies.

In sign languages, topics usually occupy the left periphery of the clause and are marked by dedicated non-manual markers. Studies on topic marking in various sign languages (Aarons 1994, 1996 for ASL; Sze 2013 for HKSL; Brunelli 2011 for LIS, a.o.) show that: (i) sign languages vary in the non-manuals marking topics; (ii) different kinds of topic may co-exist in the same sentence (usually not more than two); (iii) topics can be distinguished by ordering restrictions (distribution in the sentence), non-manual marking, discourse function, and whether they are base-generated in the left-periphery of the sentence or moved. Example (a) below illustrates an ASL sentence with a base-generated topic (VEGETABLE) marked by a large movement of the head back, wide eyes, and a forward head movement ('tm2'). The ASL sentence in (b) displays two topics preceding the main clause: a base-generated topic (JOHN) introducing known referent marked by a cluster of NMMs (head down, wide eyes, mouth open, raised eyebrows and rapid headnods, 't3-bg') and a moved topic (MARY) expressing contrastive focus and marked by raised eyebrows, wide eyes, head tilted back, and the head moving down ('t1-mv'). According to Aarons (1994), moved topics must follow base-generated topics in ASL.

tm2
a. VEGETABLE, JOHN LIKE CORN
'As for vegetables, John likes corn.' (ASL, Aarons 1996: 78)

t3-bg t1-mv
b. JOHN$_j$, MARY$_i$, IX$_j$ LOVE t_i
'You know John, *Mary* he loves.' (ASL, Aarons 1994: 179)

2.3.3.4 Specific order for focused elements

In this section the grammar writer should describe the permutations that correspond to focalization strategies.

Similarly to topics, focused elements usually tend to appear at the left of the sentence in sign languages, they are marked by dedicated non-manual markings and may carry out different discourse functions. In some sign languages, focused constituents may be followed by an indexical sign or by a determiner-like element functioning as an intensifier, as in the ASL example below. The focused constituent (KAY) is marked by brow raise and lean back ('br').

br
KAY THAT, TOLD FINISH
'It's Kay that I told.' (ASL, Wilbur 2012: 475)

Languages may vary as to the distribution of topic and focus in the sentence.

2.3.3.5 Word order variations according to the different types of verbs (plain, agreeing)

Most sign languages of the world have three types of verbs (Padden 1983): plain verbs [Lexicon – Section 3.2.1], agreement verbs [Lexicon – Section 3.2.2] and spatial verbs [Lexicon – Section 3.2.3]. Word order may change according to these classes, as it is well known at least since Fischer (1974, 1975). In particular, sentences with agreement verbs exhibit a freer word order than sentences with plain verbs. For example, in NSL, where the basic word order is SVO, the order SOV is also commonly found with agreeing verbs:

 5_2.3.3.5_1_NSL_joe-ixi eva-ixj ikickj

JOE-IX$_i$ EVA-IX$_j$ $_i$KICK$_j$
'Joe kicked Eva.' (NSL)

Because of this, claims about the basic word order of particular sign languages are often based on sentences with plain verbs rather than agreement verbs.

The word order differences between plain verbs and agreement verbs can be further illustrated through LSB. As shown below, LSB allows an OSV order with the agreement verb ASSISTIR 'watch' but not with the plain verb GOSTAR ('like'). Note that since there is no topic marking in these examples, we can assume that they are not derived by topicalization. Importantly, the sentence with GOSTAR would be grammatical if the predicate were irreversible (for example, 'John likes football'), showing that the reversible/irreversible character of the predicate interacts with the agreeing/non agreeing character of the verb.

	eg:b	eg:a	eg:b
a.	TV$_i$	IX<det> JOÃO$_j$	$_j$ASSISTIR$_i$
	'John watches TV.'		
			hn
b.	*IX<det> MARIA IX<det> JOÃO		GOSTAR
	'John likes Mary.'		(LSB, Quadros & Lillo-Martin 2010: 238–239)

2.3.3.6 Word order variations according to the different types of predicates (reversible/irreversible)

Another factor that researchers have claimed plays a role in word order is the reversible/irreversible character of the predicate. If the predicate is reversible, namely the two characters can perform the action on each other ('John saw Mary'), word order may be the only clue to understand who is the agent and who is the theme. If the predicate is irreversible, ('John is eating a sandwich'), word order is less crucial in determining argument structure. This may have consequences. For example, in NSL, sentences with SOV order are more commonly found in narratives and when

the predicate is irreversible. The verb in SOV-clauses is normally intensified, as in the following sentence:

JOE CHOCOLATE EAT-intensified
'Joe gorged himself on chocolate.' (NSL)

In many sign languages, the SVO order is preferred in sentences with reversible arguments whereas SOV is more common with irreversible arguments. This holds in ASL (Fischer 1975), HZJ (Milković et al. 2006), LSB (Quadros 1999), LIS (Volterra et al. 1984) and VGT (Vermeerbergen et al. 2007). Kimmelman (2012) also reports that semantic reversibility of the sentence favors SVO in RSL.

The contrast between irreversible arguments and reversible arguments is exemplified in (a) and (b) below:

hn
a. IX<det> JOÃO FUTEBOL GOSTAR
'John likes soccer.'

hn
b. *IX<det> JOÃO IX<det> MARIA GOSTAR
'John likes Mary.' (LSB, Quadros & Lillo-Martin 2010: 239)

Not only is an SOV order ruled out with reversible arguments in LSB (as shown above), but the order OSV is also impossible, even though it is allowed with irreversible arguments:

hn
a. FUTEBOL IX<det> JOÃO GOSTAR
'John likes soccer.'

hn
b. *IX<det> MARIA IX<det> JOÃO GOSTAR
'John likes Mary.' (LSB, Quadros & Lillo-Martin 2010: 239)

Although reversibility/irreversibility of the subject and object arguments is relevant for word order in many sign languages, this is not the case for all sign languages. For instance, reversibility/irreversibility of subject and object does not influence word order in Auslan, Irish SL and HKSL (Johnston et al. 2007; Sze 2003). Hence, the grammar writer should check if reversible sentences differ from non-reversible sentences in the sign language under investigation.

Elicitation materials

Researchers have adopted different approaches in collecting data on word order in sign language. The approach characterizing the first studies on word order involves the use of

elicited data either in the form of translations from the spoken language, grammaticality judgments or elicitation from drawings. In general, elicited data present some disadvantages: they often lack a discourse and pragmatic context against which to check their interpretation, or they might erroneously suggest one. However, elicitation procedures with the necessary recommendations may turn out to be a very useful approach. The grammar writer should avoid translations from the spoken language as this might induce the signer to follow the word order of the spoken language. The elicitation from drawings avoids such drawback favoring the presence of a narrative context with no shared information between the signer and his interlocutor, so it likely elicits an unmarked word order. The grammar writer should avoid presenting images favoring a focused interpretation. To provide a clarifying example, the investigation on LIS word order carried out by Volterra et al. (1984) involved the participation of two interacting signers both provided with couples of drawings minimally different for the direction of the action performed (namely, 'the woman embraces the girl' versus 'the girl embraces the woman'). One of the signers was told which of the two drawings he/she had to describe to his partner. This elicitation approach might have induced the signer to produce marked orders reflecting the contrastive information present in the two drawings.

More recently, the availability of technological equipment and the collection for some sign languages of naturalistic corpora, has induced researchers to annotate naturalistic and spontaneous data to investigate word order. Among the advantages of using naturalistic data is the possibility to interpret them at the light of the discourse context in which they are produced. However dialogues naturally build a context which is presupposed among participants, thus facilitating the establishment of certain constituents as topic or focus categories. On the other hand, naturalistic data might lack specific structures preventing the grammar writer to carry out an in-depth analysis of the phenomenon. The grammar writer is therefore advised to use more than on approach when carrying out research on word order in the target sign language.

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2.4 Null arguments

2.4.0 Definitions and challenges

2.4.0.1 What is a null argument?

Some languages allow the arguments of a verb in a tensed clause not to be expressed as an overt pronoun [Lexicon – Section 3.7] or a lexical noun phrase [Syntax – Chapter 4]. This is the situation in which the term 'null argument' is commonly used. Spoken languages vary with respect to whether they allow the arguments of the verbs to be silent. Null arguments are most commonly observed in languages like Italian, Spanish, Catalan, and Turkish, which have a rich verbal agreement morphology. English, on the other hand, which does not have a rich verbal morphology, does not allow arguments of a predicate to be phonologically null in a sentence. In the Turkish and Catalan examples below, the verb bears the person and number agreement marker for the subject that is not phonologically expressed (*e* indicates the phonologically null pronoun).

a. Kitab-ı bitir-di-m
book-ACC finish- PAST-1SG
'I finished the book.' (Turkish)

b. Al camp *e* ho aprofiten tot.
in-the countryside it use.3PLeverything
'In the countryside they use everything.'
(Catalan, Barbera & Quer 2013: ex. (1a))

Languages that identify the referent of the null argument by means of verbal agreement morphology are said to use a licensing strategy based on agreement.

Similar to spoken languages, many sign languages also allow one or more of the arguments of the verb in a tensed clause to be phonologically unexpressed. In the ASL question-answer exchange below, the agreeing verb *send* is marked for subject and object agreement.

DID JOHN SEND MARY THE PAPER?
YES, $_{A}$SEND$_{B}$
'Yes, (he) sent (it) to (her).' (ASL, Lillo-Martin 1986: 421)

As can be observed, neither the subject nor the object argument of the verb *send* is pronounced in the response. The null pronouns are nevertheless interpreted as a definite pronominal such as *he*, *her*, and *it*.

2.4.0.2 Further explanations/distinctions

Significantly, it is not only those spoken languages with a rich agreement system that allow null arguments. Languages like Chinese and Japanese, which do not mark their

verbs for agreement also license null arguments. In Speaker B's responses below, either the subject (a), or the object (b), or both (c) can be null.

Speaker A:
Zhangsan kanjian Lisi le ma?
Zhangsan see Lisi ASP Q
'Did: Zhangsan see Lisi?'
Speaker B:
a. *e* kanjian ta le.
(He) see he ASP
'(He) saw him.'
b. ta kanjian *e* le.
He see (he) ASP
'He saw (him).'
c. *e* kanjian *e* le.
(he) see (him) ASP
'(He) saw (him).' (Chinese)

Spoken languages like Chinese, which do not have a rich verbal agreement morphology but still allow null arguments, are said to use the 'licensing by topic [Pragmatics – Section 4.2] / topic' strategy to identify the referent of the argument that is not phonologically expressed.

Sign languages also allow sentences with null arguments of verbs belonging to classes other than agreeing verbs. In ASL, the verb *eat* is a plain verb [Lexicon – Section 3.2.1] and can occur with a null subject and a null object.

A: Did you eat my candy?
B: YES, EAT-UP
'Yes, (I) ate (it) up.' (ASL, Lillo-Martin 1986: 421)

However, Bahan, et al. (2000) argue that in ASL a null argument is possible with a plain verb only in the presence of non-manual agreement markers. When this happens, the head and the eyes are non-manual agreement markers of, respectively, the subject and the object: the head is leaned towards the point in space associated with the subject, while the eye gaze is directed towards the point in space associated with the object. Bahan, et al. claim that if the plain verb is signed without the non-manual agreement marker, the argument cannot be null but has to be phonologically realized. It is therefore important to determine if the particular sign language has a non-manual marker of agreement and also to see if the language licenses null arguments.

Licensing of null arguments by topic is also possible in some sign languages. Sign languages therefore can use one or both of the two types of strategies in licensing null arguments: (i) a null pronoun licensed by verb agreement, (ii) a null pronoun licensed by topic.

2.4.0.3 Methodological challenges

There are a number of methodological challenges in analyzing null arguments in a sign language. One has to do with determining whether the verb of the clause with a null argument is an agreeing [Lexicon – Section 3.2.2] or a non-agreeing (plain) verb [Lexicon – Section 3.2.1], and in the latter case, whether the sign language has non-manual marking of agreement on plain verbs.

Correlated with this issue is another challenge, namely, determining the nature and properties of topic constructions in the language being analyzed. This is significant since the most common licensing strategy in sentences with null arguments and plain verbs has been the identification with topic.

2.4.1 Subject and object null arguments

Null arguments are typically subjects and objects of their clauses. Null subjects and objects can occur in sentences with both agreeing and plain verbs.

2.4.1.1 Null subjects

A sign language that has optional non-manual agreement marking on agreeing verbs may or may not differentiate between the two productions of the agreeing verb in allowing a null subject in the clause.

In ASL, for example, which is a language in which a non-manual agreement marker optionally occurs with the agreeing verb, the null subject of the agreeing verb is allowed regardless of whether the non-manual agreement marker is present or absent.

With respect to allowing null subjects in sentences with plain verbs, sign languages exhibit variation. Sign languages might have optional non-manual agreement markers that are produced simultaneously with the plain verb. Sign languages differ with respect to whether they allow a null subject in the absence of such non-manual agreement marker when the verb of the clause is a plain verb.

If a language licenses null pronominal subjects and pronominals in sentence-final position (as in the ASL example below), the subject is more likely to occur after the verb rather than in the initial position of the sentence which is the common position for subjects.

$_{i}\textsc{blame}_{j}$ $\textsc{fred}_{j}$, $\textsc{ix}_{i}$
'(He/she) blames Fred, him/her.' (ASL, Neidle et al. 2000: 59)

In those sentences in which a null argument occurs in subject position, in addition to a pronominal in sentence-final position, there may optionally be a tag.

2.4.1.2 Null objects

Sign languages also allow null objects to occur with agreeing and plain verbs. Null objects seem to behave similarly with null subjects with respect to whether a sign language will allow a null object to occur in a construction or not. As in the case of null subjects, null objects can occur with agreeing verbs. A sign language that has an optional non-manual agreement marker with agreeing verbs might allow a null object regardless of whether the non-manual agreement marker is present or not.

Bahan et al. (2000) claim that a null object is not allowed with plain verbs in ASL in case of absence of a non-manual object agreement marker (the eye-gaze directed towards the signing space associated with the object).

a. *JOHN$_i$ LOVE
   eye gaze$_i$
b. JOHN$_i$ LOVE
   'John loves (him/her).' (ASL, Bahan et al. 2000: 32–33)

2.4.2 Types of verbs that can license null subjects

Null pronouns may be licensed by different verb classes is sign languages. Languages have been observed to allow null arguments with agreeing, spatial and plain verbs.

In many sign languages agreeing verbs [Lexicon – Section 3.2.2] with or without non-manual agreement license null arguments to a higher degree of frequency than plain verbs with non-manual agreement. In some sign languages, e.g. Auslan, null subjects have been recorded to occur most frequently with spatial verbs.

With respect to allowing null subjects in sentences with plain verbs [Lexicon – Section 3.2.1], sign languages exhibit variation. A sign language which has an optional non-manual agreement marker produced simultaneously with the plain verb might not license a null subject in the absence of the non-manual agreement marker. In ASL, according to Bahan et al. (2000) for example, null subjects and null objects of plain verbs are not licensed in the absence of the non-manual agreement markers. In such cases, the arguments have to be overtly expressed.

2.4.3 Null subjects in main clauses

A number of factors allow for null subjects in main clauses. In this section the grammar writer should describe the distribution of null arguments in main clauses, as opposed to their distribution in embedded environments.

2.4.4 Null arguments in embedded clauses

It is cross-linguistically common for the distribution of null arguments to vary in matrix and embedded environment, especially in non-finite clauses. In English, for example, null arguments have a freer distribution in non finite clauses than in matrix clauses. In the following sentences the verb *leave* does not take an overt argument (in the first sentence the null argument must refer back to the subject of the main clause, while in the second sentence it refers to the object of the main clause).

a. John decided to leave
b. David ordered Bill to leave

The grammar writer should check if this holds also in the sign language under investigation, even though this is made difficult by the fact that in most sign languages there are no clear diagnostics to set apart finite and non-finite clauses.

It is also possible that a sign language will *not* allow a null argument in an embedded clause to have a definite referent. In LSC, a SOV sign language, for example, the null argument in an embedded clause with either a plain verb or an uninflected agreeing verb cannot be definite.

JORDI SAY-$_1$ LAURA TEACH
1. *Jordi$_i$ says to me that Laura teaches him$_i$
2. *Jordi$_i$ says to me that he$_i$ teaches Laura
3. Jordi says to me that Laura teaches/is a teacher.

(LSC, Quer & Rosselló 2013: 349)

2.4.5 Pragmatic and semantic conditions licensing null arguments

Although null arguments are commonly licensed by verbs that are marked for agreement (manually as in the case of agreeing verbs or non-manually in the case of plain verbs), it is possible that a sign language also uses a different licensing strategy for null arguments.One such strategy is licensing by a topic [Pragmatics – Section 4.2] / topic phrase. Both agreeing and plain verbs can allow a null argument that is coreferential with the topic phrase. The next sentence shows topic marking of the null object of the plain verb:

t
THAT COOKIE, IX$_1$ HOPE SISTER$_{3a}$ SUCCEED $_{3a}$PERSUADE$_{3a}$ MOTHER$_{3b}$ EAT
'That cookie, I hope my sister manages to persuade my mother to eat.'

(ASL, Koulidobrova 2017)

2.4.6 Referential properties of null arguments

One of the characteristics of null arguments in spoken languages is that they can be ambiguous with respect to their referent. In the case of verb phrase ellipsis in the following English sentence, it is ambiguous as to whether Audrey lost her own book or Jane's book.

Jane lost her book, Audrey did too.

Null arguments of plain and agreeing verbs in sign languages can also have ambiguous reading. Note that in LSC, even in the case of an agreeing verb can the referent of the null subject be ambiguous.

 5_2.4.6_1_LSC_maria say daughter

MARIA SAY DAUGHTER POSS$_i$ LETTER SEND-LETTER DIRECTOR. LAURA ALSO SAY LETTER SEND-LETTER DIRECTOR

Lit. ' Maria says her daughter sent a letter to the director. Laura also says *e* sent a letter to the director. '

e = Maria's daughter, *e* = Laura's daughter (LSC, Quer & Rosselló 2013: 355)

The ambiguity in the interpretation of such constructions can be resolved through context.

Elicitation materials

The analysis of null argument structures requires careful elicitation of data. Data elicitation tasks and grammaticality judgment tasks can determine the constructions in which null arguments are licensed. Picture descriptions can uncover the contextual factors which determine the choice of null arguments over phonologically realized arguments.

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2.5 Clausal ellipsis

In addition to null arguments [Syntax – Section 2.1.2] / null arguments, parts of the clause can be unpronounced if a suitable antecedent is present that provides the content for the missing category. For sake of explicitness, in the examples below we indicate the elliptical category by strikethrough. This means that the sentences must be intended with words/signs unuttered. We use English to define categories of clausal ellipsis and start from deletion of smaller units and move to ellipsis that involve deletion of bigger units.

In the elliptical construction called gapping the finite verb is elided in the second conjunct of a coordination / coordination [Syntax – Section 3.1]:

John bought a cake, and Sally ~~bought~~ an ice cream.

Also the entire verb phrase can go unpronounced as in the following example, and this is called verb phrase (VP) ellipsis.

John has already left while I have not ~~already left~~

Another type of ellipsis is stripping. Under stripping, everything in a clause is deleted under identity with corresponding parts of the preceding clause, except for one constituent**.** The following sentence contains an example of stripping because everything but the subject is deleted:

John broke a vase, and Mary ~~broke a vase~~ too

However, the following sentence is another case of VP ellipsis because the category expressing tense and agreement (the auxiliary *do*) is not deleted.

John broke a vase, and Mary did ~~break a vase~~ too

Finally, an entire clause out of which a *wh*-phrase has moved may undergo ellipsis and this is called sluicing:

John bought something but I do not know what ~~John bought~~

The grammar writer may be interested in the study of ellipsis not only to unveil what categories can be omitted in the sign language she or he is studying but because ellipsis can give information on the internal structure of the clause. For example, typically ellipsis affects the verb, or the verb and its object(s), while it does not happen that the verb and the subject undergo ellipsis but the object is not elided, as illustrated by the ungrammaticality of the following sentence (sluicing is an exception which is due to the fact that the *wh* object has moved to a dedicated position outside the verb phrase).

*John broke a vase, and ~~Mary broke~~ a vase too

Under the assumption that ellipsis targets constituents [Syntax – Section 2.0.1] / constituents, this is taken as an indication that the inner constituent of a transitive clause is composed by the verb and its object while the subject is later added to this nucleus. So, ellipsis is a useful tool to study clause structure.

While the sign language literature on argument ellipsis is wider, lesser attention has been devoted to ellipsis in the clausal domain. Jantunen (2013) discusses candidate cases of gapping, VP ellipsis and sluicing in FinSL. The following example illustrates gapping:

GIRL HAS-GOT TWO-PIECES. BOY ~~HAS-GOT~~ ONE-PIECE
'The girl has two and the boy (has) one.'
(FinSL, modified from Jantunen 2013: 317)

Cecchetto et al. (2015) make a systematic use of signs like SAME ('as well'), YES or NOT to probe elliptical constructions in LIS and discuss cases such as the following, in which the verb and the object are deleted but the auxiliary for future survives ellipsis.


5_2.5_1_LIS_gianni bean eat fut

GIANNI BEAN EAT FUT. PIERO ~~BEAN EAT~~ FUT SAME
'Gianni will eat beans and Piero will too.' (LIS, Cecchetto et al. 2015: 9)

Given that the auxiliary survives ellipsis, the preceding sentence is interpreted as a case of VP ellipsis. This sentence contrasts minimally with the following one, which, since the auxiliary is elided too, can be interpreted as a case of stripping.

GIANNI BEAN EAT FUT. PIERO ~~BEAN EAT FUT~~ SAME
'Gianni will eat beans and Piero too.' (LIS, Cecchetto et al. 2015: 9)

Finally, the following sentence is a paradigmatic cases of sluicing, (the embedded interrogative precedes the matrix verb KNOW because indirect questions precede the main verb in LIS).

 5_2.5_2_LIS_gianni someone meet

GIANNI SOMEONE MEET BUT ~~GIANNI MEET~~ __wh WHO I-KNOW NOT
'Gianni met someone but I do not know who.' (LIS, Cecchetto et al. 2015: 10)

As signs functionally equivalent to SAME, YES or NOT are likely to be found in all sign languages, their occurrence in sentences consisting of the coordination of two clauses is the natural environment to look for cases of ellipsis. As a proviso, the grammar writer should be advised that while cases of stripping, gapping and sluicing are robustly attested cross-linguistically, VP ellipsis is rarer. Furthermore, sign languages often express information about tense and agreement without the use of auxiliaries, so it may be difficult or even impossible to set apart VP ellipsis and stripping, which are normally distinguished by the presence/absence of the auxiliary.

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2.6 Pronoun copying

2.6.0 Definitions and challenges

Pronoun copying is the copying of an argument [Syntax – Section 2.1.2] of a verb within its clause. One of the copies occurs in the regular position of the argument.

The other copy, which is in the form of a pronominal IX agreeing in space with that argument, occurs most often in the clause final position. Pronoun copying is very common to sign languages, as illustrated below for ASL.

 5_2.6.0_1_ASL_ix1 go-away ix1

a. IX_1 GO-AWAY IX_1
'I'm going for sure.' (ASL, Padden 1988: 86)

b. IX_3 NOT-LIKE ICE-CREAM IX_3
'S/he doesn't like ice cream.' (ASL, Cormier et al. 2013: ex (8))

Sign languages differ from spoken languages in this respect. Not many spoken languages seem to have pronoun copying. One exception is (Canadian) French. In the following sentence the pronoun *moi* ('me') is reduplicated in sentence final position.

(Moi) Je le connais moi
Me I him know me
'I know him.' (French, cited in Bos 1995)

Pronoun copying is to be distinguished from another phenomenon commonly attested in sign languages, namely doubling, which may apply to categories other than arguments. In the example below, the auxiliary *will* is doubled and the doubled auxiliary occurs after the verb.

hn
IX_1 WILL LEAVE WILL IX_1
'I will leave.' (ASL, Petronio 1993: 134)

In clauses that contain both doubling and pronoun copy, the subject pronoun copy follows the doubled auxiliary, at least in ASL.

2.6.1 Personal pronoun copying

In pronoun copying, the argument that is copied can be a noun phrase [Syntax – Chapter 4] (NP), an overt pronoun [Lexicon – Section 3.7] or a null pronoun. The argument that is most commonly copied is the one functioning as the subject of its clause. The sentence below illustrates the pronoun copy of a subject noun phrase.

GIRL IX_{left}, IX_{left} BOOK THROW-AWAY IX_{left}
'That girl, she threw away the book.' (NGT, Crasborn et al. 2009: 359)

A null subject too can have a copy in sentence-final position. Below is an example illustrating the copy of a null subject.

neg
BUT CAR BUY IX_1 PU_1 //
'But I am not going to buy a car.' (NGT, Bos 1995: 128)

In the example above, the subject is a first person null pronoun. The pronoun copy in the form of the pronominal IX, which agrees in number and person with the doubled null argument, appears in clause final position.

Pronoun copying can also occur in matrix polar interrogatives, as shown below:

 5_2.6.1_1_ASL_brother like salad ixbrother

_____ _br
$BROTHER_3$ LIKE SALAD IX_3?
'Does (my) brother like salad?' (ASL, Davidson & Caponigro 2016: ex. (61))

A pronoun copy can occur in imperatives as well, at least in some sign languages.

SCARE IX_a? HEY, ASK SCARE ASK SCARE IX_a IX_{Aby}
'Are you scared? Hey, Aby, ask Laura if she is scared.'
(ASL, Davidson & Caponigro 2016: ex. (32))

Pronoun copying can also occur in complex sentences that contain an embedded sentence. In such cases, in ASL the pronoun copy is the copy of the subject of the matrix clause.

IX_1 DECIDE [IX_a SHOULD $_aDRIVE_b$ SEE CHILDREN] IX_1
'I decided he ought to drive over to see his children, I did.'
(ASL, Padden 1988: 95)

In the example above, the index IX in the sentence-final position can only be interpreted as the subject of the matrix clause. The pronoun copy can refer only to the subject of the matrix clause, but not to the subject of the embedded clause. The grammar writer should check whether the same restriction applies to the sign language under description.

Pronoun copying has also been observed to apply in indirect questions [Syntax – Section 1.2] / questions. In ASL, in such cases, the pronoun copy in the sentence-final position can be ambiguous between referring to the subject of the matrix declarative clause or to the subject of the embedded polar interrogative.

neg
MOM REMEMBER BROTHER LIKE SALAD (IX_{mom}/$IX_{brother}$)
'Mom doesn't remember whether her brother likes salad.'
(ASL, Davidson & Caponigro 2016: ex. (62))

In the example above, the pronoun copy in the sentence-final position can be the double of either subject: the matrix subject IX_{mom} or the subject of the embedded question $IX_{brother}$, but it is ungrammatical in ASL to have two different subject pronoun copies. The grammar writer should be careful about these restrictions.

Pronoun copying in ASL distinguishes between subordination [Syntax – Section 3.2] / subordination and coordination [Syntax – Section 3.1] / coordination constructions. As illustrated in the example repeated below, in a sentence containing an embedded clause, the sentence-final subject pronoun copy can only refer back to the matrix subject.

IX_1 DECIDE [IX_a SHOULD $_a\text{DRIVE}_b$ SEE CHILDREN] IX_1
'I decided he ought to drive over to see his children, I did.'
(ASL, Padden 1988: 95)

In a sentence that contains a conjoined clause, however, the sentence-final subject pronoun copy cannot refer back to the first conjunct.

[IX_a SIT_a] [IX_b STAND_b $\text{IX}_{*a/b}$]
'He sat there and she stood there, she did.' (ASL, Padden 1988: 88)

In sentences such as the example above, which contains a conjoined clause, the pronoun copy can only refer to the subject of the second conjunct. Referring the copied pronoun back to the (null) subject of the first conjunct is not possible.

The grammar writer should verify whether this distinction between coordinated and subordinated sentences with respect to pronoun copying is also attested in the relevant sign language.

2.6.2 Syntactic properties of pronoun copying

2.6.2.1 Possible subject-object asymmetry in pronoun copying

In most sign languages there is an asymmetry between the function of the arguments that are doubled in pronoun copying. In general, pronoun copying applies to subjects much more freely than to other arguments.

Some sign languages have also been reported to copy objects and adverbials such as a locative phrase. The frequency of copying of a non-subject, however, is much lower than that of subjects. In NGT, for example, the occurrence frequency for second and third arguments has been observed to be approximately 5% to 6% (Bos 1995). The grammar writer should check whether pronoun copy is restricted to subjects or can also hold for other arguments.

2.6.2.2 Position of the copying pronoun

One word of caution is that not all instances of multiple IXs are considered to be pronoun copies, but only those in clause-final position.

Multiple IXs that appear in the regular position of the argument are not pronoun copies, but rather simple pronouns.

The category of the verb may have an effect on the position of the subject pronoun copy. In some sign languages, plain verbs and agreement verbs behave differently

with respect to where the pronoun copy occurs in the clause. In those languages, a subject pronoun copy may intervene between the agreeing verb and the person agreement marker [Lexicon – Section 3.3.4] (PAM), as shown below.

IX_1 TEACHER NEW IX_{3a} $_1\text{HELP}_{3a}$ IX_1 $_1\text{PAM}_{3a}$
'I help the new teacher.' (DGS, Pfau & Steinbach 2011)

But if the verb is a plain verb, the pronoun copy cannot occur between the verb and the person agreement marker.

*IX_1 TEACHER NEW IX_{3a} LIKE IX_1 $_1\text{PAM}_{3a}$
'I like the new teacher.' (DGS, Pfau & Steinbach: 2011)

The grammar writer should carefully observe the interaction of verb classes and the position of the pronoun copy.

2.6.3 Prosodic features of pronoun copying

The pronoun copy is generally unstressed. There is usually no intonational break [Phonology – Section 2.2.3] before the pronoun copy. In the attested cases, no pause occurs before the pronoun and there is no lengthening of the preceding sign.

2.6.4 Functions of pronoun copying

Pronoun copying is closely related to information structure. The most common use of pronoun copying is to express emphasis [Pragmatics – Section 4.1.4]. It has however also been noted that it can convey other functions such as focus [Pragmatics – Section 4.1] / focus and topic [Pragmatics – Section 4.2] / topic.

The following examples from NGT illustrate that pronoun copying expresses topic. Here the first IX localizes the topic noun phrase: the topic is $\text{GIRL-IX}_{\text{left}}$, while the second IX_{left} is a resumptive pronoun in subject position that indicates left dislocation of the topic phrase. The third IX in clause-final position is the pronoun copy referring to the topicalized subject $\text{GIRL-IX}_{\text{left}}$.

5_2.6.4_1_NGT_girl-ixleft, ixleft book throw-away girl-ixleft

$\text{GIRL-IX}_{\text{left}}$, IX_{left} BOOK THROW-AWAY $\text{GIRL-IX}_{\text{left}}$
'That girl, she threw away the book.' (NGT, Crasborn et al. 2009: 359a)

Since the final IX in this example refers to the topic, the phenomenon in these sentences has been labeled as 'topic agreement'. The grammar writer should describe the most common informative function of pronoun copying in the relevant sign language.

Elicitation materials

There are a number of methodological issues that need to be taken into consideration in eliciting and identifying pronoun copying. For one, elicitation of pronoun copying through specifically designed tasks shares the same challenges as elicitation tasks for information structure phenomena such as topic/focus. Given the fact that pronoun copying is closely related to information structure, it can best be elicited through tasks similar to those designed to induce other types of information structure sensitive constructions.

Contexts of natural production where the informants are led through unmonitored, free sessions of signing on issues, inducing them to produce the construction in a more natural manner are more likely to yield better results.

A challenge in data interpretation is how to identify the pronoun copy construction correctly. The crucial distinction is between doubling versus pronoun copying constructions. Since both involve doubling of the IX, the distinction lies on the position occupied by the copied IX and its function. However, the grammar writer is helped by the consideration that pronoun copy occurs in clause/sentence-final position.

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Chapter 3 Coordination and subordination

3.0 Introduction

In addition to a classification in sentence types [Syntax – Chapter 1] (declaratives, imperatives, interrogatives, and exclamatives), sentences can be classified according to their internal complexity. A sentence is simple when it consists of a single independent clause ('Mohammed arrived on time') while it is complex when it consists of a main and a subordinate clause or of two (or more) coordinate clauses. In principle, the level of subordination is unlimited ('John said that I think that Mohammed claimed that Kazuko is convinced that you arrived on time') although in practice there are limitations of the sentence length due to cognitive limitations (for example, working memory).

