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Antisymmetry and sign languages: a comparison between NGT and LIS

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Chapter 3: The structure of the simple sentence: aspect, modals and negation

As discussed in §1.1.1, sign languages have a specific order of elements, in the sense that signs cannot be combined randomly to form sentences. With respect to the unmarked word order of subject, verb and object in plain declarative sentences, there is a certain crosslinguistic variation among both sign languages and spoken languages. For instance, LIS and NGT are both considered SOV languages (a.o. Laudanna (1987), Cecchetto et al. (2004), and Bertone (2007) for LIS; Coerts (1994) and Bos (1995) for NGT) because the direct object and the indirect object usually precede the verb in the surface order. Other sign languages have been argued to have an SVO surface order. For example, ASL is SVO, although different orders are possible (Fischer 1975; Liddell 1980), and so is Swedish Sign Language (Bergman & Wallin 1985). Interestingly, the spoken languages in the direct environment of a sign language often show a different surface order than the sign language: Italian, for instance, is SVO and Dutch stays somehow in the middle having an SOV order in subordinate clauses, an SVO order in main clauses, and the object sandwiched between auxiliary and past participle when compound verbal forms are used. Thus, LIS and NGT show a different linear order compared to the surrounding spoken languages Italian and Dutch. However, the differences concern not only the unmarked order of subject verb and object, but also the ordering of modals, negations, and aspectual markers with respect to the verb. It is therefore possible that LIS and NGT, although they are both SOV languages, display some differences in the linear order of other elements of the sentence.

This chapter presents and discusses some data regarding the position and the behaviour of negation, modals, and aspectual markers with respect to the verb in declarative clauses. In other words, it addresses what is generally called the IP domain (other sentence types, including interrogative, imperative, conditional, and relative clauses are analyzed in chapters 4 and 5). The discussion will focus on the costs and the advantages of a derivation based on an antisymmetric, that is, Specifier-Head-Complement, deep structure along the same lines proposed for the DP in chapter 2. The analysis, however, will be somewhat more tentative than the analyses proposed in other chapters since sign languages often make use of nonconcatenative morphology (see chapter 1) to encode

morphosyntactic features corresponding to adverbs, aspectual markers, or even negation. It is therefore not always possible to unambiguously establish the linear ordering of the elements to be discussed, making a satisfactory analysis difficult²⁹. Moreover, in my opinion, a complete understanding of the IP domain of LIS and NGT can be achieved only once their verbal agreement system has been fully described and analyzed. Since both languages sometimes show much richer agreement than well-known spoken languages, their structure is more difficult to unravel. An analysis of verbal agreement is, however, outside the scope of this dissertation. Data on agreement will serve here to discuss some general properties of LIS and NGT which are the starting point for the analysis. Thus, while this chapter will not provide a theoretical account for verbal agreement of LIS and NGT, a brief **description** of it will be presented, which will turn out to be necessary for the discussion of some basic premises relevant for the analysis.

This chapter is organized as follows. In §3.1, I present some data on the ordering of different elements in the simple sentence. In §3.2, I will analyze the ordering of verb, modals, aspect markers, and negation, arguing in favour of a Specifier-Head-Complement phrase structure. Some special properties of synthetic negative modal signs will also be discussed. General conclusions follow in §3.3.

3.1 The word order within the simple sentence

I will start the discussion of word order within the simple sentence by outlining the basic SOV sign order of LIS and NGT in §3.1.1. This will turn out to be useful for the discussion of more complex constructions (interrogative clauses, conditional clauses, topicalizations, relative clauses) in chapters 4 and 5. In the same subsection, I also sketch some properties of the verbal agreement system of the two sign languages; the presence and position of agreement are important factors that must be taken into consideration when analyzing the distribution of modals, aspectual markers, and negation (in the second part of the chapter). In §3.1.2, some information will be given about the ordering of selected aspectual and tense markers in these two languages. §3.1.3 will describe

²⁹ See Vermeerbergen et al. (2007) for problems related to simultaneity in sign languages.

the realization and the position of negation, whereas §3.1.4 will deal with modals and negative modals.