The main difference between subordination and coordination is that coordinated clauses have the same status while the main clause and the subordinated one do not. For example, the two clauses that form the coordinated sentence 'Mohammed arrived on time and Sarah arrived late' might be used as independent sentences. In contrast, subordination is a syntactic mechanism by which a clause becomes dependent on another one. Therefore, in the complex sentence 'If Mohammed arrives on time, Miriam will be surprised', the subordinate clause 'if Mohammed arrives on time' could never be used as an independent sentence while the main clause 'Miriam will be surprised' might.

3.1 Coordination of clauses

3.1.0 Definitions and challenges

3.1.0.1 What is coordination?

By coordination we mean the combination of at least two constituents / constituents [Syntax – Section 2.0.1], often belonging to the same syntactic category such as noun phrases [Syntax – Chapter 4], verb phrases, or clauses, either through conjunction or juxtaposition. Conjunction refers to combining at least two constituents through the use of conjunctions / conjunctions [Lexicon – Section 3.9] such as *and, but,* and *or.*

Juxtaposition, on the other hand, refers to the coordination of constituents without such conjunctions. This section focuses on properties of coordinated clauses. The reader is referred to sections on other types of phrases for a discussion of coordination of those constituents.

3.1.0.2 Methodological challenges

We expect sign languages to have developed grammaticalized forms to create complex coordinated structures, just like spoken languages have. Still, the means employed by sign languages to coordinate clauses may differ from the means employed by spoken languages. Given the multidimensionality of sign languages and their tendency to avoid functional elements like conjunctions, the grammar writer investigating clausal coordination in the target sign language should be aware of the fact that non-manual marking may play a key role in signaling coordinated clauses.

Non-manual markers observed in complex clauses with coordination may have (morpho-)syntactic as well as prosodic [Phonology – Chapter 2] functions. A non-manual marker identified by the grammar writer may, for example, function to mark a constituent as a conjunct (non-final or final) or a clause as a coordinated complex clause. However, it may also serve as a prosodic cue marking the clausal boundaries, similar to tone variation and pauses in spoken languages. In that sense, the non-manual marker identified may not be unique to clausal coordination. Non-manual markers such as eye-blinks, facial expressions, head and shoulder position, and eye gaze direction have been identified in a number of sign languages as markers of clausal boundaries. The grammar writer should be aware that all these prosodic means may be employed by sign languages as the only syntactic markers signaling the peripheries of coordinated clauses.

3.1.1 Types of clausal coordination

Recall that conjunction refers to combining at least two constituents / constituents [Syntax – Section 2.0.1] through the use of conjunctions such as *and, but*, and *or*. Juxtaposition, on the other hand, refers to the coordination of constituents without such conjunctions. The following English examples illustrate conjunction.

a. My son received the letter **and** Carla ran to the train station.
b. I accept your decision **but** you must explain me your reasons.
c. She will watch the movie **or** go to bed.

The following provides an example of juxtaposition from Pacoh, a Mon-Khmer mountain language of Vietnam, where two verb phrases are juxtaposed without any conjunction.

Do	[cho	t'ôq	cayâq,	cho	t'ôq	apây]
she	return	to	husband	return	to	grandmother

'She returns to (her) husband and returns to her grandmother.'

(Pacoh, Tang & Lau 2012: 342)

When employed, conjunctions may be used differently: some languages may use them to introduce only the last conjunct, as shown in English; some other languages require one conjunction for each conjunct, as in the following Upper Kuskokwim Athabaskan example.

nongw	dona?	totis	leka	?isdlal	**ts'e?**	ch'itsan'
from.river	upriver	portage	dog	I.did.not.take	**and**	grass
ch'itey	nichoh	**ts'e?**	<.....>			
too.much	tall	**and**	...			

'I did not take the dogs to the upriver portage because the grass was too tall, and ...'

(Upper Kuskokwim Athabaskan, Tang & Lau 2012: 342)

There are three main types of conjunction: adversative conjunction (corresponding to the use of conjunctions like *but* in English), disjunctive conjunction (corresponding to the use of conjunctions like *or* in English), and conjoined conjunction (corresponding to the use of conjunctions like *and* in English).

Juxtaposition may be the preferred option for conjunctive coordination signaling simultaneous and sequential events in a sign language. The ASL examples below illustrate the juxtaposition of clauses to represent sequential (a) and simultaneous (b) events, respectively.

a. $_{3}$GIVE$_{1}$ MONEY IX$_{1}$ GET TICKET
   'He'll give me the money, then I'll get the tickets.'
b. HOUSE BLOW-UP, CAR $_{i}$CL:3-FLIP-OVER
   'The house blew up and the car flipped over.' (ASL, Padden 1988: 85)

Here the grammar writer may briefly mention how the target language expresses coordination, namely if constituents are simply juxtaposed without the use of conjunctions or whether conjunctions are employed, and how the different types of coordination (adversative, disjoined and conjoined) are expressed.

3.1.2 Coordination by manual markers

If the sign language under investigation makes use of manual markers to coordinate clauses, the grammar writer should investigate what manual signs of conjunction are used in conjoined conjunction, adversative conjunction and disjunctive conjunction (see, for instance, Waters & Sutton-Spence (2005) for BSL).

Their position in the sentence should also be described and their optionality or obligatoriness verified.

3.1.2.1 Manual markers of coordination

ASL makes use of overt lexical markers such as AND and BUT. In the example below, the second conjunct is marked by a headshake ('hs') as well.

hs
$_1$PERSUADE$_3$ BUT CHANGE MIND
'I persuaded her to do it but I/she/he changed my mind.' (ASL, Padden 1988: 95)

Researchers have observed that some sign languages use manual conjunctions only for some of the functions of coordination. Auslan, for example, uses the conjunction BUT, not the conjunction AND.

K-I-M LIKE CAT BUT P-A-T PREFER DOG
'Kim likes cats but Pat prefers dogs.' (Auslan, Johnston & Schembri 2007: 213)

3.1.2.1.1 Manual markers in conjoined coordination

The grammar writer can list the manual markers in conjoined coordination in this section.

3.1.2.1.2 Manual markers in adversative coordination

The grammar writer can list the manual markers in adversative coordination in this section.

3.1.2.1.3 Manual markers in disjunctive coordination

The grammar writer can list the manual markers in disjunctive coordination in this section.

3.1.2.2 Position of manual markers of coordination

In this section, the grammar writer should address the following questions: do conjunctions occur in every conjunct or in only one of the conjuncts? What is the position of the conjunction: conjunct-initial or conjunct-final?

3.1.2.2.1 Position of manual markers in conjoined coordination

The grammar writer can describe the positions of the manual markers in conjoined coordination in this section.

3.1.2.2.2 Position of manual markers in adversative coordination

The grammar writer can describe the positions of the manual markers in adversative coordination in this section.

3.1.2.2.3 Position of manual markers in disjunctive coordination

The grammar writer can describe the positions of the manual markers in disjunctive coordination in this section.

3.1.2.3 Optionality or obligatoriness of manual markers of coordination

In this section, the grammar writer should include information related to whether the manual markers of coordination are obligatory or optional.

3.1.2.3.1 Optionality or obligatoriness of manual markers in conjoined conjunctions

The grammar writer is advised to mention the optionality/obligatoriness of the manual markers in conjoined conjunctions in this section.

3.1.2.3.2 Optionality or obligatoriness of manual markers in adversative conjunctions

The grammar writer is advised to mention the optionality/obligatoriness of the manual markers in adversative conjunctions in this section.

3.1.2.3.3 Optionality or obligatoriness of manual markers in disjunctive conjunctions

The grammar writer is advised to mention the optionality/obligatoriness of the manual markers in disjunctive conjunctions in this section.

3.1.3 Coordination by non-manual markers

Non-manuals marking coordinate constituents seem to be largely employed by many sign languages for which a description of the syntactic phenomenon is available. Some sign languages, like ASL, employ non-manual markers even in the presence of manual conjunctions; other sign languages, like HKSL, adopt non-manuals when lexical conjunctions are absent, namely in juxtaposition. A different set of non-manuals may be employed to mark the different types of coordination (conjoined, adversative, disjunctive coordination) and their spreading domain may vary accordingly.

For example, HKSL employs distinct non-manuals to mark the different types of coordination: head nods mark conjunctive coordination, head nods together with

body turns to the left and to the right are present in disjunction, while adversative conjunction may either require head turn or forward and backward body leans in addition to head nods (Tang & Lau 2012: 344). Note also that final and non-final conjuncts may be marked differently. It has been reported that in TİD, while the non-final conjunct may be marked by a head thrust, the final conjunct is marked by a backward body lean. Non-manual markers marking non-final conjuncts may be marking continuation while those marking the final conjunct may mark completion (Göksel & Kelepir 2016).

Among the different non-manual markers attested, head nods/thrusts and body turn seem to be cross-linguistic cues playing a crucial role in marking coordination in sign languages.

3.1.3.1 List of non-manual markers of coordination

In these subsections the grammar writer is advised to describe the non-manual markers found in different types of coordination in the sign language investigated.

3.1.3.1.1 Non-manual markers in conjunctive coordination

The grammar writer can describe the non-manual markers in conjunctive coordination in this section.

3.1.3.1.2 Non-manual markers in disjunctive coordination

The grammar writer can describe the non-manual markers in disjunctive coordination in this section.

3.1.3.1.3 Non-manual markers in adversative coordination

The grammar writer can describe the non-manual markers in adversative coordination in this section.

3.1.3.2 The spreading domain of non-manual markers of coordination

In these subsections, the grammar writer is advised to describe the spreading domains of the non-manual markers found in different types of coordination in the sign language investigated.

3.1.3.2.1 Spreading domain of non-manual markers in conjunctive coordination

The grammar writer can describe the spreading domains of the non-manual markers in conjunctive coordination in this section.

3.1.3.2.2 Spreading domain of non-manual markers in disjunctive coordination

The grammar writer can describe the spreading domains of the non-manual markers in disjunctive coordination in this section.

3.1.3.2.3 Spreading domain of non-manual markers in adversative coordination

The grammar writer can describe the spreading domains of the non-manual markers in adversative coordination in this section.

3.1.4 Properties of coordination

This section describes the properties of coordination that have been identified in the literature on spoken and sign languages. Describing these properties may help the grammar writer to tease apart complex constructions involving embedding from constructions made up of coordinated clauses, especially if the target sign language does not mark coordination with conjunctions obligatorily.

The grammar writer should be aware that not all sign languages will display these properties, but if they do, then these properties can be very useful to identify and describe coordination.

3.1.4.1 Extraction

A major property of coordinated clauses is related to extraction, that is, movement of a constituent to the left edge or to the right edge of the sentence. Typical cases of extraction are movement of wh-phrases and topics. Researchers have observed that for many languages extraction of a conjunct out of coordination is not possible. Nor is it possible to extract a constituent from within a conjunct.

In the English example in (a) below, we see that a conjunct, here *what*, cannot be moved to a different position in the sentence, that is, it cannot be extracted. Example (b) shows that a constituent contained in a conjunct, that is, *what*, contained in the verb phrase *drinking what*, cannot be moved to a different position either (*t* stands for 'trace' and marks the original position of the extracted constituent).

a. * What$_i$ did Michael eat and t_i?
b. * What$_i$ did Michael play golf and read t_i? (Tang & Lau 2012: 345)

The same violation can be observed in HKSL if an object is extracted from either the first or the second verb phrase conjunct during topicalization / topicalization [Syntax – Section 2.3.3.3] / topicalization [Pragmatics – Section 4.2] / topicalization [Pragmatics – Section 4.3.2]. Example (a) provides an example of coordination without extraction. Examples (b) and (c) are derived from (a) and involve movement of a constituent

through topicalization. In (b) COOKING has been moved from the first conjunct to the sentence-initial position, and in (c) DESIGN GAME has been moved from the second conjunct to the sentence-initial position. Example (d) provides another example of coordination without extraction. Examples (e) and (f) are derived from (d) and involve movement of a wh-phrase replacing a constituent in either the first or the second conjunct to the right edge of the sentence. In (e) WHAT, replacing the constituent SPEEDBOAT, is moved from the first conjunct. In (f) WHAT, replacing the constituent COW^CL:CUT-WITH-FORK-AND-KNIFE, is moved from the second conjunct.

a. FIRST GROUP RESPONSIBLE COOKING, SECOND GROUP RESPONSIBLE DESIGN GAME
'The first group is responsible for cooking and the second group is responsible for designing games.'

top
b. *COOKING$_i$, FIRST GROUP RESPONSIBLE t_i, SECOND GROUP RESPONSIBLE DESIGN GAME

top
c. *DESIGN GAME$_i$, FIRST GROUP RESPONSIBLE COOKING, SECOND GROUP RESPONSIBLE t_i
d. YESTERDAY DAD PLAY SPEEDBOAT EAT COW^CL:CUT-WITH-FORK-AND-KNIFE
'Daddy played speedboat and ate steak yesterday.'
e. *YESTERDAY DAD PLAY t_i, EAT COW^CL:CUT-WITH-FORK-AND-KNIFE WHAT$_i$
Lit. '*What did daddy play and eat steak?'
f. *YESTERDAY DAD PLAY SPEEDBOAT EAT WHAT$_i$
Lit. '*What did daddy play speedboat and eat?'

(HKSL, Tang & Lau 2012: 345)

However, no violation occurs if the structure is such that one constituent seems to be extracted from both conjuncts (Ross 1967; Williams 1978). In the example below, *who* is interpreted to be the object of the verbs in both conjuncts.

Laura wondered who$_i$ [Tom hated t_i] and [Sarah loved t_i]

Extraction is, however, impossible if the constituent extracted out of both conjuncts carries out a different syntactic role in each conjunct. The ungrammaticality of the following example is due to the fact that *a woman* is the subject in the first conjunct but the object in the second one.

*John has hired a woman who t_i likes mountain climbing and people admire t_i

The following examples are from HKSL. In (a), the topicalized object carries out the same grammatical role in each conjunct and can therefore be extracted from both. However, (b) is ungrammatical because the extracted argument [IX BOY] is the subject in the first conjunct and the object in the second conjunct.

top
a. ORANGE$_i$, MOTHER LIKE t$_i$, FATHER DISLIKE t$_i$
'Orange, mother likes (and) father dislikes.'
top
b. *IX BOY$_i$, t$_i$ EAT CHIPS, GIRL LIKE t$_i$
Lit. 'As for the boy, (he) eats chips (and) the girl likes (him).'
(HKSL, adapted from Tang & Lau 2012: 346)

The grammar writer should be aware of the fact that extraction of wh-items in sign languages may not always be possible even if the extracted wh-item bears the same grammatical role in each conjunct. The following HKSL example shows that, although the wh-item WHAT is the object of the verb in both conjuncts, it cannot be extracted from both of them.

c. *MOTHER LIKE t$_i$ FATHER DISLIKE t$_i$ WHAT$_i$
Lit. 'What does mother like and father dislike?'
(HKSL, adapted from Tang & Lau 2012: 346)

The discussion above has shown that if extraction of a conjunct or of a constituent out of a conjunct is possible, then the construction is likely *not* to be a coordinate structure. If, on the other hand, extraction is not possible, then the construction is likely to be a coordinate structure.

3.1.4.2 Gapping

In some spoken languages, the verb of a conjunct can be elided or "gapped" under conditions of identity with the verb in the other conjunct. The following is an example from English. The verb *eats* in the second conjunct is elided or gapped since it is identical to the verb in the second conjunct. The gapped constituent is marked with Ø.

[Sally eats an apple] and [Paul Ø a candy] (Tang & Lau 2012: 347)

It has been observed that word order may determine whether the gapped verb can be in the first or in the second conjunct (Ross 1970: 251). More specifically, in languages with SVO order, the elided verb is obligatory in the second conjunct (a), while in languages with SOV order gapping occurs strictly in the first conjunct (b).

a. [Sally eats an apple] and [Paul Ø a candy] (Tang & Lau 2012: 347)
b. [Sally-wa lingo-o Ø], [Paul-wa ame-o tabeda]
Sally-TOP apple-ACC Paul-TOP candy-ACC eat-PAST
Lit. 'Sally an apple and Paul ate a candy.' (Japanese, Tang & Lau 2012: 347)

Gapping within coordinate structures has been observed in ASL (Liddell 1980). In ASL, the non-manual marker 'head nod' obligatorily accompanies the object of the conjunct where the verb has been elided. ASL therefore marks gapping by means of a non-manual marker.

In HKSL, different verb types behave differently in allowing gapping of the verb in one conjunct of coordinated structures: plain verbs (a) allow gapping but agreeing (b) and classifier verbs / classifier verbs [Morphology – Section 5.1] / classifier verbs [Semantics – Section 7.1] (c) do not (in (a), 'bl' stands for 'body lean').

a. TOMORROW PICNIC, IX_1 BRING CHICKEN WING, PIPPEN SANDWICHES, KENNY COLA, CONNIE CHOCOLATE
   (bl forward + hn: CHICKEN WING, PIPPEN; bl forward+hn: SANDWICHES; bl forward+hn: COLA; bl forward+hn: CHOCOLATE)
   '(We) will have a picnic tomorrow. I will bring chicken wings, Pippen (brings) sandwiches, Kenny (brings) cola, (and) Connie (brings) chocolate.'

b. *$KENNY_{3a}$ $_{3a}SCOLD_{3b}$ $BRENDA_{3b}$, PIPPEN Ø CONNIE
   'Kenny scolds Brenda (and) Pippen Ø Connie.'

c. *IX_1 HEAD WALL Ø, BRENDA HEAD WINDOW
   CL:HEAD-BANG-AGAINST-FLAT-SURFACE
   'I banged my head against the wall and Brenda against the window.'

(HKSL, Tang & Lau 2012: 347–348)

The discussion above has shown that, in a complex sentence, gapping of the verb in one clause under conditions of identity with the verb of the other clause is possible only if the structure is a coordination of two clauses.

3.1.4.3 Scope

Another property associated with coordination is the scope of certain morphemes such as question morphemes [Syntax – Section 1.2.1.3] and negation [Syntax – Section 1.5]. If a single lexical sign is interpreted to affect the meaning of two constituents, then these constituents can be analyzed as conjuncts of a coordinate structure.

3.1.4.3.1 Scope of negation [Syntax – Section 1.5] / [Semantics – Section 12.2]

If a single negative marker is interpreted as negating two constituents, these constituents can be considered to be coordinated. The sign NOT-HAVE below negates both clauses (in square brackets) thus proving them to be conjuncts of a coordinated structure.

[TEACHER PLAY SPEEDBOAT] [EAT COW^CL:CUT-WITH-FORK-AND-KNIFE]
NOT-HAVE
'The teacher did not ride the speedboat and did not eat beef steak.'

(HKSL, adapted from Tang & Lau 2012: 348)

When negation is marked by a non-manual marker, the spreading domain of the non-manual marker may show the scope of negation, that is, the constituent it negates. In

the example below, only the first conjunct is negated (marked by a headshake glossed as 'neg'; 'hn' = headnod).

neg hn
$_{i}$INDEX TELEPHONE $_{j}$INDEX MAIL LETTER
'I didn't telephone but she sent a letter.' (ASL, Padden 1988: 90)

3.1.4.3.2 **Scope of yes/no questions** [Syntax – Section 1.2.1]

A question morpheme has scope over both conjuncts of a coordinated structure. In the example below, the clause-final morpheme RIGHT-WRONG has scope over both clauses, thus, showing them to be conjuncts of a coordinated structure (hn = head nod, bt = body turn, re = raised eyebrows).

hn+bt left hn+bt backward right
PIPPEN BRENDA THEY-BOTH GO HORSE-BETTING. BRENDA WIN, PIPPEN LOSE,
re
RIGHT-WRONG?
Lit. 'Pippen and Brenda both went horse-betting. Did Brenda win and Pippen lose?'
(HKSL, Tang & Lau 2012: 348)

The grammar writer can consider the properties illustrated in this section as a test to verify the possibility of coordination of clauses in the target sign language.

Elicitation materials

Although coordination of clauses or of smaller constituents may occur frequently in spontaneous production, an in-depth analysis of the phenomenon may require a substantial body of evidence for each type of constituent combined, for conjoined, disjunctive, and adversative coordination. If a general description of the phenomenon is already available, the grammar writer investigating coordination in the target sign language may ask for grammaticality judgments or ask signers to produce a target sentence. This procedure has the advantage of focusing on the fine-grained aspects of the phenomenon, but it may compromise the production of spontaneous non-manual marking which would emerge in naturalistic settings.

For these reasons, it may also be useful to use elicitation techniques leading to the production of coordinated clauses in semi-naturalistic settings. As is often the case with linguistic research on sign languages, a good way to elicit coordination is through the employment of visual material depicting a situation the signer is asked to describe. Another semi-naturalistic task the grammar writer may use is the presentation of a signed story. The signer may be asked to continue the story by imagining what could happen to the characters.

Adversative coordination may be elicited through a game presenting an unlucky character who tries to do things but never succeeds in doing them. After showing some of the character's unfortunate attempts to reach a positive result, the signer may be asked to imagine some other unsuccessful adventures the character may be involved in.

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3.2 Subordination: distinctive properties

3.2.0 Definitions and challenges

3.2.0.1 A definition of subordination

By subordination, we mean a syntactic mechanism by which clauses are combined. As opposed to coordination / coordination [Syntax – Section 3.1], where clauses share an equal status in the sentence, a core property of subordination is the asymmetric status of the two (or more) clauses being in a hierarchical relation.

The main clause, also called the *independent clause*, is syntactically and semantically autonomous, while the subordinate clause, also called *dependent*, is syntactically and semantically dependent on the main clause. In this section, we will use the term "main clause" to refer to the independent clause and the term "subordinate clause" to refer to the dependent clause.

In this section, the grammar writer will be guided into the observation of a number of properties that can be associated with subordination, and is advised to use them to introduce subordinate clauses and distinguish them from coordinate clauses. Languages, however, vary a lot with respect to the properties that can define subordinate clauses. The grammar writer is, therefore, advised to verify their validity in the target sign language. The grammar writer is then referred to various sections in the Syntax part, namely the sections on argument clauses [Syntax – Section 3.3], relative clauses [Syntax – Section 3.4], adverbial clauses [Syntax – Section 3.5], comparative clauses [Syntax – Section 3.6], and comparative correlatives [Syntax – Section 3.7], where specific subordinate constructions are discussed, and for a detailed and specific description of the manual and non-manual markers of subordination that may be employed in each construction.

3.2.0.2 Different types of subordination

Subordinate clauses can be classified roughly as follows: argument clauses [Syntax – Section 3.3] / argument clauses (i.e. clauses functioning as subject or object), relative clauses [Syntax – Section 3.4] / relative clauses, and adverbial clauses [Syntax – Section 3.5] / adverbial clauses. The example in (a) below illustrates an argument clause, (b) a relative clause, and (c) an adverbial clause.

a. [**That** the speech was boring] was evident to everybody.
b. I talked to the woman [**who** was asking for you].
c. I won't say anything else [**if** you don't stop yelling at me].

Among the subordinated clause types mentioned above, the relative clause is the only one that is embedded in a noun phrase rather than being directly embedded in a larger clause.

As shown in the examples above, spoken languages often mark subordinate clauses through subordinate markers (shown in bold) signaling their dependent status with respect to the main clause. However, this is not always the case. Sometimes, no subordinate marker is available and it may be difficult to establish whether we are dealing with a coordinate or a subordinate structure. The example below exemplifies an English complement clause not introduced by an overt subordinate marker.

I feared [my plane was late].

3.2.0.3 Methodological challenges in identifying a subordinate clause

For many sign languages for which a description of subordination is available, researchers have noted that there are no or few subordination markers, and non-manual markers are often the only syntactic devices that mark a clause as a subordinate clause and distinguish it from a coordinate clause.

For example, researchers have observed that in many sign languages conditional clauses [Syntax – Section 3.5.1] / conditional clauses and relative clauses [Syntax – Section 3.4] / relative clauses are commonly marked by non-manual markers only. The following example illustrates this with minimal pairs: (a) and (c) are instantiations of coordinate clauses (juxtaposition) while (b) and (d) minimally differ from them in the use of non-manuals (cond = conditional marker; r = relative clause marker), marking the clause over which they spread as subordinate.

a. ANNA SICK HOME STAY
'Anna is sick and she stays home.' (LIS)


5_3.2.0.3_1_LIS_anna sick home stay

cond
b. ANNA SICK HOME STAY
'If Anna is sick, she will stay home.' (LIS)

c. RECENTLY DOG CHASE CAT COME HOME
'The dog recently chased the cat and came home.' (ASL, Liddell 1978: 71)


5_3.2.0.3_2_ASL_recently dog chase cat come home

r
d. RECENTLY DOG CHASE CAT COME HOME
'The dog that recently chased the cat came home.' (ASL, Liddell 1978: 66)

Similarly, in many sign languages, object clauses [Syntax – Section 3.3.2] are not marked, unless associated with special non-manual markers expressing topic or *similia*. The following provides an example from LIS in which the non-manual raised eyebrows ('re') spreads over the object clause, making it as topicalized.


5_3.2.0.3_3_LIS_piero bike fall gianni tell

re
PIERO BIKE FALL GIANNI TELL
'Gianni said that Piero fell from the bike.' (LIS, Geraci et al. 2008: 49)

3.2.0.4 Methodological challenges in identifying the (non-)finiteness of a clause

An issue related to subordination is finiteness, that is, to determine whether the subordinated clause is finite or non-finite. Note that determining the (non-)finiteness of the clause under investigation may also help determine whether a clause is subordinated

or not. If one finds evidence that the clause displays properties of a non-finite clause, then one can conclude that it has to be subordinated. Of course, this is different for finite clauses: they may or may not be subordinated.

Here we describe the notion "finiteness" and discuss the methodological challenges in identifying clauses as finite or non-finite in spoken and sign languages. Although the distinction between finite and non-finite clauses dates back to traditional grammars and is amply used, it is not univocally defined.

Morphologically, (non-)finiteness is seen as a property of forms in a verbal paradigm. For example, non-finite forms, which in English comprise participles (*eaten/eating*), gerunds (*eating*), and infinitives (*to eat*), are identified as poorer and more defective than finite forms like indicative and subjunctive, which can be specified for features like tense [Morphology – Section 3.2] / tense [Semantics – Chapter 1], aspect [Morphology – Section 3.3] / aspect [Semantics – Chapter 2], and person and number agreement [Morphology – Section 3.1]. However, this morphological criterion can be difficult to apply to languages for which a fully satisfactory morphological description is not available, as is the case with many sign languages.

Another difficulty is that the morphological divide between finite and non-finite forms is not clear, since there are well-known cases of intermediate forms, such as infinitives inflected for person (e.g. Portuguese) or for tense (e.g. Latin). As agreement in sign languages is realized spatially and, given the importance of space in sign language, one can hypothesize that agreement involving space might be realized also in non-finite forms. A final complication is that even in indisputable cases of finite clauses, tense specification in many sign languages is not expressed by tense morphology on the verb. For all these reasons, trying to identify non-finite clauses in sign languages based on a purely morphological criterion is not particularly promising.

Another possible test to set apart finite and non-finite clauses is that finite forms can occur with a fully specified lexical subject (e.g. 'John resigned'), while non-finite clauses *typically* cannot occur with a visible subject (e.g. 'John decided (*he) to resign').

However, even this test is not without problems. The first obvious observation is that many sign languages allow null subjects, namely all clauses, including finite clauses, can occur with a phonologically null pronominal expression [Syntax – Section 2.4.1.1]. Hence, the absence of a lexical subject [Syntax – Section 2.2.1] is no indication that the clause is non-finite. Secondly, there are constructions in which a lexical subject can occur in non-finite clauses. The intermediate cases mentioned above are one example, in which a lexical subject can occur with infinitives inflected only for person or only for tense. Another example are perception verbs, which in English and many Romance languages can select a non-finite clause with a lexical subject (e.g. 'I saw her running away'). Similarly, in English the infinitival complement of verbs like *want* and *expect* may have a lexical subject (e.g. 'I want/expect her to come'). For all these reasons, the presence/absence of a lexical subject is not a reliable criterion to set finite and non-finite clauses apart, at least if it is taken in isolation.

A final method to set apart finite and non-finite clauses is less dependent on the morpho-syntactic peculiarities of the given language and, as such, it should be more

easily applicable cross-linguistically. The criterion is that only a finite verb can appear as the main verb of a full, independent clause. In contrast, non-finite verbs cannot head an independent clause and may occur only in subordinate clauses. This happens because a matrix clause locates the event described by the verb as being overlapping, past or future with respect to utterance time, and only finite forms are anchored to the time of utterance by virtue of being fully tensed. A non-finite verb is connected to the utterance time only indirectly by virtue of being dependent on a finite verb. For example, in sentences like 'John decided to leave' and 'John will decide to leave' (at least in the absence of time adverbials in the embedded clause) the event of leaving is located in the past or in the future, not on its own ground but contingent on the form of the *matrix* verb.

Although useful, even this test is not without problems. A caveat is that finite forms can, *but need not*, head a main clause. Of course, finite verbs can occur in subordinate clauses ('John decided that he will leave'), so the occurrence of a verb in an embedded clause is no guarantee that the verb is non-finite.

For all these reasons, the existing research on non-finite clauses in sign languages is very limited and, in fact, it cannot be excluded that sign languages (or at least some sign languages) do not overtly mark the distinction between finite and non-finite forms. Still, sign languages display modal verbs [Syntax – Section 2.3.1.3] / modal verbs [Morphology – Section 3.4] / modal verbs [Semantics – Chapter 4], which cross-linguistically may introduce non-finite clauses. Furthermore, for at least two sign languages (ASL and LIS), it has been explicitly claimed that the distinction between finite and non-finite clauses is real, so the existence of non-finite clauses is a research question that the grammar writer may want to consider.

There are two main types of verbs that are likely to introduce non-finite clauses and the grammar writer may start his/her analysis from them: control predicates and raising predicates. Some modal verbs may be listed among the former type.

Control predicates

Predicates like *want* are called *subject* control predicates because the controller, namely the category that determines the reference of the implicit subject of the embedded verb, is the matrix subject (e.g. 'Mary wants to leave'), while other predicates, like *ask* are called *object* control predicates because the controller is the indirect object, as in 'Mary asked John to leave'.

Although some semantic classes of verbs tend to be control predicates cross-linguistically (verbs of order, intention and desire, for example), the set of control predicates must be determined empirically language after language because of lexical idiosyncrasies. The following is a very partial list of control predicates in English, which, due to their semantics, might (but need not) be control predicates in other languages.

Subject control predicates: *want, try, manage, start, hope, fail, plan, wait, desire, choose, decide*.
Object control predicates: *allow, ask, command, convince, demand, persuade, order, permit, make, help, tell*.

Modal verbs like the counterparts of English *want*, *can* and *must*, at least in some languages and in some uses, may be analyzed as verbs introducing a non-finite clause. The English sentence 'Mary wants to swim' is an example. It is called a control structure because the phonologically null subject of the infinitival clause depends on (i.e. "is controlled by") an argument of the main verb (the subject in this case).

Modal verbs do not always introduce a non-finite clause, though. For example, *can* in the English sentence 'Mary can swim' is normally analyzed as a special type of auxiliary, so it would be a mono-clausal sentence.

The grammar writer should be aware of these two general types of possible analyses for modal verbs.

Raising predicates

A second class of verbs that cross-linguistically may take a non-finite clause are verbs like *seem*, *be likely*, *appear*, etc. These predicates have different properties from control predicates. A key difference is semantic in nature because raising verbs are one-place predicates, in contrast to control verbs, which are two-place predicates. This is shown by the fact that (a) is roughly synonymous with (b), a sentence in which the main subject is the expletive pronoun *it*, a sort of place-holder that does not contribute any meaning to the sentence. On the other hand, (d) is sharply ungrammatical, because the meaningless expletive pronoun does not qualify as the external argument of *want*.

a. John seems to be the winner.
b. It seems that John is the winner.
c. John wants to be the winner.
d. *It wants that John is the winner.

Other properties follow from this. For example, the subject of control predicates is typically sentient or volitional, but no such restriction holds for the subject of raising predicates. This property is illustrated by the contrast between (b) and (d) in the examples given below.

a. The dean decided to reduce the money for our department.
b. *The crisis decided to reduce the money for our department.
c. The dean seems to go against our plans.
d. The crisis seems to go against our plans.

Another consequence of the fact that the raising predicate is mono-argumental is that it can take an infinitival clause with a meteorological verb, while a control predicate cannot. This is shown by the contrast below.

a. It seems to be raining right now.
b. *It is trying to rain.

Since the differences between raising and control predicates are semantically based, it is possible that they show up in sign languages as well.

A potential confounding factor is that there may be verbs that alternate between a control and a raising construction. These cases are rare but are attested, one example being *begin* in English.

a. It began to rain.
b. John began to eat a sandwich.

Begin is a raising verb in (a), as witnessed by the fact that it introduces an infinitival clause with a meteorological verb, but it is a control verb in (b) since the matrix subject is volitional.

The work on non-finite clauses in sign languages is extremely limited, and there is no standard way to elicit them. So, it is hard to give well-informed methodological advice to the grammar writer. However, a possible starting point is the following: the grammar writer may initially focus on verbs that, given their semantics, are known to be prototypical examples of control predicates (say, *order* or *decide*). The next step is looking for any property that systematically differentiates the complement clauses of these verbs from clauses that, given their internal structure, are clear cases of finite clauses. If the complement clause of the verb that is a good candidate for being a control verb is systematically different from "good" cases of finite clauses, that clause is a candidate for being a non-finite structure. In fact, the two works that have reported the existence of non-finite clauses in sign languages seem to have used this strategy.

Aarons' (1994) study on ASL syntax is the first work. She argues that a topic phrase [Pragmatics – Section 4.2] / topic phrase [Pragmatics – Section 4.3.2] / topic phrase [Syntax – Section 2.3.3.3] can be extracted out of an embedded clause only if this clause is non-finite. After showing that ASL has a dedicated position for topic phrases in the left periphery of the clause, she shows that a phrase that is the argument of an embedded non-finite verb can access the topic position in the main clause, while the same is impossible if the embedded verb is finite. This is illustrated in the following sentences. Example (a), according to Aarons, is a sentence with an embedded non-finite clause. Example (b) shows a permutation of the same sentence where the embedded subject moved to the topic position of the main clause. Example (c) shows the sentence where the embedded object moved to the same position.

a. TEACHER REQUIRE JOHN LIPREAD MOTHER
   'The teacher requires John to lipread mother.' (ASL, Aarons 1994: 84)
   top
b. JOHN, TEACHER REQUIRE LIPREAD MOTHER
   'John, the teacher requires to lipread mother.' (ASL, Aarons 1994: 84)
   top
c. MOTHER, TEACHER REQUIRE JOHN LIPREAD
   'Mother, the teacher requires John to lipread.' (ASL, Aarons 1994: 84)

According to Aarons, (d) differs minimally from (a) because the verb REQUIRE in (d) selects a finite clause. This is indicated by the fact that the embedded clause contains

an auxiliary-like verb (MUST). Since the clause is finite, no topic phrase can be extracted out of it, as shown by the ungrammaticality of (e) and (f).

d. TEACHER REQUIRE JOHN MUST LIPREAD MOTHER
'The teacher requires that John must lipread mother.' (ASL, Aarons 1994: 84)

top
e. *JOHN, TEACHER REQUIRE MUST LIPREAD MOTHER (ASL, Aarons 1994: 84)

top
f. *MOTHER, TEACHER REQUIRE JOHN MUST LIPREAD (ASL, Aarons 1994: 84)

Confirmation of the claim that arguments may not be extracted from finite embedded clauses comes from sentences with verbs that require tensed complements. According to Aarons, the verb SAY in ASL is such a verb. As a consequence, extraction of a topic from the complement clause of SAY is also ungrammatical.

Geraci et al. (2008) is the second work arguing for the presence of non-finite clauses in a sign language. They claim that in LIS, finite and non-finite clauses may be disentangled by using two tests. The first one is distributional. Although SOV is the unmarked word order in LIS, it is never possible for a finite clause to intervene between the matrix subject and the matrix verb, as confirmed by the ungrammaticality of the example given below. That the embedded clause below is finite is at least consistent with the fact that it has an overt subject (although the presence of an overt subject is not a fully reliable test).

*GIANNI PIERO CONTRACT SIGN KNOW
'Gianni knows that Piero signed the contract.' (LIS, Geraci et al 2008: 49)

However, when the matrix verb is a subject control predicate, as in (a) below, or an object control predicate, as in (b), the complement clause *can* appear in the SOV order, namely between the matrix subject and the matrix verb:

a. GIANNI CONTRACT SIGN FORGET
'Gianni forgot to sign the contract.' (LIS, Geraci et al. 2008: 52)
b. COOK MARIA MEAT EAT FORCE
'The cook forced Maria to eat meat.' (LIS, Geraci et al. 2008: 52)

The hypothesis that the embedded clause in these examples is non-finite is supported by the observation that the subject cannot be overt (MARIA in (b) is analyzed as being in the same clause as *force*, as in 'John forced Mary out of the kitchen').

The second difference between finite and non-finite clauses identified by Geraci et al. for LIS parallels what Aarons observed for ASL, namely that non-finite clauses are transparent for extraction, while finite clauses are not. Geraci et al. did not look at topic phrases but considered wh-phrases [Syntax – Section 1.2.3] instead: a *wh*-phrase can be moved out of a non-finite clause in control structures like the examples just given (a and b above), and it can reach the dedicated position for *wh*-phrases in the matrix clause. However, a *wh*-phrase can never be moved out of a non-finite clause.

The grammar writer may want to start his/her investigation by checking whether the complement clauses of likely cases of control verbs show the properties that set them apart from finite clauses in both LIS and ASL, namely the extractability of arguments. On the other hand, the positional test applied to LIS is only applicable to sign languages that display SOV as basic word order.

Other tests are conceivable in principle. First, if a given sign language overtly expresses tense [Morphology – Section 3.2] / tense [Semantics – Chapter 1] and aspect [Morphology – Section 3.3] / aspect [Semantics – Chapter 2], it would be interesting to check if the complements of control verbs are any different in this respect.

Second, the grammar writer might also want to check if the complement clause whose finite/non-finite status is being investigated can include a time adverbial [Syntax – Section 6.4.2.1] referring to a time different from the time of the matrix event.

Third, investigation of complements of perception verbs could also help the grammar writer to identify properties of non-finiteness, at least if perception verbs in the sign language under investigation pattern as in languages where they can introduce non-finite structures.

Finally, it is always important to study prosodic cues for clause boundaries [Phonology – Section 2.2] and to investigate whether they are different for finite and non-finite clauses.

Overall, this is an area that is still rather unexplored, so much work is needed. In particular, differences between raising and control predicates have not been studied yet, but might well be detectable by future work.

3.2.1 Subject pronoun copy as a subordination property

In some sign languages, though not all, it is possible to have a pronoun at the end of the sentence that refers to the main clause subject. In a language with unmarked SVO order, this results in sandwiching the object clause between constituents of the main clause and the pronoun referring to the main subject. This phenomenon is called Subject Pronoun Copy (SPC) [Syntax – Section 2.6]. The availability of Subject Pronoun Copy differentiates between subordination and coordination and can be used as such by the grammar writer to introduce subordination.

In the following complex ASL sentence, the sentence-final pronoun IX_1 is co-referential / co-referential [Pragmatics – Chapter 1] / co-referential [Pragmatics – Chapter 2] with the subject of the main clause, IX_1, and there is no pause in the signing production.

IX_1 DECIDE IX_i SHOULD $_i\text{DRIVE}_j$ SEE CHILDREN IX_1
'I decided he ought to drive over to see his children, I did.'

(ASL, adapted from Padden 1988: 88)

However, in constructions with coordination, the subject pronoun copy can only be co-referential with the subject of the second conjunct but not with the subject of the first conjunct, as shown by the ungrammaticality of the following example.

*$_1$HIT$_3$ IX$_3$ TELL MOTHER IX$_1$
'I hit him and he told his mother, I did.' (ASL, Padden 1988: 86)

Thus, Subject Pronoun Copy can be used as a diagnostic for subordination in a language that allows it. If the complex construction allows for the presence of a pronoun in clause-final position referring to the main clause subject, one can conclude that the clause sandwiched between the main verb and the final subject pronoun is subordinated, and it is not an instance of coordination.

This diagnostic is not applicable to all sign languages, however. In NGT, for instance, a subject pronoun copy co-referential with the subject of the main clause is not allowed after the subordinate clause. Rather, it must appear after the main verb, as shown in the example below (where the Subject Pronoun Copy is marked by boldface):

INGE$_3$ IX$_3$ KNOW **IX$_3$** IX$_1$ ITALY $_1$GO.TO$_{neu.space}$
'Inge knows that I am going to Italy.' (NGT, adapted from Van Gijn 2004: 94)

The grammar writer is advised to verify whether Subject Pronoun Copy is possible in the sign language investigated before using it to introduce a distinction between coordinate and subordinate structures.

3.2.2 Position of question signs

In some sign languages, the position of a question sign in an embedded clause may be restricted to a single position, in contrast to a variety of positions available for a question sign in a simple question. In ASL, for instance, question signs in simple questions may occupy three different positions: they may be clause-initial, clause-final or in situ, as in (a) below. However, in indirect questions, wh-signs invariably occupy the initial position within the subordinate clause, regardless of their syntactic role, as the contrast between (b) and (c) shows.

a. MEG BUY WHAT
'What did Meg buy?' (ASL, Caponigro & Davidson 2011: 343)
b. *TIM KNOW MEG BUY WHAT
c. TIM KNOW WHAT MEG BUY
'Tim knows what Meg bought.' (ASL, Caponigro & Davidson 2011: 349)

Thus, when introducing subordinate clauses, and more precisely indirect questions, the grammar writer could investigate the possible positions of question signs, and contrast these with possible positions of question signs in simple questions.

3.2.3 Spreading of non-manual markers

Another property that seems to go with subordination and can thus be used as such to describe subordination is the spreading behavior of the non-manual markers. The two conjuncts of a coordinate structure [Syntax – Section 3.1] may display different non-manual markers and there may be a pause between the two conjuncts.

In contrast with coordinate clauses, in complex sentences a non-manual marker that originates in the main clause may spread over the subordinate clause with no pause at the potential clausal boundary, hence, marking the embedded status of the subordinate clause with respect to the matrix clause. In (a) below, the non-manual for negation ('neg') associated with the main clause spreads over the embedded complement clause, and similarly in (b), the yes/no question non-manual marker ('y/n') spreads over the entire sentence including the embedded clause.


5_3.2.3_1_ASL_1index want jindex go-away

a. neg
IX$_i$ WANT IX$_j$ GO-AWAY
'I didn't want him to leave.' (ASL, adapted from Padden 1988: 89)


5_3.2.3_2_ASL_remember dog chase cat

b. y/n
REMEMBER DOG CHASE CAT
'Do you remember that the dog chased the cat?' (ASL, Liddell 1980: 124)

Thus, spreading of non-manual markers over both clauses may be taken as a property of a subordination relation.

However, two words of caution are in order. First, different non-manual markers associated with a single syntactic or semantic function may have different spreading domains. For instance, there may be more than one non-manual marker for negation in a given language, and each non-manual marker may have different functions and different spreading domains. One may spread over only one sign, for instance, the manual sign for negation, or over a small constituent such as a verb phrase, while the other may spread over the entire negative sentence. One would need to take the latter type into consideration in determining the subordination relation between two clauses. Second, the type of the main verb may affect the spreading domain of the non-manual marker for negation in complex clauses.

3.2.4 Interpretation of embedded negation in the matrix clause

Researchers have observed that some verbs such as *want* and *think*, when they take clausal objects, can be negated even though what is really negated is the embedded

predicate. For instance, in the English examples below, (a) actually expresses (b) since the speaker has a wish and that is 'not going to school'. Even though the verb *want* seems to be negated by the auxiliary *don't* in (a), this sentence does not express that the subject 'does not want X', that is, negation does not negate 'wanting'. Similarly, the speaker uttering sentence (c) does not intend to express that the subject 'she' does not think. Rather, what 'she thinks' is that 'you are not angry'.

a. I don't want to go to school.
b. I want not to go to school.
c. She doesn't think you're angry.

Thus, the possibility of having a negative marker associated with verbs such as *want* and *think* when they function as main verbs may point to a subordination relation since the negative markers in such constructions actually negate the embedded verb, not the main verb.

Elicitation materials

The grammar writer is referred to the different types of subordinate constructions in the relevant sections for suggestions on specific elicitation techniques.

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3.3 Argument clauses

3.3.0 Definitions and challenges

3.3.0.1 What is an argument clause?

The obligatory constituents of a sentence are determined by the semantic properties of the predicates (verbs, adjectives). Clauses can be arguments of a predicate. Take a verb like *know* that takes two arguments; these can be either realized by two NPs [Syntax – Chapter 4], or by an NP and a clause.

a. John knows the truth.
b. John knows that he will leave.

The verb *surprise* also takes two arguments. They can either both be realized by NPs, as in (a) below, or they can be realized by a clause and an NP, as in (b).

a. His decision surprised everybody.
b. That he decided to leave surprised everybody.

The same holds for adjectives [Syntax – Chapter 5], such as *aware*, which can take both a PP and a clausal argument.

a. I am aware of the problem.
b. I am aware that he will leave soon.

This means that the semantic properties of predicates do not always specify a unique syntactic category which can serve as their arguments. Reconsider the examples above, repeated here.

a. John knows that he will leave.
b. That he decided to leave surprised everyone.

In both cases, there is a clause in an argument position. But in (a) the clause is an object; while in (b) the clause is a subject: it is a subject clause.

3.3.0.2 How to recognize an argument clause

Arguments of predicates can be usually identified by a number of criteria: typically, in many languages, the subject [Syntax – Section 2.2.1] can be identified by the position it occupies in the clause, and the same holds for the object [Syntax – Section 2.2.1]; there are also agreement phenomena between the arguments and the verb that identify them in many cases and in many languages. And finally, there is a meaning relation connecting the arguments to the predicate: technically, arguments receive a thematic role (theta-role) from the predicate.

When it comes to identifying argument clauses one should be very cautious, since relying only on position criteria would not work. Even in languages that normally exhibit a fixed constituent order with NPs, clauses are frequently dislocated; they are produced in a position that does not correspond to the prototypical position for, say, subjects or objects. Even agreement phenomena cannot be the only criterion for identifying argument clauses because a) not all predicates exhibit morphological agreement; and b) clauses do not carry all the formal features associated with NPs: they do not correspond (necessarily) to a locus in space, they have no number feature, and are only associated to a default third person singular. Finally, the semantic criterion as well is not always enough to identify argument clauses. This is particularly true with subject clauses, which might receive no theta role from the predicate and simply stand in a syntactic relation with it, especially when the predicate is a raising [Syntax – Section 3.2.0.4] verb, such as *seem* or *appear*. The safest way of identifying an argument clause is by using what we call the *gap procedure*: if in a given utterance, a predicate that needs an argument appears to lack it in the prototypical position and there is on the other hand a clause that is subordinate but has no obvious adverbial function, then the gap and the clause are to be related, and the clause is an argument clause. An example is given below.

SURPRISE IX_1 [IX_3 DRINK TEA]
'It surprises me that she drinks tea.' (ASL, Kastner & Davidson 2013)

In this example, there is a gap in subject position (the first person pronoun is the object) and there is a subordinate clause in the utterance: we thus assume that the clause corresponds to the gap and that it is a subject clause.

3.3.0.3 Methodological challenges

As is always the case when subordination is involved, it is difficult to rely only on naturalistic or corpus data to gather the relevant data for the description of the phenomenon: subordination is quite generally avoided or kept to the minimum in face-to-face conversations, and it is unlikely that a simple corpus will contain sufficient and reliable information. Argument clauses are only a subset of all the subordinate clauses a grammar can display, so they will be even less attested. This does not mean that argument clauses are not part, actually a core part, of the grammatical competence of a given language's users. It means, however, that the grammar writer will need to rely on sources other than spontaneous production to investigate

this aspect. Perhaps the most careful and fruitful strategy is that of starting from naturalistic data (e.g. a corpus if available or even a simple recorded interchange between some signers), displaying the relevant construction, namely one argument clause, and then searching for elicited judgments from informants by trying to slightly modify the source data in the aspects that are believed to be relevant for a complete description (e.g. its position within the clause, its non-manual markers, the realization and interpretation of the subject and so on and so forth), and discuss the result with trained informants.

3.3.1 Subject clauses

A subject clause (or subjective) is a subordinate argument clause carrying the syntactic function of a subject [Syntax – Section 2.2.1]. Subject clauses can be either (i) simple clauses, with no special interpretation, or they can be (ii) free relative clauses [Syntax – Section 3.4], or (iii) interrogative clauses [Syntax – Section 1.2.3]. All three types are illustrated below. In the following, however, we will only treat the normal case (a), referring to the relevant sections for the two special types.

a. [That John will come] should be clear to you.
b. [EXAM DONE WHO] EXIT CAN
   'Whoever has finished the exam can go out.' (LIS, Branchini 2007: 104)
c. [Whether I am coming or not] is uncertain.

3.3.1.1 Position(s) within the matrix clause

In many spoken languages, subject clauses are often "extraposed", that is, they are uttered in a peripheral position, either at the beginning or at the end of the sentence. This is illustrated below for English: while the *that*-clause carries the function of the subject of the clause, it cannot easily be realized in the canonical preverbal position for subjects (example (a) is thus awkward): it has to be expressed postpredicatively, in what we thus call an "extraposed" position.

a. ?That John will leave is unlikely.
b. It is unlikely that John will leave.

This "extraposition" is obligatory in embedded contexts, at least in many spoken languages, as illustrated below: here the subordinate clause takes a clausal subject, which needs to be obligatorily extraposed, as in (b).

a. *I think that that John left early disappointed them.
b. I think that it disappointed them that John left early.

There is a strong cross-linguistic tendency for clausal subjects to appear in clause-final position.

Languages differ on whether the extraposed clause is duplicated by a resumptive pronoun. This is obligatory in English, where the subject position has to be filled by a dummy pronoun (the pronoun *it* in the above examples), and in this case, this is clearly related to the fact that even in very simple clauses ("it rains") the subject position must be filled in English.

The grammar writer should thus pay attention to a) the position of the subject clause within the sentence, and b) whether its basic position close to the verb is resumed by some form of indexation or localization in space, as has been reported for example for ASL, as illustrated below.

[IX$_3$ DRINK TEA]$_c$ IX$_c$/THAT$_c$ SURPRISE IX$_1$
'That she drinks tea surprises me.' (ASL, Kastner & Davidson 2013)

3.3.1.2 Special non-manual markers

In most sign languages, subordination in general is marked only through special NMM. The grammar writer should pay particular attention to this aspect in subject clauses, and verify whether the non-manual marker of the clause changes according to its position. It is indeed possible that the extraposition phenomena that subject clauses frequently undergo are associated to topicalization [Syntax – Section 2.3.3.3] / topicalization [Pragmatics – Section 4.2] / topicalization [Pragmatics – Section 4.3.2] / topicalization or focalization [Syntax – Section 2.3.3.4] / focalization [Pragmatics – Section 4.1] / focalization [Pragmatics – Section 4.3.1] / focalization procedures, which are typically associated with specific prosodic markings, and thus specific non-manual markers. Subject clauses sitting in unmarked subject position, if they are allowed, should also be investigated with respect to their non-manual marker.

3.3.1.3 Tense and aspectual marking

Subject clauses can correspond to at least three types of structures:

1. They can be small clauses, containing only a subject and a nominal or adjectival predicate:

[John president] sounds good to me.

2. They can be non-finite clauses: typically non finite clauses have a null anaphoric subject and lack tense marking:

[To be lazy] is not an option.

3. They can be complete clauses, with a verb, possibly agreeing, with tense and aspectual marking, and its argument(s):

[IX$_3$ DRINK TEA]$_c$ IX$_c$/THAT$_c$ SURPRISE IX$_1$
'That she drinks tea surprises me.' (ASL, Kastner & Davidson 2013)

Many languages display phenomena of tense dependency [Semantics- Section 2] (*sequence of tenses*) between the subject clause and the main clause. This dimension should be considered carefully, and described in details.

3.3.1.4 Anaphoric relations

The arguments of the subject clause can be either autonomous or anaphoric to those of the root clause. Typically, these anaphoric relations are asymmetric. Just to illustrate, in English it is OK for a pronominal in the subject clause to be anaphoric to a referential expression in the root clause (a), while the reverse, a pronominal in the root clause anaphoric to a referential expression in the subject clause, is impossible (b).

a. That he_i was fired didn't surprise $John_i$.
   That he_i left too early was obvious to $John_i$.
b. *That $John_i$ was fired didn't surprise him_i.
   *That $John_i$ left too early was obvious to him_i.

The grammar writer should describe any asymmetry in these anaphoric relations.

3.3.1.5 Null arguments

(Some) subject clauses can display a null subject, even if the language does not display null subjects in main clauses. English, for example, disallows any omission of the subject in main clauses, but can display null subjects in subject clauses (when non-finite), as illustrated below.

To be lazy is not an option.

The null subject of subject clauses typically displays anaphoric or anti-anaphoric relations to an argument of the main clause; this may vary according to the language or to the specific type of subject clause even within the same language. This can be illustrated in Italian, which displays the two types of relation: in non-finite clauses, obligatory anaphoricity is observed: the subject of the subject clause is *controlled* by an argument of the main clause:

A	Giovanni	è	stato	ordinate	[ø di	partire].
To	Giovann	has	been	ordered	to	leave

'It has been ordered to John to leave.' (Italian)

The opposite phenomenon, called obviation, is observed when the subject clause is in subjunctive mode: the subject of the subject clause must be disjunct from the argument of the main clause.

Mi	addolora	che	[ø	parta].	(ø ≠ me)
to.me	makes.sad	that		leaves	

'It makes me sad that he/she leave.' (Italian)

In the example above, the null subject of the subject clause can be interpreted with any referent *but* with that corresponding to the argument of the main clause.

These phenomena of obligatory or banned anaphoricity relations should be considered with great caution.

3.3.2 Object clauses

An object clause (or completive, or complement clause) is a subordinate argument clause carrying the syntactic function of an object. Object clauses can be (a) simple clauses, with no special interpretation, or (b) free relative clauses [Syntax – Section 3.4], or (c) interrogative clauses [Syntax – Section 1.2.3]. All three types are illustrated below. In the following, however, we will only treat the normal case (a), referring to the relevant sections for the two special types.

a. PIERO CONTRACT SIGN GIANNI KNOW
'Piero knows that John signed the lease.' (LIS, Geraci et al. 2008: 49)

b. EXAM DONE WHO PAOLO MEET
'Paolo met whoever took the exam.' (LIS, Branchini 2007: 109)

c. EXAM DONE WHO PAOLO ASK
'Paolo asked me who took the exam.' (LIS, Branchini 2007: 109)

3.3.2.1 Verbs taking object clauses

Verbal predicates that take an object clause are traditionally classified into a number of groups characterized in semantic terms. The various groups are reported to behave consistently as far as the syntax of the object clause they select is concerned. The description of object clauses in the given sign language should take into account this classification, a version of which is given below:

- Desiderative predicates: *want, prefer, yearn, arrange, hope, be afraid, refuse, agree, plan, aspire, decide, mean, intend, wish, need, long, expect, resolve, strive, demand, choose, offer, be eager, be ready, …*
- Directive/manipulative predicates: *cause, force, make, persuade, tell, threaten, let, cajole, command, order, request, ask, press, charge, command, induce, compel, signal, forbid, prevent (from), enable, …*
- Implicative predicates/achievement predicates: *manage, chance, dare, remember to, happen to, get to, try, forget to, fail, avoid, refrain, decline, neglect, …*
- Factive/commentative predicates: *regret, hate, be sorry, be glad, like, dislike, loath, be surprised, be shocked, …*
- Experiencer-object verbs: *thrill, amuse, cheer, satisfy, sadden, …*
- Phasal predicates/aspectual verbs: *begin, start, continue, keep on, finish, stop, cease, …*

- Modal predicates: *can, be able, ought, should, may, be obliged, must, …*
- Perception predicates: *see, hear, watch, feel, sense, smell, …*
- Attitude predicates: *claim, believe, think, suppose, assume, doubt, deny, …*
- Utterance predicates: *tell, say, report, promise, ask, …*

3.3.2.2 Position(s) within the matrix clause

There is cross-linguistic evidence that clause-internal object clauses are dispreferred, although not always disallowed. In particular, in SOV languages, object clauses rarely occur in the canonical object position (that is, sentence internally, following the subject and preceding the verb). While there are some SOV languages in which clausal objects obligatorily follow the verb, some SOV languages (like Japanese) do allow clause-internal sentential objects.

LIS, which is also SOV, is reported to strongly disallow or maybe completely ban object clauses in canonical position, at least as far as finite clauses are concerned. As shown below, the object clause appears either to the left (a) or to the right (b), but not in the canonical clause-internal position of the object (c).

a. PIERO CONTRACT SIGN GIANNI KNOW
b. GIANNI KNOW PIERO CONTRACT SIGN
'Gianni knows Piero signed the contract.'
c. * GIANNI PIERO CONTRACT SIGN KNOW (LIS, Geraci et al. 2008: 49)

Whether the object clause can be realized in the canonical object position in special cases, or whether it is always obligatorily realized at the left or right periphery is still an object of investigation.

The "extraposed" clause is reduplicated in some languages by a pronominal in the canonical position. This has been also reported for LIS, and for ASL, but in both cases, this resumption is neither obligatory nor is it related to factivity.

3.3.2.3 Factivity

Predicates differ on whether they are factive or not, that is, whether they presuppose the truth of the proposition they have as their argument or not. While factivity is a semantic notion, it is known to correlate with specific syntactic properties of the argument clause. Typically, in English, factive clauses can be paraphrased with *the fact that*. While English has no special way of introducing or marking factive clauses, other languages (e.g. Greek, Persian, Spanish) mark factive clauses with a determiner-like element, as illustrated below for Spanish.

Estoy	contento	**del**	que	me	hayas	invitado.
I.am	happy	of.the	that	me	you.have	invited

'I am happy that you have invited me.' (Spanish)

In ASL, the same function has been claimed to be performed by spatial localization, with an index resuming the factive clause, as shown in the example below.

IX$_3$ REMEMBER IX$_c$/THAT$_c$ [BUILDING$_b$ COLLAPSE]$_c$
'He remembers that the building collapsed.' (ASL, Kastner & Davidson 2013)

In LIS, the factive clause can be marked by the same determiner-like element that we find in relative clauses [Syntax – Section 3.4] (glossed PE).

[PIERO CONTRACT SIGN DONE] PE GIANNI FORGET
'Gianni forgot that Piero signed the contract.'
(LIS, Cecchetto & Donati 2016: 193)

3.3.2.4 Special non-manual markers

In most sign languages, subordination in general is marked only through special non-manual markers. The grammar writer should pay particular attention to this aspect in object clauses, and verify whether the non-manual markers of the clause changes according to its position. It is indeed possible that the extraposition phenomena object clauses frequently undergo are associated with topicalization [Syntax – Section 2.3.3.3] / topicalization [Pragmatics – Section 4.2] / topicalization [Pragmatics – Section 4.3.2] / topicalization or focalization [Syntax – Section 2.3.3.4] / topicalization [Pragmatics – Section 4.1] / topicalization [Pragmatics – Section 4.3.1] / focalization procedures, which are typically associated with specific prosodic markings, and thus specific non-manual markers. Object clauses in non-marked object position, if they are allowed, should also be investigated with respect to their non-manual markers.

3.3.2.5 Tense and aspectual marking

Object clauses can correspond to at least three types of structures:

1. they can be small clauses, containing only a subject and a nominal or adjectival predicate;
2. they can be non-finite clauses: typically non-finite clauses have a null anaphoric subject and lack tense marking;
3. they can be complete finite clauses, with a verb, possibly agreeing, with tense and aspectual marking, and its argument(s).

Many languages display phenomena of tense dependency (sequence of tenses) between the object clause and the main clause. This dimension should be observed carefully.

3.3.2.6 Anaphoric relations with the main clause arguments

There is typically an asymmetry in the possibilities of anaphoric relations between the object clause and the main clause; while arguments of the object clause can be pronominal anaphoric to arguments of the main clause, the opposite is allegedly never possible. The pattern of anaphoric relations between the arguments of the root clause and those of the object clause should be investigated.

Particular attention should be given to so-called indexical reference shifts / indexical reference shifts [Pragmatics – Chapter 6] / indexical reference shifts [Syntax – Section 3.3.3], that is, to whether the language to be described allows the shift of the reference of indexicals like *I* or *here* in (some) object clauses. That this is the case in a number of sign languages has been largely shown. An example is given below for LSC.

topic				RS-i		
IX_{3a}	$MADRID_{m}$	MOMENT	$JOAN_{3a}$	THINK	IX_{1}	STUDY FINISH $HERE_{b}$

'When he was in Madrid, Joan thought he would finish his study here (in Barcelona).' (LSC, adapted from Quer 2005: 154)

In the example above, the first person pronoun IX_{1} is interpreted as referring to Joan and not to the signer. This shift in reference of the pronoun is indicated by non-manual signals co-articulated with the manual signs. For example, while uttering the sentence that contains the pronoun, the signer may shift the body slightly toward the locus where the name coreferential with the pronoun was previously signed (this is indicated by the non-manual-marking RS-i). See the section on role shift [Syntax – Section 3.3.3] for more on these particular phenomena.

3.3.2.7 Occurrences of null arguments

Object clauses can contain null arguments, which typically display either free, or, anaphoric or anti-anaphoric relations to the argument of the main clause; this may vary according to the language or to the specific type of object clause even within the same language. This can be illustrated in Italian for null subjects, since Italian displays the three types of relation: in indicative clauses, the null subject can be freely interpreted as anaphoric or not to the subject of the root clause:

Gianni	ha	saputo	che	ø	parte	domani.	ø = Gianni, x
Gianni	has	known	that	ø	leaves	tomorrow	ø = Gianni, x

'Gianni has heard that he will leave tomorrow.' (Italian)

In infinitival clauses, obligatory anaphoricity is observed: the subject of the object clause is *controlled* by an argument of the main clause, as shown below.

Dubito	[ø	di	partire]	ø = me
doubt.1SG		to	leave	

'I doubt of leaving.' (Italian)

The opposite phenomenon, called *obviation*, is observed when the object clause is in the subjunctive mode.

Dubito	che	[ø	parta]	ø ≠ me
doubt.1SG	that		leave	

'I doubt that she/he leave.' (Italian)

These phenomena of obligatory or banned anaphoricity relations should be observed with great caution.

3.3.3 Role shift

In spoken languages like English, a distinction can be drawn between direct speech and indirect speech, exemplified by the following sentence pair:

John said "I'll never ask her for a favor again."
John said that he would never ask her for a favor again.

Indirect speech is typically expressed through an object clause, while direct speech is expressed by an independent clause. Things are more complicated in sign languages.

Role shift / role shift [Pragmatics – Chapter 6] is a sign language phenomenon that may be used in contexts where direct speech is used but has a much more general distribution (Lillo-Martin 2012). Role shift is characterized by two general properties: (i) semantically, the expressions that are signed under role shift are somehow interpreted 'from another person's perspective', or 'with respect to another context' than the context of the actual speech act; (ii) morphosyntactically, role shift is overtly marked by some modification, which may involve (a) body shift, (b) change in the direction of eye gaze, and/or (c) altered facial expressions in order to mark that the signer is adopting somebody else's perspective. Scholars usually distinguish between role shift as used to report someone else's speech or thought (attitude role shift), and role shift used to describe physical actions performed by someone else (action role shift).

Sentence (b) below illustrates the phenomenon of attitude role-shift. It is a possible continuation of sentence (a). In (b) two noteworthy phenomena signal that the signer is adopting the swimmer's perspective. First, the signer shifts his body right before the beginning of the embedded clause towards locus *3* (associated with the arrogant French swimmer); this is notated as 'RS_3' (for 'role-shift to *3*'s perspective'), followed by a line over all the expressions during whose articulation the signer's body remains shifted. Second, a first person pronoun IX_1 is used in the embedded subject position; however, it does not refer to the actual speaker, but rather to the agent of the reported speech act (namely the arrogant French swimmer). Example (c) is another possible continuation of (a). Although the meaning is similar, in (c) no role shift takes place, so the pronoun in the embedded clause is third person and no body shift is observed. In (c) the speech act / speech act [Pragmatics – Chapter 3] is reported by using the signer's perspective.

a. SEE [THAT ARROGANT FRENCH SWIMMER]$_3$ IX_3? YESTERDAY IX_3 ANGRY.
'See that arrogant French swimmer? Yesterday he was angry.'
(ASL, Schlenker 2016a: 15)

RS$_3$
b IX$_3$ SAY IX$_1$ WILL LEAVE
'He said: "I will leave."' (ASL, Schlenker 2016a: 15)
c. IX$_3$ SAY IX$_3$ WILL LEAVE
'He said that he would leave.' (ASL, Schlenker 2016a: 15)

The phenomenon of action role shift is illustrated by sentence (d), which is another possible continuation of (a).

RS$_3$
d. IX$_3$ $_1$WALK-WITH-ENERGY(CL-ONE) (ASL, Schlenker 2016a: 15)
e. IX$_3$ WALK-WITH-ENERGY(CL-ONE)
'He walked away with energy.' (ASL, Schlenker 2016a: 15)

The sentence in (d) contrasts with the standard third person description in (e). While both clauses start with the third person pronoun IX$_3$, in (d) the signer's body leans towards the swimmer's location and the directional verb WALK is marked for first person, that is, its articulation starts from the signer's body. On the other hand, in (e) there is no body lean and the verb is marked for third person, that it, its articulation starts from the swimmer's location.

Crucially, the action described in (d) involves no speech or thought act whatsoever, therefore this instance of role shift could not possibly be analyzed as reporting someone else's utterance or mental attitude. The *action* performed by someone else is reported by assuming his or her perspective.

3.3.3.1 Markers of role shift

The grammar writer should investigate which non-manual markers signal role shift. Body shift toward the locus of the person whose perspective is adopted is of course expected, but this does not need to involve shifting of the entire body. Head shift or eye gaze might suffice and, in principle, there might be different markings for attitude role shift and action role shift.

When doing this, the grammar writer should be aware that the signer may adopt facial expressions of the person whose perspective is adopted and these may be grammatical facial expressions (say, brow raise if the person whose perspective is adopted asks a yes/no question) or affective ones (say, when a person is reported as being puzzled, happy or angry).

Especially when reporting a dialogue or an event involving two or more characters, the signer might role shift into (assume the perspective of) multiple characters. This may happen sequentially, as when the signer shifts back and forth between two loci in the signing space linked to two characters, or simultaneously, when, in action role shift, the dominant and the non-dominant hands represent two characters involved in some action.

3.3.3.2 Integration of the role-shifted clause into the main clause

An issue that the grammar writer should keep in mind is whether (or to what extent) the clause in which role shift takes place is integrated into the main clause. Stated differently, the issue to be investigated is whether role shift involves a genuine case of subordination [Syntax – Section 3.2] of an object clause or not. Since many sign languages do not have the counterpart of complementizers like *that* which overtly signal subordination, the issue might not be easy to decide and might require the use of specific tests.

One test involves long-distance dependencies, in which a certain phrase occupies a position different from the one in which it is interpreted. For example, a wh-phrase [Syntax – Section 1.2.3] / wh-phrase can be linked to a position inside an embedded clause in an indirect speech report (a), while the same is impossible in case of a direct speech report (b):

a. What did John say he understands _ ?
b. *What did John say "I understand _ "?

This suggests that in English, a "direct speech clause" is not fully integrated into the matrix clause. In some sign languages, it might be impossible to apply this test because wh-phrases are not found in the left (or right) periphery of the clause to begin with. For these sign languages, it might be easier to exploit long-distance dependencies involving (contrastive) focus [Syntax – Section 2.3.3.4] / (contrastive) focus [Pragmatics – Section 4.1] / (contrastive) focus [Pragmatics – Section 4.3.1] / (contrastive) focus, where a difference in acceptability between indirect (a) and direct (b) speech is also observed.

a. BOOKS, John said that he never buys_ (not magazines)
b. *BOOKS, John said "I never buy _ " (not magazines)

Another way to investigate the integration issue involves cases of long-distance topicalization [Syntax – Section 2.3.3.3] / topicalization [Pragmatics – Section 4.2] / topicalization [Pragmatics – Section 4.3.2] / topicalization. Once again, direct speech (b) blocks a long-distance dependency, suggesting a loose integration within the main clause.

a. Mary, John said that he met _
b. *Mary, John said "I met _ "

This is an area where variation between direct speech and role shift (and among sign languages) might be expected. For example, for some signers, the following ASL sentences with and without role shift have the same acceptability status, suggesting that grammatical dependencies can be created between the role-shifted clause and the matrix clause, unlike what happens in English direct speech:

Context: The speaker is in New York City; the listener was recently in Los Angeles with John.

BEFORE IX_3 JOHN IN LA,

a. No role shift
   WHO IX_3 SAY IX_3 WILL LIVE WITH THERE WHO

b. Role-shift

RS

WHO IX_3 SAY IX_1 WILL LIVE WITH HERE WHO

'When John was in LA, who did he say he would live with there?'

(ASL, Schlenker 2016a: 37)

A different way to identify the level of integration is to investigate whether indexicals in the role-shift clause can be evaluated with respect to the context of the actual speech act. This may happen in LSC, as shown by the sentence below, where one indexical under role shift, namely the embedded first person pronoun IX_1, is interpreted with respect to the shifted context (and thus denotes Joan); while the other indexical, namely HERE, refers to the location of the actual speech act – and hence to Barcelona.

Uttered in Barcelona:

topic RS-i

IX_3 $MADRID_m$ MOMENT $JOAN_i$ THINK IX_1 STUDY FINISH $HERE_b$

'When he was in Madrid, Joan thought he would finish his study here (in Barcelona).' (LSC, Quer 2005: 154)

The fact that HERE in the role-shifted clause can be evaluated with respect to the context of the speech act indicates that the role-shift clause is more syntactically integrated than cases of direct speech, as shown by the following English sentence, which cannot mean that Joan said that he would finish his studies in Barcelona even if the sentence is uttered in Barcelona. So, *here* in the direct speech report cannot be interpreted with respect to the context of the utterance of the matrix clause.

Uttered in Barcelona:
When he was in Madrid, Joan said "I will finish my study here."

It is possible that not all indexicals pattern alike in this respect. In DGS, for example, personal indexicals such as IX_1 and IX_2 are always interpreted relative to the context of the reported utterance. By contrast, the indexicals HERE and TODAY are generally interpreted relative to the actual context of utterance. On the other hand, TOMORROW and YESTERDAY are generally ambiguous and can be interpreted relative to both contexts. Hübl (2014) relates this complex pattern to the iconic deictic properties of these indexical signs, but this is an area in which cross-linguistic variation might be found.

3.3.3.3 Syntactic contexts introducing attitude role shift

The grammar writer should investigate which verbs can introduce an attitude role-shift context. Although it is expected that these verbs belong to the class of verbs used to report a speech act or a mental attitude (i.e. verbs like *say*, *think*, *hope*, *fear*,

etc.), fine-grained lexical distinctions may emerge. In English, for example, a verb like 'deny' does not allow direct speech:

John denied that he would leave.
*John denied "I will leave."

Another question that the grammar writer may look at is whether attitude role shift is allowed when the subject of the verb reporting a speech act is a *wh*-phrase. In English in this syntactic context, both direct and indirect speech are allowed.

Who$_i$ said that he$_i$ would leave?
Who said "I will leave"?

The grammar writer may investigate whether role shift is possible when the subject of the verb reporting the speech act does not denote a definite individual whose point of view can be adopted. The same issue arises if the subject of the verb reporting a speech act is a quantifier / quantifier [Semantics – Chapter 10] / quantifier [Lexicon – Section 3.10.2] / quantifier [Syntax – Section 4.4]:

Nobody$_i$ said that he$_i$ would leave. / Everybody$_i$ said that he$_i$ would leave. /
Someone$_i$ said that he$_i$ would leave.
Nobody said "I will leave." / Everybody said "I will leave." /
Someone said "I will leave."

Here, as well, the fact that the subject of the main clause is not a referential expression might impact on role shift.

3.3.3.4 Special signs introducing action role shift

While identification of verbs introducing attitude role shift is easier because these are (a subset of) verbs that report a mental attitude or an act of saying, the identification of specific signs introducing action role shift is less direct. However, there might be specific expressions akin to *was like* in sentences like 'John was like…' followed by a specific posture or by the gesture of John fainting. Given that action role shift is much more ubiquitous than corresponding cases in spoken languages, specialized signs might exist.

3.3.3.5 Syntactic differences between action role shift and attitude role shift

One issue to be investigated is whether there are syntactic differences between action role shift and attitude role shift. In ASL, for example, a first person pronoun usually does not occur under action role shift, though full first person pronouns are acceptable under attitude role shift. Non-manual markings might also be different in the two kinds of role shift. For example, in attitude role shift, actual body movement towards the locus of the person whose perspective is adopted might be mandatory, even more

so if a dialogue between two characters is reported, while in action role shift, a change in facial expressions and/or the interruption of eye contact with the actual addressee might suffice.

Differences might also concern the level of integration of the role-shifted clause within the matrix clause. Although the issue of syntactic integration of role-shifted expressions has been investigated only for attitude role shift, in principle the same issue arises for action role shift. This might be investigated by applying the tests involving long-distance dependencies to action role shift clauses. However, this should be checked language after language, and new tests might be necessary, since this is an area where current research is quite limited.

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3.4 Relative clauses

3.4.0 Definitions and challenges

3.4.0.1 A definition of relative clauses

A relative clause is a clause that modifies a noun, and thus, it has an adjectival function. The noun that is modified is called "the head" of the noun phrase (or "head noun"). Depending on the language, any constituent can be relativized, that is, can be the head. In the following example, the object of the verb of the relative clause, *admire*, is relativized. The blank line in the example indicates where the head, *artist*, is interpreted. The noun phrase containing the relative clause can have any grammatical function. In this example, it is the subject of the main clause. (For reasons of simplification, in the examples provided in this chapter, the relative clause is in italics and, where marked, the head is in bold. Where present, the underscore illustrates the gap where the head is interpreted but not pronounced.)

[The **artist** *that Laura admires* __] makes beautiful pottery.

Languages form relative clauses in a variety of ways. If the sign language that is studied does not mark a relative clause with a special manual sign, identifying relative clauses may be a challenging task. In sign languages for which a description of relative clauses is available it has been observed that non-manual markers are often the only linguistic means distinguishing relative clause constructions from coordinate clauses / coordinate clauses [Syntax – Section 3.1].

3.4.0.2 Properties of relativization

In the following sections we illustrate some properties of relativization that may help in identifying the presence of a relative clause in the language under investigation.

3.4.0.2.1 Non-manual markers

As already mentioned, non-manuals are often the only device by which a relative construction is distinguished from a coordination of two clauses. The following examples

illustrate a minimal pair, namely two clauses differing only in the presence of relative clause non-manual markers responsible for the different syntactic nature of the two sentences: a juxtaposition of two clauses in (a) and a relative construction in (b) (rel = relative clause non-manual marker(s)).

 5_3.4.0.2.1_1_ASL_recently dog chase cat AND come home

a. RECENTLY DOG CHASE CAT COME HOME
'The dog recently chased the cat and came home.' (ASL, Liddell 1978:71)

 5_3.4.0.2.1_2_ASL_recently dog chase cat come home

rel
b. RECENTLY DOG CHASE CAT COME HOME
'The dog that recently chased the cat came home.' (ASL, Liddell 1978:66)

3.4.0.2.2 Impossibility of production in isolation

While in a coordinate construction / coordinate construction [Syntax – Section 3.1], as in (a); both conjuncts can be uttered in isolation, as shown in (b) and (c); in a relative construction, as the one in (d); the noun phrase containing the relative clause cannot be uttered in isolation, as shown in (e); as opposed to the main clause that can appear in isolation, as in (f). All examples are from LIS.

a. CHILD_{3a} TOY BREAK MOTHER_{3b} $_{3b}\text{SCOLD}_{3a}$
'The child breaks the toy and (his) mother scolds (him).' (LIS)
b. CHILD TOY BREAK
'The child breaks the toy.'
c. MOTHER_{3b} $_{3b}\text{SCOLD}_{3a}$
'The mother scolds him.'

rel
d. CHILD_{3a} TOY BREAK PE MOTHER_{3b} $_{3b}\text{SCOLD}_{3a}$
'The mother scolds the child that broke the toy.'

rel
e. *CHILD TOY BREAK PE
f. MOTHER_{3a} $_{3a}\text{SCOLD}_{3b}$
'The mother scolds (him).'

3.4.0.2.3 Position of temporal adverbials

While temporal adverbials [Syntax – Section 6.4.2.1] introducing a coordinate structure modify the predicate of both conjuncts (a), temporal adverbials preceding the head of an internally headed relative clause only modify the relative clause predicate but not the main clause (b).

a. YESTERDAY DOG CAT CHASE HOME COME
'Yesterday the dog chased the cat and came home.' (LIS)

rel
b. YESTERDAY IX_3 **FEMALE** CYCLE IX_1 LETTER $SEND_3$
'I sent a letter to that lady who cycled yesterday.'
(HKSL, Tang & Lau 2012: 360)

In externally headed relative clauses [Syntax – Section 3.4.0.3], however, as illustrated in the DGS example below, the time adverbial preceding the head, being external to the relative clause, can refer and modify the main clause but not the relative clause (in square brackets). The grammar writer may therefore also use this diagnostic to verify the presence of externally or internally headed relative clauses in the target sign language.

 5_3.4.0.2.1_3_DGS_yesterday man (ix3) rpro-h3 cat stroke arrive

rel
YESTERDAY **MAN** IX_3 [RPRO-H_3 CAT STROKE] ARRIVE
'The man who is stroking the cat arrived yesterday.'
(DGS, adapted from Pfau & Steinbach 2005: 513)

3.4.0.3 Syntactic types of relative clauses: diagnostics

The position of the head noun in noun phrases containing a relative clause differs across languages. In this respect, four types of relative clauses have to be distinguished: (i) externally headed, (ii), internally headed, (iii) correlative clauses and (iv) free relatives.

In externally headed relative clauses, the head noun appears outside the relative clause, but is interpreted as one of its constituents. The example below illustrates this type.

The **artist** *that Laura admires* __ makes beautiful pottery.

The head noun *artist* is external to the relative clause. We can assume that the relative clause contains a gap (represented by the blank line) where the head noun *artist* is interpreted.

In internally headed relative clauses, the head noun is in the position in which it is interpreted, that is, inside the relative clause. The sentence below exemplifies this type of relative clause. Clearly, the head noun *keeki-o* is internal to the relative clause (in italics).

Yoko-wa	*Taro-ga*	*sara-no*	*ue-ni*	***keeki-o***	*oita-no-o*	tabeta
Yoko-TOP	Taro-NOM	plate-GEN	on-LOC	cake-ACC	put-NM-ACC	ate

'Yoko ate a piece of cake which Taro put on a plate.'
(Japanese, adapted from Shimoyama 1999: 147)

In correlative clauses, the relativized noun has two copies: one in the position where it is interpreted inside the relative clause, and one in the main clause. The

following example illustrates this type. There are two copies of the noun *laRkii* 'girl'.

jo	***laRkii***	*khaRii*	*hai*	vo	**laRkii**	lambii	hai
REL	girl	standing	is	DEM	girl	tall	is

Lit. 'Which girl standing is that girl tall is'
'The girl who is standing is tall.' (Hindi, Dayal 1991: 647)

Finally, in free relatives, there is no overt head noun that is modified, as illustrated below.

I liked __ *what he cooked* __

While the examples provided here all belong to spoken languages, sign languages are known to display the same typological variation in the syntax of relative clauses. The grammar writer should be also aware that some sign languages are reported to display more types.

Below we list some useful diagnostistic tests that can be used to identify the syntactic type of the relative clause under investigation.

(i) Signs marking the clause boundary
One way to verify whether a sign (in our case the head or the relativization sign) belongs to a clause is by establishing the clause boundary. Every sign language has specific signs that invariably mark the sentence-initial position. In LIS, for example, such signs are time adverbials. By eliciting a relative clause with a time adverbial modifying the relative predicate and marking the relative clause left periphery, we can verify whether the head is internal or external to it. If it is external, the head precedes the time adverbial, if it is internal, the head follows it. As illustrated in the LIS example below, the head (MAN) follows the time adverbial (TODAY) modifying the relative clause predicate (BRING), thus showing that the head is internal to the relative clause.

rel
TODAY MAN PIE BRING PE YESTERDAY (IX_3) DANCE
'The man who today brought the pie danced yesterday.'
(LIS, Branchini 2007: 150)

The example also shows that the relativization sign PE belongs to the sentence-initial relative clause since it precedes the time adverbial (YESTERDAY) that modifies the matrix predicate (DANCE), thus, marking the main clause sentence-initial boundary.

(ii) Non-manual markers
Since non-manuals mark the relative clause, their spreading domain helps the grammar writer in identifying the structure of the material inside the relative clause. If the non-manual markers spread over the head, this suggests that the head is internal to the relative clause; on the other hand, if the head is not marked by the relative clause non-manual marker, the head is external to the relative clause. In example (a),

the non-manual markers only spread over the relative pronoun RPRO-NH$_3$ but not over the head, BOOK, suggesting that we are dealing with an externally headed relative clause. In contrast, in (b), the non-manual markers spread over the head of the relative clause, TEACHER, suggesting that it is an internally headed relative clause.


5_3.4.0.3_1_DGS_book rpro-nh poss father read.mp4

rel
a. BOOK [RPRO-NH$_3$ POSS$_1$ FATHER READ]
'the book which my father is reading' (DGS, Pfau & Steinbach 2005: 512)


5_3.4.0.3_2_LSC_[teacher my son help+++] ix1 plant give

rel
b. [TEACHER MY SON HELP+++] IX$_1$ PLANT GIVE
'I gave a plant to the teacher who has helped my son a lot.'
(LSC, Mosella 2012: 198)

Research on non-manual markers has shown that eye blinking and pauses in the signing stream mark syntactic boundaries between two clauses. Analysis of these non-manual markers can therefore be also useful in establishing the relative clause and the main clause boundaries.

(iii) Repetition of the head in both clauses
A test to verify the presence of correlatives is the possibility for the head to be produced in both clauses. In the following ASL example, the head BOOK is produced in both the relative clause and the main clause, and for this property it is claimed to be a correlative clause ('wr' indicates 'nose wrinkle' and PT is a demonstrative pronoun).

br wr
[PT GIRL BORROW **BOOK**] [THAT **BOOK** GONE]
'The book the girl borrowed is missing.' (ASL, Galloway 2012)

It is, however, important to keep in mind that correlative clauses generally allow three possibilities: the head is produced only in the relative clause, only in the main clause, or in both clauses.

(iv) Lack of a head
If no head is produced in either clause but the relevant non-manual markers are produced over one of the two clauses, it is likely that the relative clause is a free relative clause. Similar to spoken languages, free relative clauses in sign languages may display the presence of a wh-element, as shown in the LIS example below.


5_3.4.0.3_3_LIS_exam done who exit can

rel
EXAM DONE WHO EXIT CAN
'Who has taken the exam can go out.' (LIS, Branchini 2007: 207)

(v) Presence of ordinals

Ordinals / Ordinals [Lexicon – Section 3.10.1.2] only modify externally and internally headed relative clauses, not correlatives. They can therefore be used as diagnostics to verify the presence of correlatives. In the LIS example below, the ordinal FIRST modifies the head WOMAN but also the whole NP containing the relative clause [WOMAN $_1$KISS PE] thus showing that it cannot be a correlative clause.

rel

FIRST WOMAN$_{3a}$ $_1$KISS PE$_{3a}$ NOW BANK WORK

'The first woman I kissed now works in a bank.' (LIS, Branchini 2007: 154)

3.4.0.4 Semantic types of relative clauses (restrictive versus non-restrictive): diagnostics

Relative clauses are also classified as restrictive and non-restrictive. Restrictive relative clauses limit the set of possible entities the noun specified by the clause can refer to, whereas non-restrictive clauses simply provide further information about the modified noun. Example (a) below has a restrictive clause (marked by the absence of commas in English) since it identifies one student among many, and expresses that only the one that read the manual carried out the experiment. Example (b), on the other hand, exemplifies a non-restrictive clause (marked by commas in English) since the relative clause does not uniquely identify the student as the one who read the manual. It just provides further information about the student.

a. The **student** *who read the manual* carried out the experiment. (restrictive)
b. The **student**, *who read the manual*, carried out the experiment. (non-restrictive)

Examples (c) and (d) below provide further examples:

c. My **cousin** *who lives in Spain* is visiting me now. (restrictive)
d. My **cousin**, *who lives in Spain*, speaks Spanish fluently. (non-restrictive)

Example (c) implies that the speaker has more than one cousin, and the relative clause 'who lives in Spain' uniquely identifies the cousin that the speaker is talking about. The person uttering (d), on the other hand, may have only one cousin. Thus, the relative clause does not identify a cousin among a number, but simply provides further information about him.

A set of diagnostics is commonly associated with restrictivity and can be used to verify the interpretation of relative clauses. Each property is first illustrated with an English example and with an example from LIS (see Branchini 2007; Branchini & Donati 2009). Note that in some of the following sign language examples, the non-manual markers are not provided.

(i) Possibility of a pronominal head

While the head of a non-restrictive relative clause can be a pronoun (a), the head of a restrictive relative clause cannot (b) and (c).

a. We, who are women, think that you, who are men, should go now.
b. *We who are women think that you who are men should go now.
c. *YESTERDAY IX_2 FELL-OFF BIKE PE TODAY NEW GLASSES BUY WANT
*'You that yesterday fell off the bike today want to buy new glasses.' (LIS)

(ii) Possibility of a proper noun head
While the head of a non-restrictive relative clause can be a proper noun / proper noun [Lexicon – Section 3.1.2] (a), the head of a restrictive relative clause cannot (b) and (c).

a. John, whom you saw yesterday, is a good friend.
b. *John whom you saw yesterday is a good friend.
c. *MARIA CAKE COOK LIKE PE PREPARE DONE
*'Maria who likes to cook cakes has prepared a pie.' (LIS)

(iii) Possibility of a quantified head
While a quantified head can be the head of a restrictive relative clause (a), it is incompatible with a non-restrictive relative clause (b) (Ross 1967).

a. Every student who attended my course will be rewarded.
b. *Every student, who attended my course, will be rewarded.

No example from a sign language is available to illustrate this at the moment.

(iv) Possibility of an ordinal head
An ordinal preceding the head of a restrictive relative clause modifies the head and the whole relative clause (a), while an ordinal preceding the head of a non-restrictive relative clause only modifies the head of the relative clause (b).

a. The first woman that I kissed works in a bank.
b. The first woman, that I kissed, works in a bank.
rel
c. FIRST WOMAN KISS PE NOW BANK WORK
'The first woman I kissed now works in a bank.' (LIS)

In the LIS example above in (c), the ordinal FIRST modifies the entire relative clause, that is, FIRST does not refer to the first woman standing in a row or to the first woman who ever existed, but to *the woman I kissed*, as the translation makes clear. Thus, the relative clause here is interpreted as restrictive.

(v) Scope of matrix negation
A negative element [Syntax – Section 1.5] / negative element [Semantics – Section 12.2] modifying the matrix predicate modifies both the head and the restrictive relative clause (a), but it only modifies the head of a non-restrictive relative clause (b), not the non-restrictive relative clause (Demirdache 1991).

a. I haven't met a girl who doesn't like to wear make-up.
b. *I haven't met a girl, who doesn't like to wear make-up.

rel
c. ONE WOMAN MAKE-UP NOT PE IX$_1$ MEET NEVER
'I never met a woman who doesn't wear make-up.' (LIS)

In the LIS example above in (c), the matrix negation (NEVER) modifies the head and its relative clause 'a woman who doesn't wear make-up'. Thus, the relative clause here is interpreted as restrictive.

(vi) Intensional verbs
While intensional verbs take the entire restrictive relative clauses into their scope, they take scope only over the head in non-restrictive relatives (Zhang 2001).

a. #Gianni thinks that Mary likes men, who own big cars.
b. Gianni thinks that Mary likes men who own big cars.

rel
c. GIANNI THINK MEN CAR CL-BIG-CAR PE MARIA LIKE
'Gianni thinks that Maria likes men who own big cars.' (LIS)

In the LIS example in (c), the intensional verb *think* takes scope over the whole relative clause *men who own big cars*. Thus, the relative clause is interpreted as restrictive.

(vii) Interpretation of ellipsis
In ellipsis / ellipsis [Syntax – Section 2.0.6] / ellipsis [Syntax – Section 2.5] constructions a constituent of a sentence is not pronounced but it is interpreted as identical to a constituent in another part of the sentence. In (a) below, for instance, the second clause does not have a lexical verb and an object, but 'my brother does not' is interpreted as 'my brother does not like the cake'.

The possible interpretations of elided predicates correlate with restrictive and non-restrictive interpretations of the relative clauses in the sentence. While the antecedent of the elliptical constituent must include a restrictive relative clause (b), it may not include a non-restrictive relative clause (a).

a. My sister likes the cake, which by the way I bake well, and my brother does not (= like the cake)
b. My sister likes the cake I bake, and my brother does not (= like the cake I bake)

5_3.4.0.4_1_LIS_cake ix-1 cook pe sister poss-1 like brother not

rel
c. CAKE IX$_1$ COOK PE SISTER POSS$_1$ LIKE BROTHER NOT
'My sister likes the cake that I bake, my brother does not.' (LIS)

In the English example in (a), the ellided constituent is interpreted as 'like the cake' while in (b) and in the LIS example (c), it is interpreted as 'like the cake that I bake', thus, including the restrictive clause.

(viii) Modification by sentence adverbs
While sentence adverbs [Syntax – Section 6.4.1] / sentence adverbs [Lexicon – Section 3.5.2] of modification, such as *by the way* in the examples below, can appear inside non-restrictive relative clauses, they cannot appear inside restrictive relative clauses (Ogle 1974).

a. The boys, who by the way have lost the case, should give up.
b. *The boys who by the way have lost the case should give up.
c. *WOMAN MAN BY-THE-WAY KISS PE PASTA MAKE
*'The woman that by the way kissed the man can make pasta.' (LIS)

The ungrammaticality of the LIS example in (c) shows that the relative clause here is interpreted as restrictive.

(ix) Category restrictions of the head
While the head modified by a non-restrictive relative clause can belong to any syntactic category (an adjective, a preposition, etc.), the head modified by a restrictive relative clause can only be a noun (Sells 1985).

a. My sister is intelligent, which my brother never is.
b. *My sister is intelligent which my brother never is.
c. *SISTER POSS_1 INTELLIGENT PE BROTHER POSS_1 NEVER
*'My sister is intelligent which my brother never is.' (LIS)

The ungrammaticality of the LIS example in (c) shows that the relative clause here is interpreted as restrictive.

The following table summarizes for each property the behavior displayed by restrictive and non-restrictive relatives in English.

Property	Restrictive	Non-restrictive
1. Pronominal head	No	Yes
2. Proper name head	No	Yes
3. Quantified head	Yes	No
4. Ordinal head	Yes	No
5. Matrix negation	Yes	No
6. Intentional verbs	Yes	No
7. Ellipsis	Yes	No
8. Sentential adverbs	No	Yes
9. Any category	No	Yes

Analyses of relative clauses in the sign languages studied so far have shown that the semantic differences between restrictive and non-restrictive relative clauses can result in syntactic differences. While restrictive relative clauses may be marked by relativization signs and specific non-manual markers, non-restrictive relative clauses may lack the presence of relativization signs and of non-manuals marking relative clauses.

Non-restrictive relative clauses rather look like conjoined clauses or parentheticals, whose boundary is sometimes marked by an eye blink, a non-manual marker often used to mark clause boundaries.

3.4.1 Type of relative clause

The first thing to do while describing relativization in a given language is identifying the type of strategy that is used in the language under investigation. The grammar writer is advised to used the diagnostics listed above [Syntax-Section 3.4.0.3], and to keep in mind that some (sign) languages are reported to display more than one type.

3.4.2 Presence or absence of a relativization sign

Spoken languages differ in the way they mark relative clauses. They may employ: (a) a complementizer, (b) a relative (or personal) pronoun, (c) a determiner, (d) a participial form, or (e) nothing. The elements that mark the relative clause are underlined in the following examples, while the modified noun is in bold.

a. The **book** *that I read* is interesting.
b. The **woman** *who lives next door* is a singer.
c. *Peemɛ* ***thep*** *khii-pa* *the* nee yin.
   Peem.ERG book.ABS carry-PART the.ABS I.GEN.be
   'The book that Peem carried is mine.' (Tibetan, Keenan 1985:161)
d. *Kitap* *oku-yan* **çocuk** soru sorar
   book read-SUBJ.REL.PART child question asks
   'The child who is reading /reads /read books asks questions.' (Turkish)
e. *The writer I met* is selling his house.

Sign languages show the same variation. There are sign languages that do not employ any relativization sign marking the relative clause, as illustrated by the following LSB example.

GIRL *FALL BICYCLE* STAY HOSPITAL
'The girl that fell off the bicycle is in the hospital.'
(LSB, reported in Pfau & Steinbach 2005: 511)

In analyzing relative clauses in the target sign language, the grammar writer should verify the presence of manual signs of relativization marking the relative clause and/or its head, their specificity for human/non-human referents and for singular/plural heads, their position(s), and their optionality/obligatoriness in the construction.

3.4.2.1 List of relativization signs

In the sign languages that employ relativization signs, these signs come in different forms. Sign languages displaying internally headed relative clauses [Syntax – Section 3.4.0.3], for example ASL, may employ a determiner-like sign spatially agreeing with the relative clause head (in the example below, the determiner-like sign is glossed as THAT).

 5_3.4.2.1_1_ASL_recently dog that chase cat come home

rel
RECENTLY ***DOG*** *THAT CHASE CAT* COME HOME
'The dog which recently chased the cat came home.' (ASL, Liddell 1978: 66)

Other markers may be specified for humanness or number.

3.4.2.1.1 Human/non-human specificity of the relativization sign

DGS exhibits externally headed relative clauses [Syntax- Section 3.4.0.3] and uses a manual sign equivalent to a relative pronoun marking the relative clause as subordinate. DGS has two different relative pronouns: one for human referents (RPRO-H: an upright ☝-hand resembling a person classifier) and one for non-human referents (RPRO-NH: a pointing sign) – in the examples below, both are accompanied by a non-manual marker ('re' = raised eyebrows).

 5_3.4.2.1.1_1_DGS_man rpro-h cat stroke

re
a. **MAN** *RPRO-H CAT STROKE*
'the man who is stroking the cat'

 5_3.4.2.1.1_2_DGS_book rpro-nh poss father read

re
b. **BOOK** *RPRO-NH* $POSS_1$ *FATHER READ*
'the book which my father is reading'
(DGS, adapted from Pfau & Steinbach 2005: 512)

3.4.2.1.2 Singular/plural specificity of the relativization sign

A language may have relativization signs marked for the number feature (singular/plural) of the head noun.

3.4.2.2 Position of the relativization sign

The position of manual signs of relativization may vary. They may be realized next to the head (as in the ASL example above) or at the relative clause periphery (as is true

for the marker PE in the LIS example below), and their presence may be optional or obligatory.

rel
TODAY ***MAN***$_{3a}$ *PIE BRING PE* YESTERDAY (IX$_{3a}$) DANCE
'The man who today brought the pie danced yesterday.'
(LIS, Branchini 2007: 150)

3.4.2.3 Optionality or obligatoriness of the relativization sign

The grammar writer should check whether the relativization sign is optional or obligatory.

3.4.3 Position of the noun phrase with the relative clause within the matrix clause

In spoken languages, the position of the relative clause with respect to the main clause is often tightly connected to the word order of the language and to the syntactic role carried out by the noun phrase with respect to the matrix predicate.

In the English example in (a), an SVO language, the relative clause modifies the object of the main clause, thus the NP modified by the relative clause occupies a post-verbal position, the position of objects in English. In the Japanese example in (b), the relative clause, again, modifies the object of the main clause but since Japanese is an SOV language, the object NP appears between the subject and the matrix predicate.

a. I saw [the **house** *that they want to buy.*]
b. Taro-ga [***ringo-ga*** *kittin-ni* *aru* *no-o*] tot-te tabeta
Taro-NOM apple-NOM kitchen-in be no-ACC pick.up ate
'Taro picked up and ate the apple that was in the kitchen.'
(Japanese, Nishigauchi 2003: 1)

Relative clauses in the sign languages for which a description is available behave differently as to the sentential position of the noun phrase containing a relative clause.

In LIS, NPs with relative clauses occupy a sentence-initial position regardless of their syntactic role in the matrix clause (c), while in DGS, the position of the NP with a relative clause corresponds to the position of the NP alone. Thus, DGS patterns with languages like English (d).


5_3.4.5_LIS_dogi ixi eat a-lot pei doctor (ixi) vet bring

rel
c. [***DOG***$_{3a}$ *IX*$_{3a}$ *EAT A-LOT PE*$_{3a}$] DOCTOR (IX$_{3a}$) VET BRING
'I took to the vet the dog that eats a lot.' (LIS, Branchini 2007: 150)
d. INDEX$_1$ **BOOK** *RPRO-NH*$_3$ *TABLE LIE-ON* KNOW
'I know the book which is lying on the table.'
(DGS, adapted from Pfau & Steinbach 2005: 515)

Summing up, the position of the relative clause with respect to the main clause should be verified. Three possibilities may occur: NPs with relative clauses (i) always appear in a (dislocated) sentence-initial/final position regardless of their syntactic role; (ii) stay in-situ; (iii) may be optionally produced inside the matrix clause or dislocated to the sentence periphery.

3.4.4 Subject versus object relativization

Some languages mark relative clauses in a specific way depending on whether the relativized noun is the subject or the object (or another main constituent) of the predicate of the relative clause. In English, for instance, if the head is human and the object of the predicate, it may be optionally marked with the relative pronoun *whom*, as opposed to *who*, which would be used if the head noun was the subject of the predicate. In (a) *a man* is the subject of *climbed*, whereas in (b) *the man* is the object of *to date*.

I once met [a **man** *who had climbed Mt. Everest*].
I met [the **man** *whom my sister used to date*].

There are also some languages that mark this difference with different inflectional markers on the predicate of the relative clause. The following examples are from Turkish:

a. Ara-yan kadın
call-SUBJ.REL woman
'the woman who called' (Turkish)

b. Ara-dığ-ım kadın
call-OBJ.REL-1POSS woman
'the woman whom I called' (Turkish)

In (a), the head noun *kadın* 'woman' is the subject of the verb *ara* 'call', and the verb has a marker for subject relativization, *-yan*. In (b), on the other hand, the head noun *kadın* 'woman' is the object of the verb *ara* 'call', and the verb has a marker for object relativization, *-dığ*, followed by the first person possessive marker expressing the person features of the subject of the relative clause.

Thus, the grammar writer should investigate whether the target sign language marks subject and object relativization differently: by different manual signs or non-manual markers.

3.4.5 Displacement of noun phrases with relative clauses

Relative clauses are reported to be frequently displaced in sign languages. In the following examples from LIS, an SOV language, although the noun phrase modified by

a relative clause (marked by relative clause non-manuals: rel = relative) is the object of the main predicate WASH, it must precede the matrix subject PAOLO, as in (a), and cannot be in its argument position, as in (b). If the NP were not modified by a relative clause, it could occur between the subject and the verb, as in (c).

a. rel
YESTERDAY DOG_{3a} FIND PE_{3a} $PAOLO_{3b}$ IX_{3b} WASH
'Paolo washed the dog that I found yesterday.' (LIS, Branchini 2007: 151)

b. * rel
$PAOLO_{3b}$ IX_{3b} YESTERDAY DOG_{3a} FIND PE_{3a} WASH
Intended: 'Paolo washed the dog that I found yesterday.'

c. PAOLO DOG WASH

The grammar writer should verify whether relative clauses can be displaced in the language under investigation, and describe the non-manual marker and the positions the displacement is associated to.

3.4.6 Special non-manual marking

Where no manual sign of relativization is present, non-manual marking is often the only way to distinguish between a relative clause and a coordination / coordination [Syntax – Section 3.1] of two clauses. The analysis of potentially specific non-manual markers in relative clauses as well as their obligatoriness or optionality and their spreading domain is, therefore, crucial in describing how relative clauses are expressed in the target sign language. The following non-manuals marking relative clauses have been identified in the sign languages studied up to now: raised eyebrows, squinted eyes, head nodding over the head or over the relativization sign, backward head tilt, tensed upper lip, and tension of the upper cheeks.

Sign languages usually employ a combination of different non-manual markers. The sequence of manual signs a non-manual marker co-occurs with is called the "spreading domain" of the non-manual marker. The spreading domain of a non-manual marker may be the entire clause or a smaller constituent. In relative clauses, the spreading domain of the different non-manual markers may not overlap: while one may spread over the entire relative clause, another one may spread only over the relativization sign (if present) or over the head, as shown in the examples reported below (rel = relativization; nod = head nod; re = raised eyebrows).


5_3.4.6_1_ASL_1ask3 give1 dog ursula kick that

rel nod
$_1ASK_3$ $GIVE_1$ DOG URSULA KICK THAT
'I asked him to give me the dog that Ursula kicked.' (ASL, Liddell 1978: 85)

re
YESTERDAY MAN (IX_3) RPRO-H_3 CAT STROKE ARRIVE
'The man who is stroking the cat arrived yesterday.'
(DGS, adapted from Pfau & Steinbach 2005: 513)

rel
DOG_{3a} IX_{3a} EAT A-LOT PE_{3a} DOCTOR (IX_{3a}) VET BRING
'I took to the vet the dog that eats a lot.' (LIS, Branchini 2007: 150)

3.4.6.1 List of non-manual markers

The grammar writer can list the non-manual markers of relative clauses in this section.

3.4.6.2 The spreading domain of each non-manual marker

In this section the grammar writer can describe the spreading domain per non-manual marker of relative clauses listed in the preceding section.

3.4.7 Restrictive vs non-restrictive relative clauses

In this section the grammar writer should describe whether the language distinguishes between restrictive and non restrictive relative clauses, using the definitions and the diagnostics discussed above [Syntax: Section 3.4.0.4].

Elicitation materials

Relative clauses create complex sentences not frequently occurring in spontaneous production. It is for this reason that it may be not easy to find them in a corpus containing only free conversational data. An in-depth analysis of the phenomenon trying to verify the syntactic and semantic types available in the literature requires a substantial body of evidence.

If a general description of the phenomenon is already available in the target sign language, the grammar writer may ask for grammaticality judgments or ask the signer to produce a target sentence by translating it from the spoken language. This has the advantage that the grammar writer can focus on the fine-grained aspects for which a detailed investigation is needed. However, these investigation techniques can have some drawbacks, one of which is the influence that the spoken language construction may have on the sign language production or the risk that the informant is not competent enough in the spoken language. Another risk concerns the use of non-manual marking. In artificial situations in which the sentence to be judged as grammatical

or ungrammatical is later produced by the signer, production of the relevant non-manual marking may be avoided or seriously modified from the otherwise spontaneous production.

For these reasons, it may be useful to use elicitation techniques that lead to the production of relative clauses in a semi-naturalistic setting.

The grammar writer should try to avoid the production of what he/she believes to be the relevant construction in the target sign language by only facilitating its elicitation.

Starting from early investigations on relative clauses, an elicitation technique successfully employed toward this end is the presentation in the target sign language of a story with limited information about three different characters. The characters are introduced in a generic manner and referred to, for instance, as *one man*, *another man*, and *the next man*, no proper name is provided. The informant is either asked to retell the story or to answer questions regarding the characters. The most convenient way for the informant to refer to the story characters is with a relative clause.

An example of a story used to elicit relative clauses in LIS is provided below.

Elicitation context
I love dogs. In my house I have three dogs.
One dog is ill and tomorrow I will take it to the vet, another dog yesterday chased a cat and today came home. The next dog is very fat and loves to eat bones.

The informant was then asked 'What dog came home today?' The most convenient way to answer this question is by using a relative clause 'The dog that yesterday chased the cat came home today'.

A similar methodology mainly adopted to elicit relative clauses in spoken languages with children makes use of puppets to enact the story presented. After acting out the story with the puppets, the grammar writer may ask the informant which referent he/she would like to be, or which referent does something in the story. The risk when using puppets is that, in answering the question, informants may avoid producing a relative clause by directly pointing to the relevant referent. A similar drawback is found in a variation of the task, in which the informant is presented pictures illustrating a story and asked questions about the story characters. Pictures involve a further risk: they might not adequately represent the story, and they may provide the informant with too much information that could be used to avoid producing relative clauses. A picture representing a man eating an apple, for instance, may lead the informant to answer the question 'What man would you like to be in this picture?' by simply saying 'the tall man' or 'the man with the apple' rather than 'the man who is eating the apple'.

Something more should be said for the elicitation of free relative clauses, that is, of relative clauses lacking an overt head. If a description of full relative clauses, that

is, of relative clauses with an overt head, in the target sign language already exists, the grammar writer may present one such construction to the informant. The grammar writer may then ask the informant to avoid producing the referent head in the aim of referring to a non-specific referent, to a generic one. An example of an elicitation technique of a free relative clause is provided below.

Elicitation context
We are at university. Students are taking a written exam. The professor tells them that they have an hour to complete the exam and says that no one can leave the room before completing the exam. He says 'the student that finishes the exam can go out'.

The informant is then asked the following questions: 'What should I say if I wanted to say that anyone, a generic person, once he/she has finished the exam can go out?' and 'Can I omit the referent *the student* in my sentence? If yes, what should I say?'

If, however, no description of relative clauses is available in the target sign language, the grammar writer is advised to follow the elicitation techniques illustrated above for eliciting full relative clauses first.

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3.5 Adverbial clauses

3.5.0 Definitions and challenges

3.5.0.1 Adverbial clauses

An adverbial clause is a constituent of a complex sentence which is sentential in form but fulfills an adverbial function such as expressing the time, location, manner, purpose, reason, circumstance, concession/contrast, substitution, addition, and condition of the main event (Sæbø 2011). These different adverbial functions are exemplified below, with the adverbial clauses underlined.

a. If you come home earlier, we can have dinner together. (condition)
b. You were not at home when I called you. (time)
c. The referee cancelled the game because it started to snow heavily. (reason)
d. Yesterday John met Mary where he had proposed to her. (location)
e. You should do it as I told you. (manner)
f. We stopped driving to work in order to save money. (purpose)
g. He got into the army by lying about his age. (circumstance)
h. Although she had not slept much the night before, she continued to work as hard. (concession)
i. You talk to my mother instead of talking to me. (substitution)
j. Besides waking me up in the middle of the night, he accused me of not caring about his feelings. (addition)

In addition to these, languages may have absolutive clauses where the adverbial function or the semantic relationship between the subordinate clause and the main clause is not marked overtly but understood from the context. This is exemplified below.

Having talked to her boss about the promotion, she went on vacation feeling relieved.

3.5.0.2 Ways of marking adverbial clauses

In most languages, adverbial clauses display typical properties of subordinate clauses [Syntax – Section 3.2] / subordinate clauses. In that respect, three ways of marking

adverbial clauses have been attested: with (i) subordinating morphemes, (ii) special (non-finite) verb forms, and (iii) specific word orders different from main clauses (Thompson et al. 2007: 238). In addition to these, it has been attested in many sign languages that adverbial clauses are marked by non-manual markers.

(i) Subordinating morphemes in adverbial clauses
These are also called subordinating conjunctions / conjunctions [Lexicon – Section 3.9.2] such as *when, while, as, if, before, after, until, because, since,* etc. They may function as complementizers, and thus may occur clause-initially in head-initial languages (a), and clause-finally in head-final languages (b).

a. **when** the rain stopped
b. ame ga agaru **to**
   rain NOM stop when (Japanese, adapted from Thompson et al. 2007: 238)

(ii) Special verb forms in adverbial clauses
The verbs in adverbial clauses may lack certain inflections such as tense or agreement that a verb would bear in a finite clause [Syntax – Section 3.2] / finite clause.

(iii) Word order
In some languages such as German and Swedish, the (internal) word order in adverbial clauses is different from the word order in an independent clause, usually following the general pattern of word order in subordinate clauses. In such cases, the positions of the verb, certain adverbs, and negation may be different from the positions of these constituents in main clauses (Thompson et al. 2007: 239–240). Compare the position of the finite verb in the German matrix clause (a) with that of the verb in the adverbial clause (b).

a. Maria **half** Peter.
   Mary helped Peter
b. ... weil Maria Peter **half**.
   ... because Mary Peter helped (German)

The (external) position of the adverbial clause may also be fixed in a sentence. In Korean, for instance, the adverbial clause typically precedes the main clause. In other languages, the position of the adverbial clause is determined by its role in linking the main clause that it modifies to the preceding discourse.

3.5.0.3 Types of adverbial clauses

The following types of adverbial clauses have been attested: conditional, temporal, locative, manner, purpose, reason, circumstantial, concessive, substitutive, additive, and absolutive (Thompson et al. 2007). Each type of adverbial clause is discussed in more detail in this chapter.

3.5.0.4 Adverbial clauses in sign languages

To date, no extensive work has been done on different types of adverbial clauses in sign languages with the exception of conditional clauses. However, researchers have observed that, for instance, temporal clauses and conditional clauses are marked with non-manual markers such as raised eyebrows, and that they tend to appear in sentence-initial position (Pfau & Quer 2010).

Moreover, it has been observed that some sign languages have subordinating morphemes in adverbial clauses. Auslan, for instance, has the following: BEFORE, AFTER, UNTIL, BECAUSE, THROUGH (meaning 'because'), IN-CASE, etc. (Johnston & Schembri 2007). Some of these subordinating morphemes may be borrowed from a spoken language, and thus, may be fingerspelled.

3.5.0.5 Methodological challenges

It should be noted that not every language uses subordination to express every adverbial function. Some may use coordination [Syntax – Section 3.1.1] / coordination or juxtaposition [Syntax – Section 3.1.1] / juxtaposition, for instance, for expressing a sequence of events (Thompson et al. 2007: 240). The following example is from Nupe (a Kwa language), where purpose is expressed by means of a serial verb construction. The second verb is not marked as being subordinate.

Musa	bé	lá	èbi
Musa	came	took	knife

'Musa came to take the knife.' (Nupe, Thompson et al. 2007: 242)

The grammar writer should be aware of the fact that the expression of an adverbial function such as expressing the time or the reason of an event may or may not be accomplished by means of subordination [Syntax – Section 3.2]. The following examples illustrate a causal relation between two sentences that is not expressed by adverbial modification.

Mary arrived late at work. The highway was closed for roadwork.
Peter hit the little boy and he started to cry.
Peter was tired. Therefore, he went home.

To describe a clause as an adverbial (i.e. subordinate) clause, the grammar writer may need to look for independent properties pointing to subordination.

Moreover, as noted above, as in many spoken languages, in sign languages a clause may be ambiguous between two types of adverbial clause, for example between a conditional and a temporal clause or between a reason and a purpose clause. In those cases, the context usually disambiguates between these types. The following example from ASL, for instance, is ambiguous between a temporal and a conditional clause. 're' stands for raised eyebrows.

re
RAIN NOT GO PICNIC
'If it rains, we won't go on the picnic.'
'When it rains, we won't go on picnics.' (ASL, Coulter 1979: 26)

Note finally that it has been observed that at least some sign languages may mark adverbial clauses only with non-manual markers. Manual signs such as the conditional marker IF may be optional. In the absence of manual signs marking the clause or sentence type, determining what the non-manual markers mark may be challenging. For instance, in some languages such as ASL a non-manual marker, brow raise, occurs both in polar questions and the antecedent of conditional sentences (Wilbur & Patschke 1999). If the sign language does not have any other means to mark a conditional sentence, such as a sign with the meaning 'if', then it may be difficult to differentiate between a polar question [Syntax – Section 1.2.1] / question-answer pair from a conditional sentence, as in 'Does it rain? I go to the cinema' versus 'If it rains, I go to the cinema' (Cecchetto 2012). However, as discussed by Barattieri (2006) for LIS, there are cases where a polar question-answer pair can be distinguished from a genuine conditional [Syntax – Section 3.5.1] / conditional sentence even in the absence of a specialized sign. One test is reversibility. While in some languages the order of protasis and apodosis can be switched ('If it rains, I go to the cinema' versus 'I go to the cinema if it rains'), if the answer precedes the question, the conditional meaning is lost ('I go to the cinema. Does it rain?'). In addition, the semantics of the conditional may make the question-answer strategy awkward. This happens in counterfactuals like 'Had Germany won the war, Europe would be very different' whose content cannot be expressed by an exchange like 'Did Germany win the war? Europe is very different'.

In BSL, as well, a conditional may look like a rhetorical question-answer pair [Syntax – Section 1.2.0.3]; however, there is a difference: there is a longer pause after the rhetorical question, and the eyebrows are higher and the head further back in the rhetorical question than in the simple conditional (Sutton-Spence & Woll 1999: 89).

Researchers have also observed that in some sign languages such as Israeli SL, topics, polar questions, and conditionals have similar non-manual markers since the latter have grammaticalized from the former (Janzen 1999; Pfau & Steinbach 2005). Again, in the absence of an obligatory topic or conditional marker, one would have to identify means other than non-manuals to differentiate between the two constructions.

3.5.1 Conditional clauses

A conditional sentence is a sentence consisting of two clauses, one of which (the *protasis* or *antecedent*) expresses a condition [Semantics – Section 14.2.1] whose

fulfillment or non-fulfillment is relevant to the degree of reality assigned to the other (the *apodosis* or *consequent*). For instance, in the following English example, the first clause is the protasis/antecedent clause, and the second clause is the apodosis/consequent clause:

If Mary comes home early today, we will go out for dinner.

We will use the terms *antecedent clause* and *consequent clause* in the rest of the discussion. However, bear in mind that these terms do not imply an obligatory order between the two clauses. In many languages the antecedent clause may not have to precede the consequent clause.

Conditional sentences can be subdivided into two main categories: predictive/central and non-predictive/peripheral (Dancygier 1998; Haegeman 1984, 2014). Predictive/central conditionals are those constructions in which the occurrence of the event expressed in the consequent clause depends on the fulfillment of the condition expressed in the antecedent clause, as in the following English example:

If you drop the glass, it will break.

In non-predictive/peripheral conditional constructions, on the other hand, the occurrence of the event expressed in the consequent clause does not depend on the fulfillment of the condition expressed in the antecedent clause, as the following English example illustrates:

If you are hungry, there is some pasta in the fridge.

Predictive/central conditionals can further be subdivided into two types: *open or factual conditionals*, in which the fulfillment of the condition is seen as a realistic possibility, and *remote* or *counterfactual conditionals*, in which the fulfillment of the condition is impossible, contrary to fact or at least unlikely. Examples of open conditionals in English would be:

a. If it rains tomorrow, the concert will be cancelled.
b. If John is at home, he must be sleeping.

The sentence (a) above, for instance, is an open conditional since there is a possibility that it rains tomorrow. An example of a counterfactual conditional would be:

If I were you, I would call her immediately.

The sentence above is a counterfactual conditional [Semantics – Section 14.2.1] since it is not possible that I can be you. Other examples of counterfactual conditionals are given below:

a. If she had apologized, I would have forgiven her.
b. If she came tomorrow, you would meet her.

Moreover, concessive conditional clauses may be introduced with a combination of a "contrary-to-expectation" morpheme such as *even* and a conditional complementizer *if*.

The antecedent clauses of conditional sentences in some languages are introduced with a conditional complementizer such as *if* in English, and/or the predicate of the antecedent clause can be marked with a conditional affix as in the Turkish example below:

gel-se
come-COND
'if he/she came' (Turkish)

The predicate of the consequent clause can also be marked for the conditional. For instance, in the Italian example, *io partirei* 'I would leave', *-ei* is the conditional affix added to the verb infinitive *partir(e)*.

Sign languages predominantly mark conditional sentences with non-manual marking, and they may have obligatory or optional complementizers corresponding to *if* in English. Manual signs such as IF may be optional. In the absence of manual signs marking the clause or sentence type, determining what the non-manual markers mark may be challenging.

3.5.1.1 The role of non-manual markers in conditional sentences

Conditionals in sign languages are typically accompanied by non-manual markers, especially with different facial expressions such as raised eyebrows, change in head orientation, or head movement. For instance, in BSL, a conditional clause can be marked by brow movement as well as head tilt and (optionally) the sign IF (Sutton-Spence & Woll 1999). In ASL, conditional clauses are marked with brow raise, head up and tilted, eye gaze shifts, and eye blinks (Baker & Padden 1978), and the final sign of the antecedent clause is accompanied by a head thrust (Liddell 1986). In the following examples, 'ht' stands for head thrust and 're' stands for raised eyebrows.

ht
re
TOMORROW RAIN PICNIC CANCEL
'If it rains tomorrow, no picnic.' (ASL, adapted from Liddell 1986: 248)

Different non-manual markers may differentiate between different semantic types of conditionals such as factual versus counterfactual. Each component of a conditional sentence, namely, the antecedent and the consequent clause, may also be associated with different non-manual markers.

For instance, in Israeli SL, factual conditionals are systematically associated with brow raise, and counterfactual conditionals with brow raise together with squint.

a. *factual conditional*

re

IF IX_3 INVITE-ME BIRTHDAY-PARTY OF-HIM IX_1 GO

'If he invites me to his party, I will go.'

b. *counterfactual conditional*

re

squint

IF IX_3 STOP SMOKE IX_3 LIVE

'If he had quit smoking, he would be alive.'

(Israeli SL, adapted from Dachkovsky 2005: 109, 113)

The following two visuals show the contrast between factual and counterfactual non-manual markers in Israeli SL: the antecedent of the factual conditional is marked with raised eyebrows, the antecedent of the counterfactual conditional with raised eyebrows together with squint.

factual conditional

counterfactual conditional

(Israeli SL, Dachkovsky 2008: 68f)

In the case of more than one non-manual marker in a conditional, each may have a different semantic/pragmatic function (Dachkovsky & Sandler 2009). The following is an example of a counterfactual conditional clause and the non-manual markers marking the antecedent and the consequence in Israeli SL. It has been argued that in Israeli SL counterfactuals, brow raise signals continuation and squint marks the information shared with the interlocutor.

squint

brow raise

head forward head up

head back

IF GOALKEEPER HE CATCH-BALL WIN GAME WIN

'If the goalkeeper had caught the ball, (the team) would have won the game.'

(Israeli SL, Dachkovsky & Sandler 2009: 292)

Moreover, the antecedent clause may be followed by an eye blink and a change in head orientation (Pfau & Quer 2010: 391).

It is important to note, as we did above under "Methodological challenges" [Syntax – Section 3.5.0.5], that a non-manual marker may not be uniquely marking conditionals. For instance, it has been shown for ASL that brow raise occurs in a variety of constructions in addition to conditionals, namely topics [Syntax – Section 2.3.3.3] / topics [Pragmatics – Section 4.2;] / topics [Pragmatics – Section 4.3.2], relative clauses [Syntax – Section 3.4], yes/no questions [Syntax – Section 1.2.1], etc. (Wilbur & Patschke 1999).

3.5.1.2 Factual conditionals

In factual conditionals, the fulfillment of the condition is seen as a realistic possibility. The following is an example of a factual conditional from Israeli SL:

re
IF IX_3 INVITE-ME BIRTHDAY-PARTY OF-HIM IX_1 GO
'If he invites me to his party, I will go.'
(Israeli SL, adapted from Dachkovsky 2008: 72)

3.5.1.2.1 Non-manual markers and their properties in factual conditionals

In many sign languages studied so far, antecedents of factual conditionals are marked with raised eyebrows together with other non-manual markers such as different positions of the head, eyegaze shifts, and eyeblinks.

In this section, we advise the grammar writer to:

- List the non-manual markers marking the antecedent and the consequent clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with the factual conditional clause, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.1.2.2 Manual conditional signs in factual conditionals

ASL, for instance, has the optional manual conditional markers I-F and SUPPOSE. LIS signers use a variety of optional signs such as IF, EXAMPLE, IN-CASE, OCCASION. The language may also have a manual sign in the consequent clause such as THEN.

In this section, we advise the grammar writer to list the manual conditional signs, their distributions and possible occurrences, and also indicate their obligatoriness/optionality.

3.5.1.2.3 Order of the components of the factual conditional clause

We recommend that the grammar writer check whether there is a strict order of the antecedent and the consequent clause, or whether can they be used in any order. For example, see the two possibilities attested in English below:

I will fire him if he comes to work late again.
If he comes to work late again, I will fire him.

We also advise the grammar writer to check whether the different orders have different pragmatic functions and whether they can be used in similar contexts or require different kinds of contexts.

3.5.1.3 Counterfactual conditionals

In *counterfactual conditionals*, the fulfillment of the condition is impossible, contrary to fact, or at least unlikely. The following is an example of a counterfactual conditional from Israeli SL:

re
squint
IF IX_3 STOP SMOKE IX_3 LIVE
'If he had quit smoking, he would be alive.'
(Israeli SL, adapted from Dachkovsky 2008: 74)

3.5.1.3.1 Non-manual markers and their properties in counterfactual conditionals

In this section, we advise the grammar writer to:

- List the non-manual markers marking the antecedent and the consequent clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with the counterfactual conditional clause, if there is more than one .
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.1.3.2 Manual conditional signs in counterfactual conditionals

In this section, we advise the grammar writer to list the manual conditional signs, their distributions and possible occurrences and also indicate their obligatoriness/optionality. Note that the language under analysis may employ the same manual conditional sign, such as IF, for all types of conditional clauses.

3.5.1.3.3 Order of the components of the counterfactual conditional clause

We advise the grammar writer to check whether there is a strict order of the antecedent and the consequent clause, or whether can they be used in any order. For example, see the two possibilities attested in English below:

I would fire him if he came to work late every day.
If he came to work late every day, I would fire him.

We also advise the grammar writer to check whether the different orders have different pragmatic functions and whether they can be used in similar contexts or require different kinds of contexts.

3.5.1.4 Concessive conditionals

A typical example of a concessive conditional in English is a clause with *even if*:

Even if he apologizes, I will not forgive him.

3.5.1.4.1 Non-manual markers and their properties in concessive conditionals

In this section, we advise the grammar writer to:

- List the non-manual markers marking the antecedent and the consequent clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with the concessive conditional clause, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.1.4.2 Manual conditional signs in concessive conditionals

In this section, we recommend that the grammar writer list the manual signs for concessive conditionals, their distributions and possible occurrences and also indicate their obligatoriness/optionality. In this type of conditional clause, the language may combine two signs with the meanings ‘even’ and ‘if’, or there may be a single sign expressing the meaning ‘even if’.

3.5.1.4.3 Order of the components of the concessive conditional clause

We advise the grammar writer to check whether there is a strict order of the antecedent and the consequent clause, or whether can they be used in any order. For example, see the two possibilities attested in English below:

Even if he apologizes, I will not forgive him.
I will not forgive him even if he apologizes.

3.5.1.5 Non-predictive/peripheral conditionals

Languages have constructions that have the form of canonical conditional sentences (e.g. with a conditional complementizer, conditional marking on the verb, or conditional non-manual marking) but do not actually express a conditional link between the two clauses. These are called *non-predictive/peripheral* conditionals. The grammar writer should be aware of this difference, and of the fact that the difference in meaning may correlate with difference in form, for instance, in the form of the absence/presence of a complementizer, non-manual marking, word order restrictions, etc. We provide more examples of this kind from English below:

a. If Mary called you, (then) she must have forgiven you.
b. If he is such a good boss, why does he force his employees to work on weekends?
c. If I may so, you are overreacting.
d. If you were at the meeting, did the board discuss my proposal?
e. If you do not have time now, we can talk tomorrow.
f. He will have to work very hard to improve his situation, if you know what I mean.
g. He trapped two mongeese, if that's how you make a plural of "mongoose".
h. Grandma is feeling lousy, if I may put it that way. (Dancygier 1998: 104)

3.5.1.5.1 Non-manual markers and their properties in non-predictive/peripheral conditionals

In this section, we advise the grammar writer to:

- List the non-manual markers marking the antecedent and the consequent clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with the non-predictive/peripheral conditional clause, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.1.5.2 Manual conditional signs in non-predictive/peripheral conditionals

In this section, we advise the grammar writer to list the manual conditional signs, their distributions and possible occurrences, and also indicate their obligatoriness/optionality. Note that the language under analysis may employ the same manual conditional sign, such as IF, for all types of conditional clauses.

3.5.1.5.3 Order of the components of the non-predictive/peripheral conditional clause

We advise the grammar writer to check whether there is a strict order of the antecedent and the consequent clause, or whether can they be used in any order.

3.5.1.6 Other conditional constructions

Some languages have what is sometimes called "Imperative and Declarative (IaD)" [Syntax – Section 1.3.9] constructions. These constructions express conditionality by means of an imperative clause followed by a declarative, as in example (a); this example is almost identical in meaning to example (b).

a. Don't do your homework and you will be grounded.
b. If you don't do your homework, you will be grounded.

3.5.2 Temporal clauses

This type of adverbial clause expresses a temporal relationship [Semantics – Section 14.2.2] between two clauses. The time of the event in the adverbial clause can be before, after or simultaneous with the time of the event [Semantics – Chapter 1] in the main clause. The morphemes that express this relationship can be subordinating conjunctions such as English *when, while, as, before, after, since, until, now that, once, as soon as*, etc. or verbal affixes, as in the Turkish example below (Thompson et al. 2007: 246):

Sen	gel-ince	ben	gid-er-im.
you	come-when	I	go-AORIST-1SG

'I will go when you come.' (Turkish)

The adverbial clause can also be in the form of a relative clause:

By the time we got back, the steaks were all gone. (Thompson et al 2007: 246)

Uyan-dığ-ın	zaman	ben-i	ara.
wake-REL.PRT.-2SG	time	I-ACC	call

'Call me when you wake up.' (Lit. 'Call me at the time when you wake up.')
(Turkish)

In some languages, a clause with a certain subordinating morpheme, such as for example *since* in English, may be ambiguous between a temporal and reason clause.

Moreover, in some languages, *before*-clauses contain a negative morpheme with no negative meaning, as illustrated by the following Turkish example.

Sen	gel-me-den	(önce)	yemeğ-e	başla-dı-k.
you	come-NEG-ABL	before	dinner-DAT	start-PAST-1PL

'We started eating before you came.' (Turkish)

In clauses expressing simultaneity of the events, one of the events is usually foregrounded / foregrounded [Pragmatics – Section 5.3] while the other is backgrounded / backgrounded [Pragmatics – Section 5.3]. This contrast may be marked in a number of ways in different languages. The language may use a marker explicitly signalling

simultaneity in the form of an affix, for instance, or the verb in the adverbial clause may be marked with a continuative / continuative [Semantics – Section 2.1.2], durative / durative [Semantics – Section 2.1.2], or imperfective / imperfective [Semantics – Section 2.1] aspect.

While I was doing the dishes, my roommate tidied up the living room.

In the English example above, both the subordinating morpheme *while* and the progressive aspect of the verb *was doing* express simultaneity.

The following is an example of a temporal clause from ASL, marked by the non-manual raised eyebrows.

re
RAIN NOT GO PICNIC
'When it rains, we won't go on picnics.' (ASL, Coulter 1979: 26)

3.5.2.1 Internal structure of temporal clauses

We recommend that the grammar writer discuss whether the temporal clauses are in the form of a (free) relative clause [Syntax – Section 3.4]. If yes, describe what the possible head nouns are; these may be a sign meaning 'time', an empty head with the interpretation of 'time', or some other noun that expresses time.

3.5.2.2 Manual signs marking subordination in temporal clauses

If the temporal clauses contain subordinating morphemes such as WHEN, WHILE, BEFORE, AFTER, UNTIL, etc., list them. Note that there may be sign languages where these are fingerspelled.

3.5.2.3 Other markers of subordination in temporal clauses

We recommend that the grammar writer indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.2.4 Non-manual markers in temporal clauses

Researchers have observed that time/temporal clauses are marked with non-manual markers in sign languages. For instance, ASL (a), DGS, and Israeli SL (b) mark these clauses with raised eyebrows (Pfau & Quer 2010).

a. re
RAIN NOT GO PICNIC
'When it rains, we won't go on picnics.' (ASL, Coulter 1979: 26)

re

b. I GO-OUT HOUSE, MEET NEIGHBOR
'When I went outside, I met a neighbor.'

(Israeli SL, Dachkovsky & Sandler 2009: 300)

However, such clauses may be ambiguous as to whether they are temporal or conditional. So, the ASL example above can also be interpreted as 'If it rains, we won't go on the picnic'. The grammar writer should therefore check whether the same ambiguity occurs in the language s/he is describing.

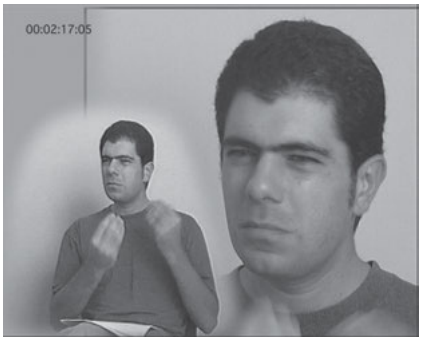
Moreover, a sign language may additionally mark the remoteness of the past of the time of the main event by a different non-manual marker that in general may be used by signers to indicate to the addressee that the information given by the signer may not be easily accessed by him/her. For example, in Israeli SL this is expressed by squint (i.e. tensed eyes).

squint

GAME YOU LOSE DISAPPOINTED YOU
'When you missed the game, were you disappointed?'

(Israeli SL, Dachkovsky 2005: 123)

The following figure shows the non-manual squint marking remote past in temporal clauses in Israeli SL:



(Israeli SL, Dachkovsky 2008: 76)

In this section, we advise the grammar writer to:

- List the non-manual markers marking temporal clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with temporal clauses, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.2.5 Position of the temporal clause with respect to the main clause

In this section, we recommend that the grammar writer describe the position of the temporal clause with respect to the main clause.

3.5.2.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by the visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, for instance, by means of buoys / buoys [Lexicon – Section 1.2.3] / buoys [Pragmatics – Section 2.2.3], and if yes, whether one of the events expressed shows any properties of subordination.

3.5.3 Locative clauses

Locative clauses express the location of the main event. They may have a subordinating morpheme such as *where* in the English example in (a), or may be in the shape of a relative clause, as in the Turkish example in (b):

a. Yesterday John met Mary *where* he had proposed to her.

b. Bilgisayar-ım-ı yemek ye-diğ-im *yer-de* bırak-tı-m.
computer-1POSS-ACC food eat-NOMIN-1POSS place-LOC leave-PAST-1SG
'I left my computer at the place/where I ate.' (Turkish)

Because of the modality-specific use of the signing space [Pragmatics – Chapter 8], it is very likely that sign languages make use of modality-specific means such as the topographic signing space [Pragmatics – Section 8.1.2] to express locative relations [Semantics – Section 14.2.3].

3.5.3.1 Internal structure of locative clauses

We recommend that the grammar writer discuss whether the locative clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are; these may be a sign meaning 'place', an empty head with the interpretation of 'place', or some other noun that expresses location.

3.5.3.2 Manual signs marking subordination in locative clauses

If the locative clauses contain subordinating morphemes such as those with the meaning 'where', list them. Note that there may be sign languages where these are fingerspelled.

3.5.3.3 Other markers of subordination in locative clauses

We recommend that the grammar writer indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.3.4 Non-manual markers in locative clauses

In this section, we advise the grammar writer to:

- List the non-manual markers marking locative clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with locative clauses, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.3.5 Position of the locative clause with respect to the main clause

In this section, we advise the grammar writer to describe the position of the locative clause with respect to the main clause.

3.5.3.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages (e.g. by classifier constructions). The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.4 Manner clauses

Manner [Semantics – Section 14.2.4] clauses express the way the event in the main clause is realized. They may contain a subordinating morpheme as in the English examples below:

a. Carry this *as* I told you.
b. Mary is carrying this *as* Peter told her/as Peter did.
c. Peter eats rice *as* I eat pasta. (Thompson et al. 2007: 249)

They may also be in the shape of a relative clause:

Carry this *the way* (that) I told you. (Thompson et al. 2007: 249)

Note that in the examples above, the material in the main clause *carry this* is understood in the manner clause, but it is elided / elided [Syntax – Section 2.5]: 'Carry this the way I told you ~~to carry this~~.'

In some languages such as Swahili, the head noun in the relative clause may be null, but is understood as 'the way'.

Sema kama a-sema-vyo yeye
say as SUBJ-say-REL he
'Say it as he does.' (Swahili, Thompson et al. 2007: 249)

In some languages, manner adverbial clauses may be in the form of a postpositional clause such as in the Turkish example below which contains the postposition *gibi* 'like':

Sana söyle-diğ-im gibi yap
you.DAT say-NOMIN-1POSS like do
'Do as I told you.' (Turkish)

3.5.4.1 Internal structure of manner clauses

We advise the grammar writer to discuss whether the manner clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are; these may be a sign meaning 'way', an empty head with the interpretation of 'way', or some other noun that expresses manner.

3.5.4.2 Manual signs marking subordination in manner clauses

If the manner clauses contain subordinating morphemes, list them. Note that there may be sign languages where these are fingerspelled.

3.5.4.3 Other markers of subordination in manner clauses

We recommend that the grammar writer indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.4.4 Non-manual markers in manner clauses

In this section, we advise the grammar writer to:

- List the non-manual markers marking manner clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with manner clauses, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.4.5 Position of the manner clause with respect to the main clause

In this section, we advise the grammar writer to describe the position of the manner clause with respect to the main clause.

3.5.4.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.5 Reason clauses

Reason clauses express a reason [Semantics – Section 14.2.5] for the main event (Thompson et al. 2007: 250–255). They may contain subordinating morphemes such as *because, since, as, for* in English.

I called you *because* I missed you.

Some sign languages also use subordinating morphemese such as REASON in reason clauses.

OFTEN BORROW CAR SUNDAY FROM-TO TUESDAY IX_1 PERIOD-FROM-TO
REASON WORK MONDAY TUESDAY
'I often borrow the car from Sunday through Tuesday because I work on Monday and Tuesday.' (NSL, adapted from Vogt-Svendsen & Bergman 2007: 230)

Reason clauses may be marked with special morphology on the main verb. In the Turkish example below, the nominalized verb is marked with ablative case, which typically marks source.

Çok	acık-tığ-ım-dan	kalan	pizza-yı	ye-di-m.
very	get.hungry-NOMIN-1POSS-ABL	remaining	pizza-ACC	eat-PAST-1SG

'I ate the remaining pizza since I got hungry.' (Turkish)

In Turkish, this type of clause may be in the form of a postpositional clause, as well:

Çok	acık-tığ-ım	için …
very	get.hungry-NOMIN-1POSS	for

'Since/for I got very hungry …' (Turkish)

Note that reason clauses may be marked by the same marker as purpose clauses, which express the purpose [Semantics – Section 14.2.6] of the main event. There are many languages that use the same morpheme to express both reason and purpose.

This could be because both types of clauses express some sort of an explanation. However, the event expressed in the purpose clause is unrealized at the time of the main event, whereas the event in the reason clause may or may not be realized. Thus, a language may mark the unrealized property of the purpose clause in some way. Good candidates for such marking may be subjunctive, irrealis, or future morphology on the verb. For illustration, consider the following examples from Kanuri (a Nilo-Saharan language of Africa).

a. *Purpose*
Biska Monguno-ro lete-ro tawange ciwoko
yesterday Mongunu-to go.VN-ro early.1SG get.up.1SG.PAST
'Yesterday I got up early to go to Monguno'

b. *Reason*
Biska Monguno-ro lengin-dɵ-ro tawange
yesterday Mongunu-to go.1SG.IMPERF-DEF-RO early.1SG
ciwoko
get.up.1SG.PAST
'Yesterday I got up early because I was going to Monguno'

(Kanuri, Thompson et al. 2007: 251)

Purpose and reason clauses differ in two ways in these examples: (i) the verb in the purpose clause (a) is a non-finite verbal noun (VN), but the verb in the reason clause (b) is finite, and (ii) the verb in the reason clause (b) has definite marking, expressing that the event is an asserted fact. The purpose clause in (a) has no such marking since the event is unrealized.

3.5.5.1 Internal structure of reason clauses

We recommend that the grammar writer discuss whether the reason clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are; these may be a sign meaning 'reason', an empty head with the interpretation of 'reason', or some other noun that expresses reason.

3.5.5.2 Manual signs marking subordination in reason clauses

If the reason clauses contain subordinating morphemes, list them. Note that there may be sign languages where these are fingerspelled.

3.5.5.3 Other markers of subordination in reason clauses

We recommend that the grammar writer indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.5.4 Non-manual markers in reason clauses

In this section, we advise the grammar writer to:

- List the non-manual markers marking reason clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with reason clauses, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.5.5 Position of the reason clause with respect to the main clause

In this section, we advise the grammar writer to describe the position of the reason clause with respect to the main clause.

3.5.5.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.6 Purpose clauses

Purpose clauses express the purpose [Semantics – Section 14.2.6] of the main event (Thompson et al. 2007: 250–255). They may contain subordinating morphemes such as *in order to*..., *so that* ... in English.

We stopped driving to work *in order to* save money.

They may be in the form of postpositional clauses, as in the following Turkish examples:

a. Havaalanın-a git-mek üzere yola çık-tı-k.
   airport-DAT go-INF upon leave-PAST-1PL
   'We left to go to the airport.' (Turkish)

b. Berkin ekmek al-mak için ev-den çık-tı.
   Berkin bread buy-INF for home-ABL leave-PAST
   'Berkin left home to buy bread.' (Turkish)

In some languages such as Tamil and Turkish, purpose clauses are marked with dative, benefactive or allative ('direction to') case.

Berkin ekmek al-ma-ya git-ti.
Berkin bread buy-NOMIN-DAT go-PAST
'Berkin went to buy bread.' (Turkish)

Some languages have a special subordinating morpheme for negative purpose clauses, such as *lest* in English:

Lest he spear me, I danced about. (adapted from Thompson et al. 2007: 253)

There are languages that use the same morpheme to express both reason and purpose (for similarities and differences between reason and purpose clauses, see the previous section [Syntax – Section 3.5.5.]).

3.5.6.1 Internal structure of purpose clauses

We recommend that the grammar writer discuss whether the purpose clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are; these may be a sign meaning 'purpose', an empty head with the interpretation of 'purpose', or some other noun that expresses purpose.

3.5.6.2 Manual signs marking subordination in purpose clauses

If the purpose clauses contain subordinating morphemes, list them. Note that there may be sign languages where these are fingerspelled.

3.5.6.3 Other markers of subordination in purpose clauses

We recommend that the grammar writer indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.6.4 Non-manual markers in purpose clauses

In this section, we advise the grammar writer to:

- List the non-manual markers marking purpose clauses. Also, indicate the spreading domains and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with the purpose clause, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.6.5 Position of the purpose clause with respect to the main clause

In this section, the grammar writer should describe the position of the purpose clause with respect to the main clause.

3.5.6.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.7 Concessive clauses

Concessive clauses are those that express a concession [Semantics – Section 14.2.7], against which the proposition in the main clause is contrasted (Thompson et al. 2007: 262). Concessive clauses are expressed with a subordinator such as *although, even though, except that, despite the fact that, in spite of the fact that, no matter what, whoever/whatever/ whenever/ wherever,* etc. in English. See the following examples for illustration.

a. *Although* she had not slept much the night before, she continued to work as hard.
b. *Even though* the landlord had lowered the rent, they still could not afford it.
c. *Except that/despite the fact that/in spite of the fact that* he had trouble with one of his classmates, he liked his school.
d. *No matter what* I said, she still left the city.
e. *Whatever* the boss thinks, I will hire this candidate.

3.5.7.1 Internal structure of concessive clauses

We recommend that the grammar writer discuss whether the concessive clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are.

3.5.7.2 Manual signs marking subordination in concessive clauses

If concessive clauses contain subordinating morphemes, list them. Note that there may be sign languages where these are fingerspelled.

3.5.7.3 Other markers of subordination in concessive clauses

The grammar writer should indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.7.4 Non-manual markers in concessive clauses

In this section, the grammar writer is advised to:

- List the non-manual markers marking concessive clauses. Also, indicate the spreading domains, and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with concessive clauses, if there is more than one.

– Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.7.5 Position of the concessive clause with respect to the main clause

In this section, we advise the grammar writer to describe the position of the concessive clause with respect to the main clause.

3.5.7.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.8 Substitutive clauses

Some languages use subordinating morphemes expressing substitution [Semantics – Section 14.2.8] such as *instead of* and *rather than* in English (Thompson et al. 2007 263).

You talk to my mother *instead of* talking to me.

There are other languages that use a construction or a morpheme with the meaning 'in place of'. Similar to *before*-clauses, one can expect a non-finite verb, a morpheme expressing the unrealized nature of the event or a negative marker in the adverbial clause.

3.5.8.1 Internal structure of substitutive clauses

The grammar writer should discuss whether the substitutive clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are.

3.5.8.2 Manual signs marking subordination in substitutive clauses

If the substitutive clauses contain subordinating morphemes, list them. Note that there may be sign languages where these are fingerspelled.

3.5.8.3 Other markers of subordination in substitutive clauses

The grammar writer should indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.8.4 Non-manual markers in substitutive clauses

In this section, the grammar writer is advised to:

- List the non-manual markers marking substitutive clauses. Also, indicate the spreading domains, and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with the substitutive clause, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

Note that this type of clause may be marked with a non-manual marker expressing the unrealized nature of the event.

3.5.8.5 Position of the substitutive clause with respect to the main clause

In this section, the grammar writer should describe the position of the substitutive clause with respect to the main clause.

3.5.8.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.9 Additive clauses

Some languages have subordinating morphemes that express one state of affairs in addition [Semantics – Section 14.2.9] to another (Thompson et al. 2007: 264). These can have meanings such as 'besides' and 'in addition'. Whether or not the clause in question is a subordinate adverbial clause or an independent clause would have to be identified independently.

Besides waking me up in the middle of the night, he accused me of not caring about his feelings.

In the English example above, the non-finite / non-finite [Syntax – Section 3.2.0.4] form of the verb in the adverbial clause – a gerundial form in this case – signals that it is subordinate to the main clause.

3.5.9.1 Internal structure of additive clauses

The grammar writer should discuss whether the additive clauses are in the form of a (free) relative clause. If yes, describe what the possible head nouns are.

3.5.9.2 Manual signs marking subordination in additive clauses

If the additive clauses contain subordinating morphemes, list them. Note that there may be sign languages where these are fingerspelled.

3.5.9.3 Other markers of subordination in additive clauses

The grammar writer should indicate whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.9.4 Non-manual markers in additive clauses

In this section, the grammar writer is advised to:

- List the non-manual markers marking additive clauses. Also, indicate the spreading domains, and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with additive clauses, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.9.5 Position of the additive clause with respect to the main clause

In this section, we recommend that the grammar writer describe the position of the additive clause with respect to the main clause.

3.5.9.6 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

3.5.10 Absolutive clauses

An absolutive clause [Semantics – Section 14.2.10] is one which does not have a specific subordinating morpheme expressing the relationship between it and the main clause, but has some sort of marking signalling that it is a subordinate clause. This may be a general subordinator or a non-finite verb form. The relationship between the two clauses is inferred from the context (Thompson et al. 2007: 264).

a. Having talked to her boss about the promotion, she went on vacation feeling relieved.
b. Seeing me in my wedding gown, my father could not restrain his tears.

In the English examples above, even though there is no subordinating morpheme, the adverbial clause is understood to be subordinate because the verb is in the non-finite/gerundial form.

3.5.10.1 Markers of subordination in absolutive clauses

By definition, absolutive clauses are not expected to involve subordinating morphemes with specific meanings. However, the grammar writer should check whether the verb in the clause shows any properties of subordination such as lack of tense, aspect, or agreement marking.

3.5.10.2 Non-manual markers in absolutive clauses

In this section, we advise the grammar writer to:

- List the non-manual markers marking absolutive clauses. Also, indicate the spreading domains, and obligatoriness/optionality.
- Identify the function of each non-manual marker associated with absolutive clauses, if there is more than one.
- Mention whether these non-manual markers also occur in other types of adverbial clauses. If so, discuss whether the clauses are ambiguous or whether there are ways to differentiate between the two.

3.5.10.3 Position of the absolutive clause with respect to the main clause

In this section, the grammar writer should describe the position of the absolutive clause with respect to the main clause.

3.5.10.4 Simultaneous expression of the main event and the adverbial clause

Thanks to the means provided by visual modality, that is, the availability of two manual articulators, two events may be expressed simultaneously in sign languages. The grammar writer should check whether this is possible, and if yes, whether one of the events expressed shows any properties of subordination.

Elicitation materials

A picture or movie description may be used to elicit adverbial clauses.

Needless to say, isolated conditional sentences would be hard to elicit in specifically designed elicitation tasks, and guiding informants to discuss issues which would lead them to produce conditional sentences might result in more frequent and natural use of these constructions.

In one study (Dachkovsky & Sandler 2009), the researchers wrote target sentences in the spoken language, and to avoid the listing effect, they embedded them in mini-discourses in order to provide a controllable context and to minimize extraneous associations that a signer might have had in his/her mind. In order to reduce both artificiality and interference from the spoken language, they asked the informants to read the discourse and the target sentence, internalize its meaning, and create a corresponding sign language sentence, which they conveyed to another signer.

In another study (Checchetto et al. 2011), two signers were involved in explaining the rules of a game such as chess. One signer does not know or at least is asked to pretend not to know the rules. The other one explains the rules. They come up with sentences such as 'If you do this, then you win'.

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3.6 Comparative clauses

3.6.0 Definitions and challenges

3.6.0.1 What is a comparative clause?

In semantic or cognitive terms, comparison [Semantics – Section 8.1] can be defined as a mental act by which two entitites are assigned a position on a scale. If the positions on the scale are different, then we speak of comparison of inequality, which finds its linguistic encoding in comparative constructions. If they are the same, we speak of comparison of equality, which is is realized as equative constructions.

The comparative construction essentially involves three things: a predicative scale, which is usually encoded as a gradable predicate such as 'tall', and two entities: the first term of comparison and the second term of comparison. They can be either simple (two NPs) or complex.

3.6.0.2 Types of comparatives

Typologically, there are four types of comparative constructions attested in the world's languages (Stassen 2013; also see Dixon 2008a). Since very little is known about comparatives in sign languages, the grammar writer is strongly encouraged to refer to the typology briefly sketched below in order to describe the relevant phenomena.

(i) Exceed comparatives

In 'exceed' comparatives, the comparison is established by a verb expressing a difference on a scale, such as 'exceed' in English. The first term of comparison is typically the subject of the verb, while the second term of comparison is its object. The comparative predicate appears as a secondary predicate on these arguments. An example from Duala (Cameroon) is given below.

Nin	ndabo	e	kolo	buka	nine.
this	house	it	big	exceed	that

'This house is bigger than that.'

(Duala, Ittman 1939: 187, cited in Stassen 2013)

In the example above, *nin ndabo* 'this house' is the first term of comparison and the subject of the verb *buka* 'exceed', *nine* 'that' is the second term of comparison, and *kolo* 'big' is the comparative predicate.

(ii) Location comparatives

In location comparatives, the second term of comparison is typically introduced by some preposition or other marker expressing a spatial meaning, which can either mark an origin ('from'), a target ('to'), or a location ('at'). The comparison is directly

established through this spatial relation. An example from Mundari (India) is given below.

sadom-ete hati maranga-e
horse-from elephant big-3SG.PRES
'The elephant is bigger than the horse.'
(Mundari, Hoffmann 1903: 110, cited in Stassen 2013)

(iii) Conjoined comparatives
In so-called conjoined comparatives, the comparative construction usually consists of two structurally independent clauses, one of which contains the first term of comparison, and the other containing the second term of comparison. Furthermore, the two clauses show a structural parallelism, in that the two terms of comparison have the same grammatical function in the two conjoined clauses. If, for example, the first term of comparison is the grammatical subject in its clause, the second term of comparison will also have subject status in its clause.

The direction of the comparison, that is, whether it is a superiority ('more') or an inferiority ('less') comparison, arises from the meaning of the two predicates employed. An example is given below from Amele, a language spoken in Nort-Eastern Papua New Guinea.

Jo i ben jo eu nag
house this big house that small
'This house is bigger than that house.'
(Amele, Roberts 1987: 135, cited in Stassen 2013)

(iv) Subordinated comparatives
In subordinated comparatives, the comparative construction is biclausal as well, but the comparative clause is subordinate, not conjoined to the main clause. The comparison is provided by a modifier of the noun/adjective/adverb that is compared, such as *more*, or *less*. In spoken languages, the comparative clause is usually introduced by a specific particle or complementizer, and the comparative clause can be either full-fledged or elided. The English *than*-comparative is an instance of this subordinated comparative.

John is taller than Mary (is).

In this type, the comparative clause can be shown to block extraction and to behave in many respects like a (free) relative clause [Syntax – Section 3.4.0.2].

In many languages, comparatives of equality, or equatives, differ greatly from comparatives of inequality. In English, for example, they display a correlative structure: a biclausal construction with a correlative word establishing the comparison. An example is given below.

John is **as** tall **as** Mary (is).

3.6.0.3 Comparatives in sign languages

As we said above, very little is known about comparatives in sign languages. A partial exception is LIS, where a comparative construction has been described by Aristodemo & Geraci (2015). An example of such a construction is given below.

MARIA TALL GIANNI (TALL)-SCALE-MORE
'Gianni is taller than Maria.' (LIS, Aristodemo & Geraci 2015)

Here the comparative morpheme is incorporated into the predicate, which is thus repeated twice in what looks like a conjoined comparative: there seem to be two structurally independent clauses, one of which contains the first term of comparison, and the other containing the second term of comparison. Furthermore, the two clauses show a structural parallelism, in that the two terms of comparison have the same grammatical function. The direction of the comparison, that is, whether it is a superiority ('more') or an inferiority ('less') comparison, arises from the meaning of the two predicates employed (with the possible complication of the morpheme incorporation).

Another exception is TİD, where comparison can also be expressed through a conjoined comparative. Interestingly, however, this is not the only option in that sign language. TİD is reported to also use the locative strategy, as illustrated below.

IX_{3a} RED COAT$_{3a}$ IX_{3b} BLACK COAT$_{3b}$ $_{3a}\text{IX}_{3b}$ EXPENSIVE
'The black coat is more expensive than the red coat.'
(TİD, Kaşıkara, Özsoy & Özparlak 2015)

Here the compared adjective EXPENSIVE is only expressed once, while the two terms of comparison are located in the signing space. Comparison is expressed by moving an indexical sign ($_{a}\text{IX}_{b}$) from the location of the first argument to that of the second term of comparison.

3.7 Comparative correlatives

3.7.0 Definitions and challenges

Comparative correlatives are biclausal constructions believed to be syntactically coordinated and semantically involving subordination of the first clause to the second clause. Two patterns of comparative correlatives are attested across languages: a symmetric pattern featuring the presence of a modifier, such as *more*, in both clauses (a), and an asymmetric pattern where the verb is reduplicated in the first clause but not in the second clause where an optional marker of quantity is present; the latter strategy is illustrated by the Japanese example in (b), where *youku* functions as the optional marker of quantity.

a. The more Gianni runs, the more he sweats.
b. Hashire-ba hashiru-hodo, Gianni-wa (youku) taberu
run-ba run-DEGREE, Gianni-NOM (a lot) eat
'The more Gianni runs, the more he eats.' (Japanese, Geraci 2007: 69)

The interpretation of comparative correlatives is very similar to conditional clauses [Semantics – Section 14.2.1] / conditional clauses [Syntax – Section 3.5.1], however, unlike conditional clauses, by changing the order of the two clauses, the interpretation of the structure changes accordingly.

LIS displays both patterns of comparative correlatives: in the symmetric pattern, the equivalent of the English comparative correlative in (a) is produced through the reduplication of the verbs both in the first and in the second clause, and the same non-manuals mark both clauses, as shown in (c).


5_3.7.0_1_LIS_gianni run-reduplication, sweat-reduplication

squint squint
re re
c. GIANNI RUN-reduplication, SWEAT-reduplication
'The more Gianni runs, the more he sweats.' (LIS, Geraci 2007: 52)

In the asymmetric variant, the verb is reduplicated only in the first clause while the second clause displays the presence of the verbal modifier MORE, and the non-manual markers are produced only over the first clause, as shown in (d).

re
squint
d. GIANNI RUN-reduplication, SWEAT MORE
'The more Gianni runs, the more he sweats.' (LIS, Geraci 2007: 52)

We advise the grammar writer to verify the presence of one or more variants of comparative correlatives in the target sign language. He/she should also be aware that comparative correlatives might be sensitive to the type of predicate or modifier involved in the construction. In both variants of comparative correlatives displayed by LIS, while atelic verbs trigger reduplication of the verb (c), stative verbs yield a different verbal morphology, namely intensification, whereby the movement of the sign for the predicate or modifier is articulated slower and more tensed (e,f).


5_3.7.0_2_LIS_sea deep-intensification, cold increase-reduplication

e. SEA DEEP-intensification, COLD INCREASE-reduplication
'The deeper the sea, the colder the water.'
f. HAIR LONG-intensification, TIME DRY MORE
'The longer the hair, the more time to dry them.' (LIS, Geraci 2007: 71)

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Chapter 4 The noun phrase

4.0 Introduction

4.0.1 What is a noun phrase?

A **noun phrase** is a single noun [Lexicon – Section 3.1], a pronoun [Lexicon – Section 3.7] or a group of words containing a noun or a pronoun as its head that function together as a constituent [Syntax – Section 2.0.1] of a sentence. The typical syntactic function of a noun phrase in a sentence is to express the subject, direct object, indirect object of the verb or the object of a preposition/postposition [Lexicon – Section 3.8]. As the argument of the predicate, each of the noun phrases bears the relevant semantic relation by which it is associated with the verb of the sentence.

With respect to the internal structure of a noun phrase, the head noun can be modified by a determiner [Lexicon – Section 3.6], one or more adjectives [Lexicon – Section 3.4], quantifiers [Lexicon – Section 3.10.2], or a numeral [Lexicon – Section 3.10.1]. A noun phrase can also contain a complex modifier called a relative clause / relative clause [Syntax – Section 3.4]. In a noun phrase the head noun can be modified with any one or more or none of these constituents. The following is an example of a noun phrase in English, where the only obligatory constituent is the head noun *friends*.

some of our old *friends* who are not living in this town anymore

Nouns are typically classified as proper nouns (or proper names) [Lexicon – Section 3.1.2], e.g. *John, Pierre, Jane,* or common nouns [Lexicon – Section 3.1.1], e.g. *book, pencil, house, boy,* which may behave differently with respect to the type of modifiers they take. Common nouns are also further classified as count nouns, for example, *book, pencil, student,* versus mass nouns, for example, *water, air, electricity,* where the type of the noun determines number marking. Count nouns are those that can have singular and plural forms. Mass nouns do not typically have plural forms.

4.0.2 Further distinctions

Noun phrases are syntactic domains in which not only the head noun but also other constituents such as determiners and adjectives can carry marking for grammatical features such as gender, case, and number. This is usually referred to as agreement / agreement [Lexicon – Section 3.3.4] or concord. Sign languages generally differ from spoken languages significantly with respect to these morphosyntactic properties in that while agreement/concord is observed in many spoken languages, sign languages have typically been observed to lack it.

4.0.3 Methodological challenges

One of the challenges in describing the noun phrase in a sign language is to determine whether a sequence of a noun and a potential modifier such as PICTURE BEAUTIFUL/BEAUTIFUL PICTURE constitutes a noun phrase such as 'beautiful picture' or a clausal constituent with a subject and a predicate such as 'the picture is beautiful.' Determining the functions of the prenominal and postnominal modifiers (as attributive / attributive [Lexicon – Section 3.4.1] versus predicative / predicative [Lexicon – Section 3.4.2]) will help identify noun phrases. In the following ASL examples, for instance, the adjective OLD is interpreted as an attributive adjective in the prenominal position in (a), BEAUTIFUL as a predicative adjective in the postnominal position in (b).

a. [POSS_1 OLD FRIEND]
'my old friend' (ASL, MacLaughlin 1997: 196)

b. [BIG RED BALL IXadv_i] BEAUTIFUL
'The big red ball over there is beautiful.' (ASL, MacLaughlin 1997: 193)

For the sign language under investigation, the grammar writer needs to determine whether there is a difference in the interpretation of the prenominal and postnominal structures.

4.1 Determiners

4.1.0 Definitions and challenges

4.1.0.1 What is a determiner?

Determiners are a class of functional elements that modify the noun. Being functional, determiners lack descriptive content, represent a closed class, and sometimes can be unexpressed. In this section, determiners are categorized into two groups: articles and demonstratives.

Articles are elements whose function is to provide information on referentiality [Pragmatics – Chapter 2] (i.e. the relation between the noun and what the noun refers to). In traditional grammar books, articles are characterized as either definite or indefinite. Definite articles (prototypically *the* in English) are used when the interlocutors can identify the referent(s) of the nominal expression. Definite [Pragmatics – Section 1.2] articles can be used for three different purposes (Lyons 1999): i) to refer back to something or someone that has been previously mentioned in the discourse (e.g. 'The cat was feeling hungry', with the cat being already introduced in the discourse); ii) to refer to something or someone that is easily identifiable in the extra-linguistic context (e.g. 'Could you pass me the pen?', with the pen being visible to the interlocutors); iii) to refer to a referent that is unique in its genre (e.g. 'the Earth,' or 'the driver' when talking about a bus trip). Indefinite [Pragmatics – Section 1.3] articles (prototypically *a*/*an*), on the other hand, are used when the interlocutor cannot identify the referent(s) of the nominal expression. Indefinite articles are used to introduce new information, specifically new referent in the discourse (e.g. 'Yesterday I saw a cat,' with the cat being a first-mention entity).

Similar to articles, demonstratives provide information on referentiality in that they are intrinsically definite. In addition to that, they convey a deictic [Pragmatics – Section 1.1] / deictic interpretation. This means that in order to interpret demonstratives, it is necessary to consider the spatio-temporal context in which they are expressed. Demonstratives encode the deictic features [± proximal] and [± distal] which help the interlocutor locate the corresponding referent(s) with respect to the speaker's spatiotemporal coordinates. Roughly, [± proximal] means close to the speaker and [± distal] means far. This can be intended as a spatial relation (e.g. 'this book' is closer to the speaker than 'that book') or a temporal relation (e.g. 'this month' is closer to the utterance time than 'that month'). Some languages distinguish between [± proximal] with respect to the speaker and [± proximal] with respect to the interlocutor, in addition to [± distal]. As for sign languages, the use of the spatial dimension as a gradient continuum allows sign languages to be extremely precise in conveying deictic specifications.

4.1.0.2 Methodological challenges

In this section, we classify determiners as articles and demonstratives. Cross-linguistically, these two categories show an important distributional

difference: demonstratives are consistently found in all of the world's languages, whereas articles are not. Considering definite articles, there are several possibilities: they can constitute a distinct word class; they can be homophonous with demonstratives so that the two classes are not distinguishable; or they may be absent, leaving nouns unspecified for definiteness (Dryer 2013a). With respect to indefinite articles, the options are the following: they may constitute a distinct word class; they can be homophonous with cardinal 'one' so that the two types of elements are not distinguishable; or they may be absent, leaving nouns unspecified for indefiniteness (Dryer 2013b).

Importantly, demonstratives and articles should not be considered as being in complementary distribution since it might be the case that they may co-occur (Giusti 1997). In this respect, cross-linguistic variation is found, as shown below (Alexiadou, Haegeman & Stavrou 2007: 106).

a. *This the book
a'. *The this book (English)
b. Ez a haz (Hungarian)
this the house
c. Afto to vivlio (Greek)
this the book (Alexiadou, Haegeman & Stavrou 2007: 106)

The grammar writer should investigate whether an article and a demonstrative can co-occur within the same noun phrase.

In sign language linguistics, determiners are frequently identified as part of pointing signs [Lexicon – Section 1.2.2] / pointing signs. What the grammar writer should pay particular attention to is the linguistic function associated with these signs. As a matter of fact, in many sign languages, pointing signs are multi-functional elements in that they can function not only as articles or demonstratives [Lexicon – Section 3.7.1], but also as personal pronouns [Lexicon – Section 3.7.2] and locatives [Lexicon – Section 3.7.1] (Pfau 2011). In some cases, they might be used as possessive [Lexicon – Section 3.7.3] modifiers, too. Therefore, it may be hard to identify real determiners.

Another analytical challenge of studying determiners in sign languages is that both manual and non-manual components must be taken into consideration. As similarly noticed for negation [Syntax – Section 1.5], in some cases, a determiner's function can be conveyed even though no corresponding manual sign is produced. In such cases, determiners can be detected by looking at specific non-manual markers, such as eye gaze and head tilt (Neidle & Nash 2012).

4.1.1 Articles

Unlike demonstratives, articles are determiners that cannot be used in isolation or occur as an answer to a question. This is shown in the examples below (Alexiadou, Haegeman & Stavrou 2007: 106).

a. I like the *(book). (English)
b. I like that. (English)
c. Ho visto il *(ragazzo).
have.1SG see.PTCP the boy
'I have seen the (boy).' (Italian)
d. Ho visto quello.
have.1SG see.PTCP that
'I have seen that.' (Italian)

In order to study the syntactic behavior of articles, the grammar writer should consider word order issues (i.e. the distribution of the article with respect to the noun), simultaneous manual articulation (i.e. the use of both manual articulators), and the role of non-manual marking.

4.1.1.1 The position of the article

Considering word order within the noun phrase, some different distributional patterns may emerge in the sign language under investigation.

The article may appear at the beginning of the noun phrase, as shown in the example in ASL below.

IX_{3a} BOY LIKE CHOCOLATE
'The boy likes chocolate.' (ASL, Neidle et al. 2000: 89)

Another option is to produce the article in postnominal position. This happens, for example, in LIS.

FURNITURE_{a} ANTIQUE IX_{3a} BROKE
'The antique furniture is broken.' (LIS, Bertone 2009: 8)

We also expect the possibility to find two co-indexed pointing signs, one before and one after the noun, even if this does not seem to be a common option. Although no example from a sign language is available yet to the best of our knowledge, the following illustrates a potential example:

IX_{3a} TEACHER IX_{3a} ARRIVE
'The teacher arrived.'

The grammar writer should verify the nature of both elements in order to assess whether they both function as articles.

4.1.1.2 Simultaneous manual articulation

Another aspect that the grammar writer should bear in mind is the case of simultaneous articulation in which the noun and its modifiers (e.g. adjective, cardinal number,

etc.) are expressed by the dominant hand (d.h.) and the article by the non-dominant hand (n.h.). In the LIS example below, the noun and the article are articulated simultaneously.

d.h. FURNITURE$_a$ ANTIQUE
n.h. IX$_{3a}$----
'The furniture is antique.' (LIS, Bertone 2009: 8)

4.1.1.3 Non-manual marking

Definite and indefinite articles may be accompanied by eye gaze (eg) and wandering eye gaze in some sign languages. These non-manual markers accompanying the definite article may spread solely over this item, or over the entire noun phrase.

a. eg$_{3a}$
IX$_{3a}$ MAN$_a$
'the/that man' (ASL, Bahan 1996: 268)

b. eg$_{3a}$
IX$_{3a}$ MAN$_a$
'the/that man' (ASL, Bahan 1996: 269)

Similarly to what happens with definite articles, the markers co-occurring with indefinite articles may spread solely over this item, or over the entire noun phrase.

a. wandering gaze
SOMETHING/ONE WOMAN
'some/a woman' (ASL, Bahan 1996: 273)

b. wandering gaze
SOMETHING/ONE WOMAN
'some/a woman' (ASL, Bahan 1996: 273)

4.1.1.4 Articles expressed by non-manual marking only

In some cases, there may be no manual sign expressing the article but the function of an article may be expressed by non-manual markers *in lieu* of the corresponding manual sign. This is possible both with the definite and indefinite interpretation, as illustrated in the two HKSL examples below.

a. eg$_{3a}$
FEMALE-KID COME
'that/the girl is coming' (HKSL, Tang & Sze 2002: 300)

b. eg$_{3a}$
MALE CYCLE
'a man is cycling' (HKSL, Tang & Sze 2002: 302)

In HKSL, the definite and the indefinite interpretations are associated with different eye gaze patterns. When the noun has a definite reading, the eye gaze must point toward the locus of the referent. When the noun has an indefinite reading, the eye gaze points toward the addressee, so that the signer keeps eye contact with him or her. The grammar writer should verify whether articles can be expressed non-manually in the language under investigation.

4.1.2 Demonstratives

4.1.2.0 Definitions and challenges

In many sign languages, demonstratives and articles are phonologically very similar. They are both realized as pointing signs and it is not easy to draw a clear line between the two categories. This is not an accident since it probably reflects a diachronic process in which demonstratives gradually lose their deictic features and undergo phonological weakening resulting in the emergence of definite articles. This is well-attested in spoken languages: Latin demonstrative *ille*, for example, led to definite articles in Italian (*il*), French (*le*), and Spanish (*el*). The grammar writer is referred to Pfau (2011) for a discussion on the diachronic evolution of pointing signs.

Demonstratives do not display the same distributional restrictions as articles. In fact, a demonstrative can be combined with a noun (transitive usage) or can be used on its own (intransitive usage). These two distributional patterns are shown in the examples below (Alexiadou, Haegeman & Stavrou 2007: 95).

a. This (English)
b. This book (English)
c. Dat
   'that' (Dutch)
d. Dat boek
   'that book' (Dutch)

4.1.2.1 The position of the demonstrative

Considering the distribution of demonstratives vis-à-vis the noun, we expect in principle three different options. The demonstrative may precede the noun (a), follow it (b), or it can be doubled (c), so that it appears both before and after the noun. The three patterns are exemplified below.

a. IX-DEM BOOK EXPENSIVE
   'That book is/was expensive.' (NGT, Brunelli 2011: 56)
b. IX_1 DECIDE BOOK IX-DEM BUY
   'I decided to buy that book.' (DGS, Pfau 2011: 149)
c. IX-DEM_i BOOK NEW TWO IX-DEM_i MINE
   'These two new books are mine.' (LIS, Bertone 2009: 23)

The grammar writer should check the position of the demonstrative with respect to the noun. As for doubling, caution should be used in order to distinguish it from the reinforcer construction.

4.1.2.2 Demonstrative reinforcer construction

Some languages allow for the demonstrative reinforcer construction. This construction contains three items: a noun, a demonstrative, and a reinforcer, which is a locative element added to provide additional information about distance such as 'here' and 'there'. This construction has been observed in a number of spoken languages (Alexiadou, Haegeman & Stavrou 2007: 117–118).

a. Den här mannen
'the here man' (Swedish)
b. Ce livre-là
'that book there' (French)
c. This guy here (non-standard English)

The demonstrative reinforcer construction has also been observed in some sign languages. In the ASL example below, the first pointing sign functions as a demonstrative, whereas the second one functions as a locative adverb (Bahan et al. 1995).

top
IX WOMAN IX ARRIVE EARLY
'That woman (there), (she) arrived early.' (ASL, Bahan et al. 1995: 3)

The second pointing sign is analyzed as the reinforcer because the path length of this sign can be modified to iconically show proximity and distance. Crucially, this articulatory modification is not possible with the first pointing sign of the construction, which is analysed as the demonstrative, as shown below.

a. IX_{i} MAN $\text{IX}_{[+\text{DISTAL}]}$ KNOW PRESIDENT
'The/that man over there knows the president.'
(ASL, Neidle & Nash 2012: 270)
b. *$\text{IX}_{[+\text{DISTAL}]}$ MAN IX_{i} KNOW PRESIDENT

4.1.2.3 Non-manual marking

The ostensive nature of demonstratives may correlate with eye gaze directed in the same direction of the pointing sign. Typically, eye gaze, head posture, and eyebrows may provide additional information on how far the referent is with respect to the signer. The non-manual markers accompanying the demonstrative may spread solely over this item, or over the entire noun phrase.

4.1.2.4 Anaphoric usage

Demonstratives are not always deictic [Pragmatics – Section 1.1], and hence do not always need to rely on the extra-linguistic context. In some cases, they refer to an entity previously mentioned in the linguistic context. This entity functions as an antecedent and demonstratives are used anaphorically [Pragmatics – Chapter 2]. In some languages, the deictic and anaphoric function of demonstratives may be conveyed by different items and may display different distributional patterns.

This is the case in ASL, where the deictic demonstrative is a pointing sign and the anaphoric demonstrative is realized as a Y-shaped sign (THAT). Differently from its deictic counterpart, ASL anaphoric demonstrative does not often occur before the noun (Neidle & Nash 2012).

a. IX MAN
'the/that man' (deictic use) (ASL, Neidle & Nash 2012: 270)

b. ??THAT MAN
'that man' (anaphoric use) (ASL, Neidle & Nash 2012: 271)

Due to possible distributional differences, deictic and anaphoric demonstratives should be investigated separately.

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4.2 Possessive phrases

4.2.0 Definitions and challenges

The crucial components of a possessive noun phrase are the *possessor* [Semantics – Chapter 11], (someone who possesses something) and the *possessed* (often referred to as *possessum* or *possessee* as well) as in the following example from English:

John's	car
possessor	possessed

The most obvious interpretation of the noun phrase *John's car* is the car that John owns but other interpretations that do not involve ownership are also possible (the car that John picked for his daughter, the car that John wants to buy, the car that John rented etc.).

All languages distinguish syntactically between attributive and predicative possession constructions (Heine 1997). An NP like *John's car* exemplifies attributive possession, that is, a relationship between the possessor and the possessed within an NP. By contrast, predicative possession is expressed by a full clause (e.g. *This car is John's / his, John has a car*, *The car belongs to John*). This section only describes attributive possessive phrases.

Many languages mark the relation between the possessor and the possessed in some way, for example, by possessive markers, agreement markers or case suffixes. Languages may mark the possessor, the possessed, or both (Croft 2002).

4.2.1 Ways of expressing the possessive relation in the noun phrase

The following ways of expressing the possessive relation [Semantics – Section 11.1] in a possessive noun phrase have been observed in the sign languages studied so far:
(i) with attributive possessive pronouns
(ii) with a possessive marker/linker
(iii) with juxtaposition of the possessor and the possessed

These means are described in detail in the following sections. The grammar writer should investigate which of these means are attested in the sign language studied.

4.2.1.1 Attributive possessive pronouns

In possessive noun phrases, the possessor may be expressed by a pronominal element such as *my, your, his, our,* etc., as in 'my car'. These elements are called either (attributive) possessive pronouns, possessive determiners, or possessive adjectives. Note that they are different in meaning and function from predicative possessive pronouns such as *mine, yours, his, ours,* etc. as in 'This car is mine'. Since this section is only on (attributive) possessive pronouns, when we use the term possessive pronoun, we will be referring to pronouns such as *my, your, his, our,* etc.

Possessive pronouns in sign languages are directional like personal pronouns but they usually have a handshape that differs from the pointing [Lexicon – Section 1.2.2] handshape of personal pronouns (Cormier 2012).

Most sign languages have a set of pronouns that express the possessor. A small number of sign languages studied so far have been found to lack such pronouns (Perniss & Zeshan 2008). These sign languages use personal pronouns instead.

The grammar writer should investigate whether the language studied has a set of possessive pronouns different from the set of personal pronouns [Lexicon – Section 3.7.2] and also identify the different distributional possibilities of possessive pronouns within the noun phrase.

4.2.1.2 Possessive markers

Languages may use special markers to express the possessive relation between nouns/noun phrases in a possessive phrase. The possessive *-s* in English (as in *the old man's house*) is an example of possessor marking with a bound morpheme attached to the possessor.

In some sign languages, the possessive phrase may contain a sign that seems to mark the relation between the possessor and the possessee. In the following example this sign is glossed as POSS.

a. BRUNO POSS BOOK (ASL, Abner 2012: 24)

These possessive markers may occur between the possessor and the possessed as in the example (a) above, but they can also occur before the possessor as in (b) below:

b. POSS BRUNO BOOK (ASL, Abner 2012: 24)

The sign language studied may have more than one such marker. For ASL, two different signs have been observed. One is glossed as POSS, as in (a) above, and the other is a borrowing from English, and is glossed as APOSTROPHE-S, as in the example (c) below:

c. BRUNO APOSTROPHE-S BOOK (ASL, Abner 2012: 24)

The following is a similar example from LSC.

d. BOOK DE TEACHER
'the teacher's book' (LSC, Quer & GRIN 2008: 36)

The possessive marker (or 'linker') is glossed as DE, whose relation to the Spanish/Catalan preposition *de* is unclear (Quer & GRIN 2008).

The grammar writer should investigate the possibilities of possessive markers in the language studied.

4.2.1.3 Juxtaposition

Researchers have observed that in some sign languages it is possible to have a possessive noun phrase with only the possessor and the possessed but no possessive marker.

BRUNO BOOK
'Bruno's book.' (ASL, Abner 2013: 129)

Juxtaposition structures and structures with a possessive marker such as POSS have been reported to have different semantics in ASL.

4.2.2 The position of the possessive pronoun

Regarding the position of the possessive pronoun, in many languages the preferred order is possessor-possessed, but other word orders are also possible in some languages. The following examples show that possessive pronouns may precede or follow the possessed noun or they can be reduplicated.

a. POSS_1 COMPUTER
'my computer'
b. COMPUTER POSS_1
'my computer'
c. POSS_1 COMPUTER POSS_1
'my computer' (ASL, Chen Pichler & Hochgesang 2008: 217)

The grammar writer should investigate different possible word orders.

4.2.3 Agreement with the possessor

Possessive pronouns in sign languages show spatial agreement [Lexicon – Section 3.3.4] in much the same way as personal pronouns. In some sign languages like ASL

possessive pronouns display manual as well as non-manual agreement (MacLaughlin 1997; Neidle et al. 2000). Manual agreement is seen when a possessive pronoun is signed in the location of the possessor, whereas non-manual agreement involves a head tilt (towards the possessor) and eye gaze (in the direction of the possessed). The grammar writer should be aware of this possibility for the sign language he/she is working on.

4.2.4 Agreement with the possessed

In some spoken languages the form of the possessor inside a noun phrase varies according to the grammatical features (gender and number) of the possessed (Corbett 2006: 47). In ASL, for example, research has shown that agreement with the possessed may be established through eye gaze.

4.2.5 Possessive phrases with the possessed elided

Although possessive phrases usually occur with a possessed noun, this noun can be omitted as in the following examples:

a. $_{a}$BRUNO POSS$_{3a}$
'Bruno's' ('a [thing] of Bruno's') (ASL, Abner 2013:129)

b. POSS$_{3a}$
'his/hers' ('a [thing] of [his/hers]')

The grammar writer should check whether this is possible in the language studied.

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4.3 Numerals

4.3.0 Definitions and challenges

4.3.0.1 What is a numeral?

Generally speaking, when the term 'numeral' is used in the nominal domain, it indicates an item specifying the number of the entities referred to.

At closer inspection, numerals can be classified according to three main categories: cardinals (which answer the question 'how many?'), ordinals (which answer the question 'in what order?'), and distributive numerals (which answer the question 'how many each?'). The grammar writer should first identify cardinals and then ordinals and distributive numerals which are usually derived from cardinals. Notice that not all languages have a distinct word class for ordinals and distributives (Dryer et al. 2013).

In particular, cardinal numerals are used to count entities and also as a strategy to express plurality [Semantics – Chapter 9]. In some sign languages plurality is expressed via noun reduplication [Phonology – Section 3.3.1]. However, in some sign languages (e.g. DGS), the two strategies, namely, modification by cardinal numerals and noun reduplication, are not compatible. In others (e.g. ESL), the presence of the numeral does not have a blocking effect over noun reduplication.

a. FIVE BOOK
'five books' (DGS, Steinbach 2012: 120)

b. *FIVE BOOK++
'five books' (DGS, Steinbach 2012: 120)

c. APPLE BIG FOUR
'four big apples' (ESL, Miljan 2003: 214)

d. CUP+++ FOUR
'four cups' (ESL, Miljan 2003: 214)

4.3.0.2 Numerals and number

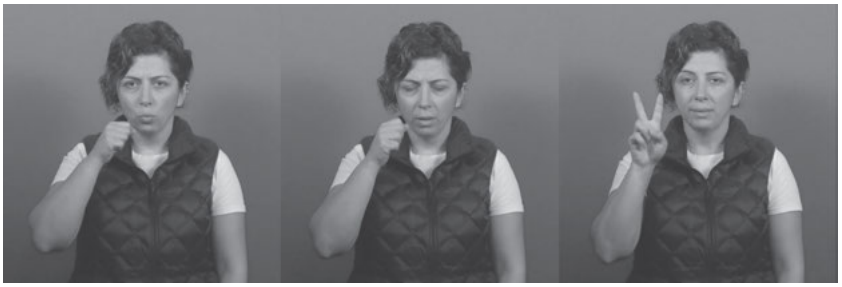
In the investigation on syntactic phenomena concerning the nominal domain of a language, it is important not to confuse two similar terms, namely numeral and

number. Numerals express a numerical quantification (e.g. 'two', 'seven', 'twenty-six'), whereas number marks count distinctions (e.g. singular, plural, dual, trial) on nouns, adjectives, determiners, etc.

4.3.0.3 Methodological challenges

Sometimes it may be difficult to determine whether a numeral co-occuring with a noun modifies it or whether it has a predicative function. Prosodic clues may help identify the construction. It has been noticed in TİD, for instance, that the numeral and the noun can be separated by a prosodic break, namely a head nod or an eye blink (Zwitserlood et al. 2012), as in (b). In this case, the two elements are not contained in the same syntactic constituent (as in (a)) and the numeral is predicative.

a. FOUR CUP
'four cups'



eyeblink
headnod
b. CUP TWO
'of cups, there are two'

(TİD, Zwitserlood et al. 2012: 1648)

Therefore, non-manual markers may help the grammar writer to determine whether the numeral is included in the noun phrase or not.

This section discusses the distribution of numerals, focusing on the case of cardinals since this type of numerals has received the most attention in the literature. Therefore, the two terms will hereafter be used interchangeably.

In order to study the syntactic behavior of cardinals, the grammar writer should consider several aspects: word order issues (i.e. the distribution of the cardinal vis-à-vis the noun), the possibility to have cardinals included in floating constructions, the distinction between definite and indefinite reading, phenomena of numeral incorporation, the role of the prosodic contour, and cardinals included in Measure Phrases.

4.3.1 The position of the numeral

In principle, cardinals can be found in three distributional patterns: i) they may precede the noun, as in NZSL, shown in (a); ii) they may follow the noun, as in LSQ, shown in (b); iii) they can be repeated so that they sandwich the noun, as it sometimes happens in VGT, shown in (c).

a. TWO LECTURER
'two lecturers' (NZSL, Wallingford 2008: 12)

b. STUDENT THREE
'three students' (LSQ, Bouchard & Parisot 2004)

c. TWO MONKEY TWO
'two monkeys' (VGT, Heyerick et al. 2010)

4.3.2 Floating numerals

Many languages are known to have constructions with floating quantifiers [Syntax – Section 4.4.2]. In these constructions a quantifier such as *all*, *both*, *each* is separated from the rest of the noun phrase, as shown in the example below:

The children have all read the books. (English)

In some languages, numerals may enter a floating construction similarly to quantifiers. In the following Japanese example, the numeral 'two' modifies its noun phrase 'student' even though another constituent 'office' occurs in-between.

Gakusei-ga	ofisu-ni	huta-ri	ki-ta.
student-NOM	office-to	two-CL	come-PST

'Two students came to the office.' (Japanese, Miyagawa 1989: 43)

This construction has been found in a sign language as well. In ASL, a numeral can be stranded when the noun phrase it modifies is topicalized [Pragmatics – Section 4.2] (Boster 1996).

top
BOOK I WANT THREE
'I want three books.' (ASL, Boster 1996: 159)

However, it is not possible to topicalize the numeral on its own, as in the following example.

top
*THREE I WANT BOOK
'I want three books.' (ASL, Boster 1996: 159)

If the noun phrase contains an adjective, it will accompany the noun rather than the stranded quantifier as shown in these examples:

a. top
RED BOOK I WANT THREE
'I want three red books.' (ASL, Boster 1996: 170)

b. top
* BOOK I WANT THREE RED
(Intended: 'I want three red books.') (ASL, Boster 1996: 170)

The grammar writer should check if these options are available in the language under investigation.

4.3.3 Definite and indefinite reading

In the study on the distribution of numerals, the grammar writer should verify the semantic interpretation of numerals. If they are associated with first-mentioned referents (i.e. entities that have not yet been introduced into the discourse), they receive an indefinite [Pragmatics – Section 1.3] / indefinite reading. If they are associated with already-mentioned referents (i.e. entities that have already been introduced into the discourse and can be identified by the interlocutor), they receive a definite [Pragmatics – Section 1.2] / definite reading.

In some languages, this semantic distinction corresponds to different distributional patterns. For example, in Shupamem, numerals with indefinite interpretation are prenominal, whereas numerals with definite interpretations follow the noun and trigger the presence of an obligatory agreement marker.

a. pɛʔ pón
two child.PL
'three books' (Shupamem, Vázquez-Rojas 2011: 235)

b. pón pí pà:
child.PL AGR two
'the two children' (Shupamem, Vázquez-Rojas 2011: 235)

The fact that the position of the numeral vis-à-vis the noun can be affected by information structure has also been reported in sign language research. In particular, it has been noticed that in LIS when numerals are associated with discourse-new information (i.e. indefinite reading), they can appear either before or after the noun. When they convey discourse-old information (i.e. definite reading), they must appear in postnominal position (Mantovan, Geraci & Cardinaletti 2014).

TWO CHILD
'two children'

CHILD TWO
'two children/the two children'

(LIS, Mantovan, Geraci & Cardinaletti 2014: 115–116)

The two cases might be distinguished also by different non-manual markers. This is the case in LIS, where cardinals with indefinite reading are usually accompanied by backward-tilted head and raised eyebrows, whereas those with definite reading are compatible with squinted eyes, lowered eyebrows, and chin down.

4.3.4 Numeral incorporation

In some special cases, it is not possible to determine the position of the cardinal with respect to the noun because the two signs come together to form a single sign. Specifically, the hand configuration of numerals (usually from 1 to 5, in some cases from 1 to 10) combines with movement, location, and orientation of a noun root. This complex phenomenon is an instance of simultaneous morphology and is known as numeral incorporation.

Numerals cannot be combined with any type of noun root. The signs which can undergo numeral incorporation are usually nouns indicating temporal information (e.g. HOUR, WEEK, MONTH) and pronouns.

a. TWO-HOUR
'two hours' (DGS, Steinbach 2012: 122)

b. TWO-YOU
'the two of you' (DGS, Steinbach 2012: 122)

Other signs that can be modified in order to accommodate numeral incorporation are classifiers.

THREE-HIGHWAY
'three lane highway' (ASL, Jones 2007: 87)

4.3.5 Measure Phrases

Cardinals might show a special distributional pattern when included in Measure Phrases (e.g. 'three weeks'). Measure Phrases are constructions containing a noun referring to a measure of time, capacity, weight, length, temperature, or currency.

For example, in LIS, cardinals within Measure Phrases consistently precede the measure noun showing a different pattern with respect to other cardinals.

a. FIVE MONTH
'five moths' (LIS, Mantovan, Geraci & Cardinaletti 2014: 115)
b. FOUR-HUNDRED METER
'four hundred meters' (LIS, Mantovan, Geraci & Cardinaletti 2014: 115)

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4.4 Quantifiers

4.4.0 Definitions and challenges

4.4.0.1 What is a quantifier?

A quantifier is an expression that identifies the number or amount of the set denoted by the noun it modifies. The following are some of the quantifiers / quantifiers [Lexicon – Section 3.10.2] in English: *no, some, both, few, a few, several, enough, many, most, each, every, all,* and numeral [Lexicon – Section 3.10.1] quantifiers such as *two, three*. Since Section 4.4. describes numerals, in this section we concentrate on the quantifiers other than numerals. Quantifiers are typically classified together with determiners [Lexicon – Section 3.6] / determiners or nominal modifiers.

4.4.0.2 Methodological challenges

Similar to the methodological problem discussed for numerals [Syntax – Section 4.3], one challenge in analyzing quantifiers is to identify whether a sequence of a noun and a quantifier such as CHILDREN MANY constitutes a quantifier phrase such as 'many children' or a predicative structure such as 'As for children, there are many.'

4.4.1 The position of the quantifier

Quantifiers may precede or follow the noun they quantify, that is, the head noun. In the following example from ASL, the quantifiers precede the noun GIRL:

ALL/ONE/NONE GIRL LIKE MATH
'All/one/no girl(s) like math.' (ASL, Davidson & Gagne 2014)

NGT patterns with ASL in that quantifiers precede the head noun in NGT, as in (a) and (b). In LIS, however, quantifiers follow the head noun, as in (c) and (d) (Brunelli 2011).

a. ALL CAR EXPENSIVE NICE
'All expensive cars are nice.' (NGT, adapted from Brunelli 2011: 52)

b. PLACE MANY OTHER SIGN SPECIAL PLACE HAVE
'Many other signs have a special place.' (NGT, adapted from Brunelli 2011: 52)

c. CAR EXPENSIVE ALL NICE
'Expensive cars are all nice.' (LIS, adapted from Brunelli 2011: 52)

d. IX_1 APPLE MANY EAT
'I eat/ate many apples.' (LIS, adapted from Brunelli 2011: 52)

LIS and NGT also contrast in the order in which quantifiers and possessives appear. In LIS, the order is Noun-Possessive-Quantifier, as in (a), whereas it is Quantifier/Possessive-Noun in NGT, as in (b):

top
a. FRIEND(S) $POSS_1$ ALL (IX_3 ARC) DEAF
'All my friends are deaf.' (LIS, adapted from Brunelli 2011: 63)

top
b. ALL FRIEND DEAF
'All my friends are deaf.' (NGT, adapted from Brunelli 2011: 63)

Quantifiers and higher adjectives such as OTHER, NEXT/FOLLOWING, PAST/PREVIOUS are postnominal in LIS, but prenominal in NGT. OTHER appears in the order N-OTHER-Q in LIS. In NGT, on the other hand, it appears in the order Q/OTHER-N, or in the order Q-OTHER-N if the quantifier MANY is used for Q.

In some sign languages the order between the quantifier and the head noun depends on the quantifier. In TSL, for instance, the existential quantifier SOME can occur both prenominally and postnominally, as in (a) and (b) below, while A-LITTLE, ALL, ANY and MOST can occur only postnominally, as in (c) and (d) below, and the quantifiers EVERY, OTHER, ANOTHER are restricted to the prenominal position, as in (e):

a. IX_3 CLOTHES SOME UNWEARABLE
'He has some unwearable clothes.' (TSL, Lai 2005: 45)

b. IX_3 SOME CLOTHES UNWEARABLE
'He has some unwearable clothes.'

c. IX_3 MONEY ALL TAKE BUY BOOK
'He spent all the money buying books.' (TSL, Lai 2005: 48)

d. IX_2 QUESTION ANY HAVE ASK TEACHER
'If you have any questions, you can ask the teacher.' (TSL, Lai 2005: 49)

e. IX_3 ASK EVERY TEACHER QUESTION SAME.
'He asked every teacher the same question.' (TSL, Lai 2005: 55)

A combination of quantifiers and distributives can be used as well, as in the following cases:

FIVE BEDS CL(B)+++
'five beds in a row' (BSL, adapted from Sutton-Spence & Woll 1998: 107)

In this case the proform is repeated three times. The number information is in the '5'-hand quantifier and proform indicates the distributive.

4.4.2 Floating quantifiers

The following examples illustrate what are known as floating quantifiers in English:

a. The children have all read the books.
b. The students have each arrived.
c. John's brothers have both read the book.

In each of these cases, the quantifiers *all*, *each* and *both* are separated from their corresponding noun phrase, i.e. *the children*, *the students* and *John's brothers* respectively, thus creating a discontinuous constituent (Bobaljik 2003).

However, there are restrictions as to where these floating quantifiers can appear. In English they can appear to the left of an auxiliary verb, as in (a), between auxiliary verbs, as in (b) and (c), but not in any of the positions to the right of the lexical verb, as in (d) and (e) below:

a. The computers all will have been moved to the new office.
b. The computers will all have been moved to the new office.
c. The computers will have all been moved to the new office.
d. *The computers will have been moved all to the new office.
e. *The computers will have been moved to the new office all.

A floating quantifier can also appear between an auxiliary verb and an adjectival predicate, as in (a) and (b):

a. We were all fast asleep. (Quirk et al. 1985: 382)
b. The children are all healthy.

The possibility of floating quantifiers has been observed in sign languages as well. In the following LIS examples, the quantifier ALL appears in combination with a kind of relative clause labeled as 'PE-clause' (Branchini and Donati 2009). In (a) the quantifier ALL modifies the head noun CHILDREN but it is separated from it. Similarly, in (b), the negative quantifier NOBODY modifies the head noun BOY but is separated from it.

rel
a. CHILDREN$_i$ CAKE EAT PE$_i$ TODAY ALL [E] STOMACHACHE
'All the children that ate the cake today have stomachache.'
(LIS, Branchini & Donati 2009: 170)

rel
b. BOY$_i$ EXAM DONE PE$_i$ PASS [E] NOBODY
'No boy that took the exam passed.' (LIS, Branchini & Donati 2009: 170)

Grammar writers should pay attention to the possible positions for quantifiers given the basic word order of the language they are working with. They should also consider the possible word order options of combinations of quantifier + possessive + adjective + noun. Also, they should check in what conditions, if at all, quantifiers, can be floated.

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4.5 Adjectives

4.5.0 Definitions and challenges

4.5.0.1 Adjectival modification

Adjectives have two main functions: attributive [Lexicon – Section 3.4.1] / attributive and predicative [Lexicon – Section 3.4.2] / predicative. Typically, when an adjective occurs in a noun phrase, modifying the noun, it is considered to have an attributive function as in 'the new car'. When the adjective is in the predicate position as in 'The car is new,' it is considered to have the predicative function. In this section we will only concentrate on adjectives having attributive function as modifiers of nouns, since we are dealing with the structure internal to the noun phrase.

Adjectives are also categorized semantically. Most commonly identified adjective categories are the following: adjectives that denote quality, size, shape, color, provenance, value, dimension, physical property, speed, human propensity, age; those that are speaker-oriented or subject-oriented; and those that are manner adjectives and thematic adjectives (Sproat & Shih 1991; Cinque 1994; Dixon 1982). The position of an adjective within the noun phrase and with respect to other adjectives may depend on the semantic category it belongs to.

The distribution of adjectives within a noun phrase is mainly analyzed in two ways: (i) their position with respect to the head noun (prenominal versus postnominal) and (ii) their position with respect to other adjectives.

4.5.0.2 Methodological challenges

The grammar writer should take into consideration whether the relative order of the adjectival modifier with respect to the head noun makes a difference in its function. Given a sequence of a noun and an adjective such as CAR NEW, it may be a challenge to determine whether the adjective is a modifier and the sequence is a noun phrase as in 'new car' or whether the adjective functions as a predicate and the sequence is a predication structure as in 'The car is new'.

There are languages where a postnominal adjective is interpreted as predicative while a prenominal adjective is interpreted as attributive. Irish SL is such a language (Leeson & Saeed 2012). In the Irish SL examples below, the prenominal SMALL is interpreted as an attributive adjective, (a), but when it is postnominal, as a predicative adjective (b).

a. SMALL HANDBAG
'(It was a) small handbag.' (Irish SL: Leeson & Saeed 2012: 153)

b. WHEN JASON SMALL
'When Jason was small' (Irish SL: Leeson & Saeed 2012: 153)

In languages where both attributive and predicative adjectives can be postnominal, identifying the function of an adjective in a sentence might pose a harder challenge. However, there may be clues in the sign language under investigation that may help make the distinction. LIS has been reported to distinguish nominal constituents from verbal constituents non-manually (Bertone 2009: 8). In the example below, the non-manual marking associated with the noun phrase spreads over FURNITURE in (a) but over FURNITURE ANTIQUE $(IX)_i$ in (b). This leads to the analysis that the adjective ANTIQUE is a predicative adjective in (a) but an attributive adjective in (b).

a. NP VP
d.h. $FURNITURE_a$ ANTIQUE
'The furniture is antique.' (LIS, adapted from Bertone 2009: 8)

b. NP VP
d.h. FURNITURE$_a$ ANTIQUE (IX$_{3a}$) BROKEN
'The antique furniture is broken.' (LIS, adapted from Bertone 2009: 8)

Different positions of the adjectival modifiers do not always correlate with different functions. In TSL, for instance, the adjective can precede or follow the head noun without a difference in the functional meaning.

a. IX$_3$ RAISE [CUTE CAT FIVE] Adj N Num
'She raises five cute cats.'
b. IX$_3$ [CAT CUTE FIVE] HAVE N Adj Num
'She has five cute cats.' (TSL, Zhang 2007: 65)

The adjective CUTE in the prenominal and post-nominal positions in the two TSL examples above are both interpreted attributively.

We advise the grammar writer to determine whether different positions of adjectival modifiers correlate with different functions such as attributive [Lexicon – Section 3.4.1] and predicative [Lexicon – Section 3.4.2].

4.5.1 Prenominal versus postnominal adjectives

Depending on the language, we may observe the following distribution for adjectival modifiers: (i) strictly prenominal (i.e. before the noun), (ii) strictly postnominal (i.e. after the noun), or (iii) occuring prenominally and postnominally. In those languages where adjectival modifiers can occur in either position, again we have two possibilities: (i) all adjective classes can occur in either position, with no meaning difference, or (ii) the pre- versus post-nominal distribution is determined by the semantic class the adjective belongs to.

English belongs to the languages of the strictly prenominal type. In example (a) below all the adjectives precede the head noun. In the French example in (b), on the other hand, the possessive adjective precedes the head noun while most adjectives belonging to other classes follow it.

a. their big red cottage (English)
b. mes livres intéressants (French)
'my interesting books'

LIS seems strictly postnominal since all adjectives follow the head noun, as shown in (a–c) below.

a. [EXAMPLE **PAST**]
'previous/last example' (LIS, Brunelli 2011:54)
b. [EXAMPLE **NEXT**] EASY
'The next/following example is easy.' (LIS, adapted from Brunelli 2011: 55)

c. [MAN **OLD**] BOOK IX BUY
'The old man buys/bought the book.' (LIS, Brunelli 2011: 60)

In NGT, adjectives can be prenominal and postnominal but the position of an adjective is determined by its semantic type: while adjectives expressing relative temporal relations like PREVIOUS, FOLLOWING, typically precede the head noun, as in (a) and (b), an attributive adjective such as OLD can follow it, as in (c).

a. **[previous** EXAMPLE]
'previous/last example' (NGT, Brunelli 2011: 54)
b. LOOK [**FOLLOWING** EXAMPLE++]
'Look at the next/following examples.' (NGT, Brunelli 2011: 55)
c. [MAN **OLD**] BOOK BUY
'The old man buys the book.' (NGT, Brunelli 2011: 60)

The following provide further examples from TİD. OTHER precedes the head noun in (a) whereas an adjective expressing a physical property, BIG, follows it, as in (b).

 5_4.5.1_1_TİD_other man money sit

a. [**OTHER** MAN] MONEY SIT
'The other man is sitting on money.'

 5_4.5.1_2_TİD_rabbit big strong

b. [RABBIT **BIG**] STRONG
'The big rabbit is strong.' (TİD, Özsoy et al. 2012: 8)

The grammar writer should check whether adjectives must be prenominal or postnominal in the language studied or whether either order is possible.

4.5.2 Symmetric adjectives

There are also sign languages in which adjectives can freely precede or follow the head noun with no difference in meaning. For the TSL examples below the Adj-N and N-Adj orders are interpreted identically.

a. [**CUTE** CAT] IX_1 LIKE
b. [CAT **CUTE**] IX_1 LIKE
'I like cute cats.' (TSL, adapted from Lai 2005: 15)

The following TİD examples also show that both orders are possible in the same language.

 5_4.5.2_1_TİD_sun yellow round

a. SUN **YELLOW ROUND**
'the yellow round sun' (TİD, Özsoy et al. 2012: 8)

 5_4.5.2_TİD_red pants

b. **RED** PANTS
'red pants' (TİD, Özsoy et al. 2012: 8)

If the language the grammar writer is analyzing can have both prenominal and postnominal modifiers, he/she should check (i) whether all kinds of adjectives can freely occur in either of these positions and (ii) whether these different positions induce different interpretations of the adjectives.

4.5.3 Reduplicated adjectives

The adjective modifier of a noun phrase can be reduplicated. In constructions in which the adjective is reduplicated, one of the adjectives occurs prenominally and the other postnominally, as in the TİD example below.

 5_4.5.3_1_TİD_pointed hat pointed

POINTED HAT **POINTED**
'a pointed hat' (TİD, Özsoy et al. 2012: 9)

The grammar writer should check whether reduplication is possible with adjectives and whether single occurence versus reduplication induces any difference in meaning.

4.5.4 Ordering restrictions among adjectives

In studies done on spoken languages, adjectives in a noun phrase have been observed to typically exhibit ordering restrictions (Dixon 1982; Sproat & Shih 1991; Cinque 1994; Teodorescu 2006). The ordering is mostly, but not uniformly, sensitive to the semantic classes of adjectives, that is, adjectives belonging to the same class pattern together with respect to their ordering restrictions. Adjectives that denote quality, for example, generally precede adjectives conveying size, which in turn precede adjectives conveying shape, in all languages as reflected in the following hierarchy.

a. Quality > Size > Shape > Color > Provenance (Sproat & Shih 1991)

The following two hierarchies represent other ordering restrictions that have been proposed:

b. Possessive > Speaker-oriented > Subject-oriented > Manner/Thematic
(Cinque 1994)

c. Value > Dimension > Physical property > Speed > Human Propensity > Age > Color (Dixon 1982)

In the absence of any intonational differences indicating different interpretations of the noun phrase, the only grammatical order of adjectives in a noun phrase in English, for instance, is the one in which the adjective denoting quality precedes the one which denotes size, which in turn precedes the color adjective, as exemplified below.

a beautiful small black purse
#a beautiful black small purse
#a small beautiful black purse
#a small black beautiful purse etc. (English, Teodorescu 2006: 399)

The following examples illustrate strict ordering of different adjective classes in LIS.

a. Origin precedes color: VASE CHINA RED
*VASE RED CHINA
'red Chinese vase'
b. Origin precedes quality: VASE CHINA OLD
*VASE OLD CHINA
'old Chinese vase'
c. Color precedes quality: VASE RED OLD
*VASE OLD RED
'red old vase' (LIS, Bertone 2009: 17)

In the LIS examples above the adjective indicating origin precedes the color and quality adjectives, while color adjectives typically precede quality adjectives.

We advise the grammar writer to investigate whether the sign language studied imposes ordering restrictions among different semantic classes of adjectives. The grammar writer should also aim at identifying the unmarked order of adjectives, and make sure that the different orders of adjectives are not correlated with different information structure interpretations like focus [Pragmatics – Section 4.1] or topic [Pragmatics – Section 4.2].

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4.6 Multiple NP constituents

4.6.0 Definitions and challenges

Typological studies on a large number of languages have revealed that even though it seems that the order of the constituents in a noun phrase such as articles, demonstratives [Lexicon – Section 3.7.1], adjectival modifiers, numerals [Lexicon – Section 3.10] / numerals and quantifiers [Lexicon – Section 3.10] / quantifiers is not identical in every language, the variation is in fact quite restricted (Greenberg 1964).

The findings of these studies are summarized as the following generalization (Greenberg 1964, "Universal 20"):

i. In the prenominal position, the order of demonstrative, numeral, and adjective (or any subset thereof) modifiers conforms to the order **Dem>Num>A>N**
ii. In postnominal position, the order of the same elements (or any subset thereof) conforms to the order **N>Dem> Num> A** or
iii. to the order **N>A> Num>Dem**.

There are, however, exceptions to the statements in (ii)–(iii) (Hawkins 1983).

Many sign languages have also been shown to conform to the generalizations above at varying degrees (cf. Bahan et al. 1995 and MacLaughlin 1997 for ASL; Miljan 2000 for ESL; Bertone 2009, Brunelli 2011 and Mantovan & Geraci 2012 for LIS; Nuhbalaoğlu & Özsoy 2014 for TİD and Zhang 2007 for TSL).

4.6.1 Prenominal modifiers

In noun phrases with multiple modifiers, sign languages have been observed to exhibit differences with respect to how strictly they conform to the following ordering of the modifiers: Dem(onstrative) – Num(eral) – Adj(ective) – N(oun).

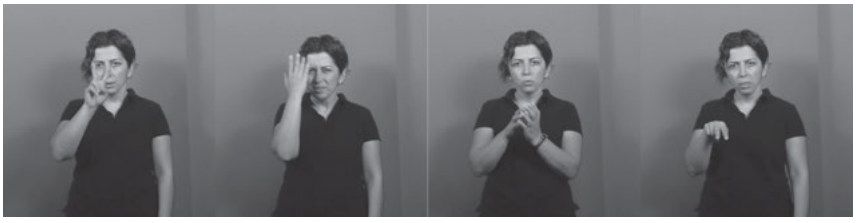
While there seems to be no exception to the generalization that Dem is in the leftmost position, sign languages vary with respect to the relative order of numeral and adjectival modifiers. TSL, for example, has the strict Dem-Num-Adj-N order in the head final noun phrase constructions.

a. Num-Adj-N
   IX_3 FIVE CUTE CAT HAVE
   'She has five cute cats.' (TSL, adapted from Zhang 2007: 65)
b. Dem-Adj-N
   IX_{DET} CUTE CAT IX_1 BELONG-TO
   'That cute cat belongs to me.' (TSL, adapted from Zhang 2007: 66)
c. Dem-Num-N
   $IX_{DET.PL}$ FOUR CAR IX_1 FRIEND BELONG-TO
   'Those four cars belong to my friend.' (TSL, adapted from Zhang 2007: 66)
d. Dem-Num-Adj-N
   $IX_{DET.PL}$ FIVE NAUGHTY BOY IX_1 BELONG-TO STUDENT
   'These five naughty boys are my students.'
   (TSL, adapted from Zhang 2007: 67)

However, the following orders have been reported to be unacceptable in TSL : *Adj Num N, * Adj Dem N and * Num Dem N (TSL, Zhang 2007:10).

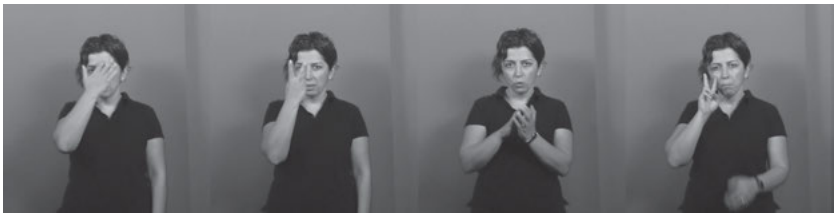
Some sign languages, on the other hand, have been observed to allow variation in the relative order of pre-nominal constituents. With respect to adjectival and numeral modifiers in TİD, for example, the two categories can occur in either order in the prenominal position without any semantic distinction between the two orders.

a. Num-Adj-N



TWO BLACK DOG SEE_3-PAST
'I saw two black dogs.'
(TİD, Nuhbalaoğlu & Özsoy 2014)

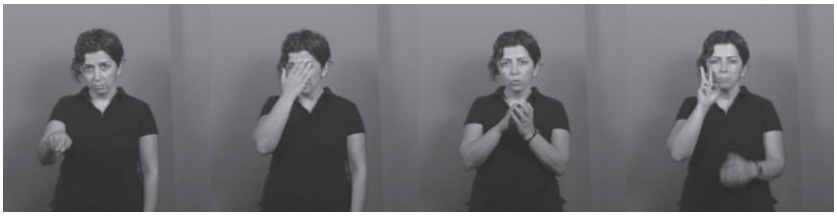
b. Adj-Num-N



BLACK TWO DOG SEE$_3$-PAST
'I saw two black dogs.'
(TİD, Nuhbalaoğlu & Özsoy 2014)

Even in TİD, however, demonstratives (and possessives) have been observed to be more restricted with respect to the position in which they can occur. In contrast to the grammaticality of orders in which Dem precedes all the other constituents as in (a) and (c) below, the corresponding *Adj-Dem-N (b) and *Num-Dem-N (d) orders are ungrammatical.

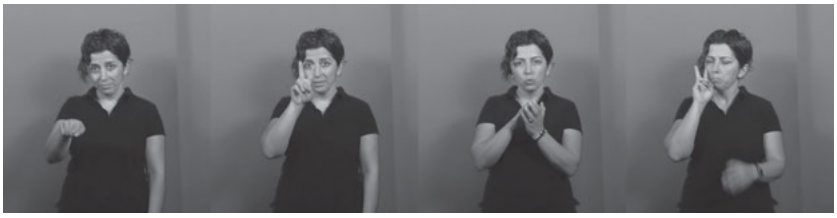
a. Dem-Adj-N



IX BLACK DOG SEE$_3$-PAST
'I saw the/that black dog.'

b. Adj-Dem-N
*BLACK IX DOG SEE$_3$-PAST
'I saw the/that black dog.'

c. Dem-Num-N



IX TWO DOG SEE$_3$-PAST
'I saw the/those two dogs.'

d. Num-Dem-N
*TWO IX DOG SEE_3-PAST
'I saw the/those two dogs.' (TİD, Nuhbalaoğlu & Özsoy 2014)

We advise the grammar writer to check which orders are possible among the prenominal modifiers.

4.6.2 Postnominal modifiers

TSL is a language which allows a symmetrical distribution of the constituents of the noun phrase in that all modifiers can precede and follow the head noun. The modifiers can be split between prenominal and postnominal position, as in (a) and (b) below or all modifiers can occur postnominally, as in (c) below.

a. $IX_{DET\cdot PL}$ **NAUGHTY** BOY **FIVE** IX_1 BELONG-TO STUDENT
b. $IX_{DET\cdot PL}$ **FIVE** BOY **NAUGHTY** IX_1 BELONG-TO STUDENT
c. $IX_{DET\cdot PL}$ BOY **NAUGHTY FIVE** IX_1 BELONG-TO STUDENT
All mean: 'These five naughty boys are my students.'
(adapted from Zhang 2007: 12)

When there are multiple modifiers in the postnominal position, as in (c) above, the relative positions of the noun phrase constituents in TSL must conform to Dem N Adj Num.

Similar to TSL, TİD allows split ordering of the modifiers in the pre- and postnominal positions. When there are multiple constituents postnominally, the relative order between a color adjective and a numeral seems to be free, as shown below.

a. IX_1 DOG **TWO BLACK** SEE_3-PAST
b. IX_1 DOG **BLACK TWO** SEE_3-PAST
'I saw two black dogs.'
(TİD, Nuhbalaoğlu & Özsoy 2014)

We recommend that the grammar writer check which orders are possible among the postnominal modifiers.

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Chapter 5 The structure of adjectival phrases

5.0 Definitions and challenges

5.0.1 What is an adjectival phrase?

Adjectival phrases (APs) are defined as phrases in which an adjective / adjective [Lexicon – Section 3.4] functions as the head of the phrase. Adjectival phrases [Syntax – Section 4.5] typically modify NPs.

APs can either precede or follow the noun / noun [Lexicon – Section 3.1] they modify. Modification is subject to language-specific rules, and, within one language, modification depends on the class of the adjective and on whether they perform an attributive / attributive [Lexicon – Section 3.4.1] or predicative / predicative [Lexicon – Section 3.4.2] function.

5.0.2 Internal structure and position with respect to the noun

Researchers have observed that the position of the AP affects its internal structure. Typically, languages tend to have what we might call a "side of recursion", that is, the side of the clause where subordination and other expansions are more likely to occur. APs sitting on the side of recursion tend to have a richer internal structure

than those on the other side. Just to illustrate, consider the following English examples. Most adjectives tend to be prenominal in English, but complex APs can only be produced postnominally (the right being the "side of recursion" in English).

a. A beautiful river
b. A very beautiful river
c. ?A [more than ever beautiful] river
d. A river [beautiful more than ever]

The grammar writer should be aware of this parameter possibly affecting the internal structure of adjectival phrases in the sign language under consideration.

The position of the adjective with respect to the noun can also be modulated by the number of adjectives that modify the noun. Mantovan (2014), for example, claims that if two adjectives modify the noun in LIS, typically one precedes the noun while the other follows it. For example, an adjective that occurs after the noun when it is the only adjective in the phrase, can occur before the noun if another adjective is present.

So, a caveat is that, ideally, any conclusion based on examples with a single adjective should be confirmed with examples including more than one adjective.

5.1 Intensifiers and other modifiers

Many adjectives are gradable (or scalar), that is they can be placed along a scale from more to less. A paradigmatic example of gradable adjective is *tall* (*very tall*, *taller than*, ...), while a non-gradable adjective is *pregnant* (?**very pregnant*, ?**more pregnant than*, ...). The degree or intensity of a gradable adjective can be made explicit through the use of a modifier, which can be either preposed (as in English, e.g. *very smart*) or postposed to the adjective. In most sign languages this modification of the adjective can either be made manually, through a modification of signs, or non-manually, by modifying the articulation of the sign for the adjective or adding a non-manual marker such as a specific facial expression.

5.1.1 Manual modifiers

A list of manual signs functioning as intensifiers of the adjective should be provided here, specifying their position with respect to the adjective.

5.1.2 Modifications of manual signs and non-manual modifiers

All sign languages that have been described exhibit the possibility of expressing the intensity or the degree of the adjective by modifying the form of the adjectival sign itself.

In ASL, intensive and approximative modifications have been described. When an adjective, say 'tall', is modulated to reflect intensity, the additional meaning that is added is essentially that of 'very'. This modulation, according to Klima and Bellugi (1979: 259) is characterized by tension in the muscles of hand and arm, a long tense hold at the beginning of the sign, a very rapid single performance, and a final hold. Note also that the intensification modification does not just involve a modification of the manual sign but also additional non-manual modification; it is generally accompanied by an intensified facial expression and often a sideward head movement.

The approximative modulation is essentially the opposite of the intensive one. Taking again 'tall' as an example, the approximative modulation conveys a meaning of 'sort of tall' or a small degree of the adjective's quality or attribute. Klima and Bellugi (1979: 260) characterize this modulation in ASL as consisting of "a lax HC [hand configuration] and an extreme reduction in size and duration in each iteration of the sign. The movement of the sign is extremely reduced and minimal".

The grammar writer should be aware of this possibility and search for the actual manual modifications of the adjective available in the sign language under investigation. Other important dimensions that should be observed is the extension of the marking, and whether it coincides with the sign expressing the adjective or whether it can start/finish earlier/later.

5.1.3 Iteration and stacking

Intensification and degree are not the only modifiers that can enter an AP. The adjective can also be modified by some qualitative adverbs, as in English *beautifully warm*, or by some other adjective, as in *dark blue*.

An important dimension that should be described is whether the various modifiers of the adjective are in complementary distribution, or whether they can be stacked, and in which order. An aspect of this question concerns also the possibility of iteration, as in English *very very nice*, which is attested in many languages. Finally, the interaction of manual signs and non-manual modifiers should also be described here.

5.1.4 Degree comparatives

The gradability of adjectives also accounts for the other class of modifiers that adjectives can go with, namely comparatives [Syntax – Section 3.6] / comparatives [Semantics – Chapter 8] / comparatives. Typically, comparatives can either be formed by coupling the adjective with a word/sign meaning 'more/less/as', or by modifying the form of the adjective itself as to incorporate this meaning, as in English *nicer*.

In LIS, for example, the analytic form is realized with the manual sign MORE, as in (b), while the synthetic form is realized by incorporating a scale morpheme (SCALE-MORE) into the adjective (Aristodemo and Geraci 2015). In (a), SCALE-MORE is realized

as an arch movement on the vertical axis into a point in space which is higher than the point in space where the previous mentioning of 'tall' was produced. When available, the two strategies are in free distribution, as below.

a. MARIA TALL GIANNI (TALL)-SCALE-MORE
'Gianni is taller than Maria.'
b. MARIA TALL GIANNI MORE (TALL)
'Gianni is taller than Maria.' (LIS, Aristodemo & Geraci 2015)

The degree comparative can either go alone, or be completed by two more constituents: what is called the second term of comparison (as 'me' in *taller than me*), and/or a constituent quantifying the difference compared, as in *three meters taller than me*. In LIS, when the differential quantifier is expressed, the scale morpheme gets incorporated into it instead of into the adjective, as shown in the example below.

MARIA TALL GIANNI A-BIT-SCALE-MORE
'Gianni is a bit taller than Maria.' (LIS, Aristodemo & Geraci 2015)

5.1.5 Superlatives

A final type of modification related to the gradability of adjectives is the so-called superlative, which posits the adjective as being to the highest degree on a scale, as in *the most beautiful*. Superlatives can be divided into absolute and relative, according to whether the scale is unspecified, as in the former example, or specified, as in *the most beautiful of this room*.

5.2 Arguments

While many adjectives are gradable and thus can be modified accordingly, only few adjectives can have arguments, according to their selectional properties. For those adjectives that can take arguments, the grammar writer should specify (i) the form of the argument [Syntax – Section 2.1.2] (whether it is a NP/PP, as in *proud of his son*, or *full of anger*; or a clause, as in *proud that you are my son*, or *curious what decision he will take*); (ii) whether these arguments occur in a fixed position, and whether this is pre- or post-adjectival.

5.3 Adjuncts

Some adjectives can also be modified by constituents they do not select. In this case their relation to the adjective is frequently reducible to a causal relation (as in *happy to hear from you*); or to some kind of comparison [Syntax – Section 3.6;] / comparison

[Semantics – Chapter 8] (as in *red as a tomato*). Here again very little is known for sign languages, and the form, order and restrictions of these constituents should be looked at with care.

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Chapter 6 The structure of adverbial phrases

6.0 Definitions and challenges

6.0.1 What is an adverbial phrase?

Adverbial phrases are constituents headed by adverbs / adverbs [Lexicon – Section 3.5], not to be confused with adverbial clauses [Syntax – Section 3.5] / adverbial clauses [Semantics – Section 14.2], which are sentences that are constituents of a complex sentence. Adverbial phrases (in bold in the following examples) are adjuncts, and as such may modify an adjective (a), another adverbial (b), a clause (c) or a verb (d) by providing information regarding the grammatical categories of tense / tense [Semantics – Chapter 1] / tense [Morphology – Section 3.2] (*yesterday*), aspect / aspect [Semantics – Chapter 2] / aspect [Morphology – Section 3.3] (*already*), and modality / modality [Semantics – Chapter 4] / modality [Morphology – Section 3.4] (*necessarily*, *probably*) or information regarding manner (*proudly*) and place (*here*).

Adverbial phrases typically answer questions like *how? where? when? how frequently? to what extent?*

a. He was **quite** clear.
b. The children spoke **very** loudly.

c. John's horse **certainly** will win the race.
d. John's horse will **quickly** pace towards the finish line.

6.0.2 Classes of adverbs

Adverbials can belong to different categories or classes. Some adverbials may modify the meaning of the entire sentence, as in (a) where the adverbial *certainly* refers to the fact that *John's horse will win the race*, while others may just modify a constituent such as the verb in (b), where *quickly* specifies the manner of the event described by the verb (*pace*). Sentential adverbials and VP-adverbials usually occupy different positions in the sentence.

a. John's horse **certainly** will win the race.
b. John's horse will **quickly** pace towards the finish line.

Sometimes the same adverbial may be used as a sentential adverbial (as in (a) below), or as an adverbial modifying the verb phrase (b).

a. **Naturally**, she raised many questions.
b. She **naturally** raised many questions.

In (a) the adverb *naturally* means 'of course' and modifies the whole sentence, whereas in (b) it modifies just the verb specifying the manner questions were raised, that is, 'in a natural way'.

Adverbs may be grouped into different classes, depending on the kind of information they provide.

6.0.3 Analytical challenges

In spoken languages, adverbial phrases may often contain a constituent modifying the head of the adverbial phrase, usually expressing intensification, as in the following examples:

a. He climbed the mountain **more** quickly.
b. The children walked in the room **very** awkwardly.

Sign languages, however, may express the same meaning without necessarily employing two manual signs. Sign languages may convey complex adverbial phrases by modulating the verb sign in its speed, movement, path and place of articulation. In addition, non-manual markers such as shoulder movement or facial expressions may be the only grammatical markers conveying complex adverbial information.

6.1 Independent manual adverbs

One possibility to convey adverbial information is through an independent dedicated manual sign. In the following example, the sign ON-TIME provides information on the manner in which the action expressed by the verb is carried out.

5_6.1_1_LIS_GIANNI ARRIVE ON-TIME

GIANNI ARRIVE ON-TIME
'Gianni arrives on time.' (LIS, Cecchetto et al. 2006: 949)

The grammar writer should identify the manual signs conveying adverbial information as well as their unmarked preferred positions within the sentence. Sometimes other positions, besides the unmarked preferred position, are allowed. However, in spoken languages, changes in the position of adverbs within the sentence usually correlate with a difference in prosody [Phonology – Chapter 2] and sometimes, as we saw in the previous section [Syntax – Chapter 6.0.2], with a change in meaning. The grammar writer is therefore advised to verify whether different available positions for an adverbial manual sign correlate with a change in non-manual marking and a change in meaning.

6.2 Modification of manual signs

A second option used in sign languages to convey adverbial information is through the modification of manual signs. The sign for the verb may be, for instance, modified in its speed, movement, path and place of articulation to convey manner information. In the following LIS example, the verbal sign WALK is modified in its speed to convey the adverbial information 'quickly'.

5_6.2_1_LIS_LUCA WALK-fast

LUCA WALK-fast
'Luca walks quickly.' (LIS)

Classifier predicates / Classifier predicates [Morphology – Section 5.1] may also be modified with the same function. In the following LIS example, the classifier predicate CL-CAR-DRIVING is produced with a zigzag movement to convey information about the manner the action expressed by the classifier predicate is carried out.

5_6.2_2_LIS_LUCA CL-CAR-DRIVING-zigzag

LUCA CL-CAR-DRIVING-zigzag
'Luca drives zigzag.' (LIS)

Manner and frequency of movement may also be modified to convey aspectual information.

The grammar writer should verify any change in the modulation of manual signs from their citation form conveying adverbial information.

6.3 Non-manual adverbs

Many sign languages that employ independent manual signs to convey adverbial information may also do so through non-manual adverbials. Sometimes, non-manual markers accompany the adverbial manual sign to intensify its meaning. This is the case of ASL deictic locative signs (corresponding to *there* or *here*) that can be produced with tensed facial expression to convey a high degree of physical proximity, or of temporal signs, like RECENT, whose lexical non-manual marking can be intensified to convey a high degree of temporal proximity.

More often, non-manuals are the only markers conveying adverbial information in the sentence. Specific non-manual markers can convey manner information, as in the following LIS example: the non-manual marking 'mm' produced with closed lips simultaneously to the verbal sign WALK conveys the manner adverb 'quietly'.


5_6.3_1_LIS_DANIELE WALK

mm
DANIELE WALK
'Daniele walks quietly.' (LIS, adapted from Lerose 2009: 51)

Non-manual adverbs usually are coextensive with the lexical sign they modify, or may extend over other signs in the case of sentential adverbials.

The grammar writer should identify non-manual adverbials and the spreading domain of non-manual adverbs in the target sign language.

6.4 Classes of adverbs

A broader classification of adverbs concerns the domain of the material they modify: while sentential adverbs modify the entire sentence, VP-adverbs modify just the verb.

6.4.1 Sentential adverbs

Sentential adverbs modify the whole sentence conveying the attitude of the speaker/signer towards the content of the sentence.

Probably, Rebecca felt guilty

The sentence below shows a sentential adverb in LIS (CERTAIN) modifying the whole proposition DANIELE COME.

CERTAIN DANIELE COME
'Daniele is certainly coming.' (LIS, adapted from Lerose 2009: 56)

6.4.2 VP-adverbs

VP-adverbs modify the sentence predicate by adding information regarding the time, manner, place, aspect, and modality of the described event. In the following sections, adverbial phrases are classified according to the type of adverbial information conveyed. We shall take into consideration the main classes of adverbs available cross-linguistically.

6.4.2.1 Temporal adverbs

Temporal [Semantics – Section 14.2.2] adverbs modify the verb by specifying when the event described by the predicate takes place (see tense [Semantics – Chapter 1]). They answer the question *when?* Among sign languages, tense information is commonly encoded by an independent manual sign, or, in some sign languages, by non-manual markers.

When conveyed by an independent manual sign, time adverbials usually appear sentence-initially, as in the following LSE example.

PAST WEEK MEETING START TEN END QUARTER TO THREE
'Last week the meeting started at ten and ended at a quarter to three'
(LSE, Cabeza Pereiro & Fernández Soneira 2004: 69)

Other sign languages, like ASL, allow their occurrence also in sentence-final position (a) or between the subject and the (modal) verb (b).

a. J-O-H-N BUY CAR TOMORROW
'John will buy a car tomorrow.'
b. J-O-H-N TOMORROW CAN BUY CAR
'John can buy a car tomorrow.' (ASL, Aarons et al. 1995: 238)

6.4.2.2 Manner adverbs

Manner [Semantics – Section 14.2.4] adverbs specify the way in which an event takes place. They answer the question *how?*. They are commonly conveyed by modifying the verbal sign, or through non-manual markers. In some cases, they are conveyed by an independent manual sign.

If manner information is encoded in the target sign language by an independent manual sign, the grammar writer should verify its unmarked position in the sentence. In LIS, when an independent manual sign is adopted, it occupies a post-verbal position.

IX$_1$ LISTEN ANNOYANCE
'I listen to you with annoyance.' (LIS, Natural 2014: 31)

6.4.2.3 Locative adverbs

This class of adverbs provides information regarding the location where the event takes place. They answer the question *where?*. Locative [Semantics – Section 14.2.3] information is commonly conveyed by an independent manual sign.

If conveyed by an independent manual sign, the grammar writer should verify the position of locative adverbs in the target sign language. According to Lerose (2009), in LIS locative adverbs occupy a post-verbal position.

DANIELE EAT OUTSIDE
'Daniele eats outside.' (LIS, adapted from Lerose 2009: 54)

6.4.2.4 Adverbs conveying aspectual information

Sign languages often convey aspectual information [Semantics – Chapter 2; Morphology – Section 3.3] through modification of the verb sign.

A continuative [Semantics – Section 2.1.2] action (corresponding to the adverb *continuously*) is marked in ASL by slow (arch-shaped) reduplication of the verbal sign. Iteration of an action (corresponding to the adverb *repeatedly*) is expressed in SSL through fast reduplication [Phonology – Section 3.3.1] of the predicate with repeated short movements. Habitual [Semantics – Section 2.1.1] events (corresponding to the adverb *usually*) are marked by reduplication of the verbal sign as well, but differ from iterative aspectual information in ASL in that they involve smaller and faster movements.

If the target sign language conveys aspectual information by independent adverbial manual signs, the grammar writer should verify their preferred position in the sentence.

6.4.2.5 Adverbs conveying deontic modality

Deontic adverbs convey the obligatoriness of the action expressed by the sentence predicate (*necessarily*).

A word of caution is needed: deontic adverbs are not to be confused with modal markers expressing deontic modality / modality [Morphology – Section 3.4.1] / modality [Semantics – Section 4.2] (*must*, *should*) that sign languages commonly use.

If the target sign language conveys deontic adverbs by independent manual signs, the grammar writer should verify their preferred position in the sentence.

6.4.2.6 Adverbs conveying epistemic modality

Epistemic [Morphology – Section 3.4.2] / epistemic [Semantics – Section 4.1] adverbs convey the speaker/signer's attitude towards the truth of the proposition (*perhaps*, *certainly*).

If the target sign language conveys epistemic adverbs by independent manual signs, the grammar writer should verify their preferred position in the sentence.

6.4.2.7 Adverbs of degree

Adverbs of degree convey the intensity or degree of a verb (a), adjective (b) or another adverb (c).

a. Tom couldn't **quite** understand what was going on.
b. He was **extremely** happy.
c. She spoke **very** loudly.

Sign languages seem to express degree by altering the manual sign that is modified (be it a verb, adjective, or adverb) changing its speed and movement and by the employment of non-manual markers rather than using a dedicated manual sign.

In the following LIS sentence, the adverb of degree 'a lot' modifying the verb STUDY is not realized as a manual sign, rather, the sign for the verb is altered in its realization, namely, it is reduplicated (reduplication is indicated by '++' in the glosses) and produced with longer and wider movements with respect to its citation form.

 5_6.4.2.7_1_LIS_DANIELE STUDY++

DANIELE STUDY++
'Daniele studies a lot.' (LIS, adapted from Lerose 2009: 55)

If the target sign language conveys adverbs of degree by independent manual signs, the grammar writer should verify their preferred position in the sentence.

6.4.2.8 Adverbs of frequency

Adverbs of frequency specify how often an event takes place (*frequently*, *sometimes*, *seldom*). They answer the question *how often?*.

They partially overlap with adverbs conveying iterative, habitual, and durative aspectual information, but they embrace a broader semantic area. Across sign languages, adverbs of frequency are conveyed by an independent manual sign (a) or by inflecting the verbal manual sign they modify (b).

a. IX$_3$ PIZZA IX$_3$ EAT SOMETIME
'He sometimes eats pizza.'


5_6.4.2.8_1_LIS_IX-1 WORK ARRIVE LATE++

b. IX$_1$ WORK ARRIVE LATE++
'I always arrive late at work.' (LIS, Natural 2014: 32)

If the target sign language conveys adverbs of frequency by independent manual signs, the grammar writer should verify their preferred position in the sentence.

6.5 Adverbial phrase modifiers

Adverbial phrases may contain more material than just the head, namely, the adverb. When this happens, the head is modified by the material appearing inside the adverbial phrase.

Adverbs can be modified by degree words expressing intensity or comparison [Semantics – Chapter 8].

6.5.1 Adverbs modified by degree words expressing intensity

An adverb can be modified by a degree word expressing intensity. In English, for example, the adverb can be preceded by *very, so, quite, too*, *extremely, incredibly,* etc.

John was walking **too** quickly

No specific studies on the modification of an adverb by a degree word expressing intensity in sign languages are at the moment available.

6.5.2 Adverbs modified by degree words expressing comparison

Adverbs may undergo comparison by being modified by degree words expressing comparison in their comparative and superlative forms. When undergoing comparison, in English the adverb is preceded by *more/less* or *most/least* yielding the adverbial phrase *more/less quickly, most/least quickly*.

No studies on comparative and superlative degree words modifying an adverb in sign languages are at the moment available.

Elicitation materials

Since the production of adverbial phrases is not frequent in spontaneous conversation, the grammar writer is advised to use elicitation techniques such as a situational

context he/she should sign to the consultant followed by questions aiming at eliciting adverbial phrases. To exemplify, after presenting the context in (i), the consultant can be asked the question in (ii).

(i) You have a job meeting at 9. It's 8:45 and you are still at home. The job meeting is half an hour away, walking distance, from your place.
(ii) How are you walking to get there on time?

Another elicitation technique involves asking grammaticality judgments. It is, however, advisable to use grammaticality judgments after eliciting the data through situation contexts, just to verify the position(s) adverbial manual signs occupy in the sentence.

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