3.1.1 Word order in plain declarative sentences

This section describes the unmarked order of LIS and NGT and the position of some adverbs in simple declarative sentences. It also focuses on the different verbal agreement strategies of these languages and the different positions in which verbal agreement appears in the sentence, depending on the employed agreement strategy. This information will serve as a useful background both for the other sections within this chapter and also for the next chapters.

Consider the following simple declarative sentences: (85.a) and (85.b) contain an agent and a transitive verb, and (86.a) and (86.b) illustrate different possessive constructions. The order in LIS (85.a) and NGT (85.b) is SOV. In these examples, I have observed no overt agreement – be it manual or nonmanual – between the verb and its arguments. In both languages, the verb DRINK always contains a movement toward the signer’s mouth, regardless of who is the subject. These examples have a 1st person sg. subject (IX₁). However, using a 2nd or 3rd person subject, the sign DRINK would not change to show agreement (unlike English *I drink – he drinks*, Dutch *ik drink – hij drinkt*, or Italian *Io bevo – egli/lui beve*). The verbal movement does not encode agreement with the object either.

85.

- | | | |
|----|-----------------------------|-------|
| a. | IX ₁ WATER DRINK | [LIS] |
| | ‘I drink water’ | |
| b. | IX ₁ WATER DRINK | [NGT] |
| | ‘I drink water’ | |

The order in (86.b) is SOV, too. In (86.a) an existential verb is used³⁰. Its subject is the possessee DOG, which follows the 2nd person singular possessor IX₂. The verb does not agree overtly with the subject, nor with the object. In (86.a) and (86.b), both languages display the order Possessor-Possessee-Verb.

³⁰ This sign is often glossed as “C’È” in Italian because, in addition to its possessive use, it is also employed to express existence or presence conveying the meaning of “X exists / There is X / There are some Xs”.

86.

- a. IX₂ DOG THERE-IS [LIS]
 ‘You have a dog’ (lit. ‘to you a dog there is’)
- b. IX₂ DOG HAVE³¹ [NGT]
 ‘You have a dog’

Here, I want to point out that the SVO order is not unattested in LIS, but seems related to other factors, such as the absence of agreement on the verb or the reversibility of a sentence (Laudanna 1987; Bertone 2007). However, Bertone (2007) describes different kinds of agreement markers (cliticized/weak indexes and nonmanual markers such as eyegaze) which favour an SOV order, in addition to the synthetic verbal inflection (change of the start/ending point of the verbal movement). In particular, LIS indexes and nonmanual agreement markers seem to be able to license an SOV order also with verbs which contact the body, plain verbs, which lack synthetical inflection and would otherwise require an SVO order. According to Bertone, SOV order is thus possible even with plain verbs in reversible sentences, if agreement through eyegaze or indexes is present, and in this case, the arguments precede the verb. In addition to this, examples (85.a) and (85.b) show that SOV order is accepted in LIS and NGT even if no overt agreement appears on the verb. Also in NGT, it is possible to have an SVO order (Coerts 1994) in addition to the SOV one. However, it is not clear what triggers the different orders. Alternative orders might be the consequence of verb movement or object shift (see Matsuoka (1997) and Braze (2003) for ASL). However, the derivation of SOV/SVO orders is not addressed in this dissertation (only some brief speculations will be offered in §6.4 for LIS).

As was discussed in §1.1.3, some sign language verbs show rich synthetic person inflection by making use of the signing space. By means of this mechanism, the verb overtly agrees with subject and objects (but recall the exception of *Kata Kolok* mentioned in chapter 1). LIS and NGT conform to this pattern, as shown in examples (87) and (88) where the verb agrees overtly with its arguments, that is, with both the subject and the object. In an unmarked context, these usually appear before the

³¹ This sign is accompanied by the mouthing *heb* (‘have’), hence the gloss. It indicates possession but not existence.

verb yielding an SOV order as in (87). In (88), too, the verb is preceded by its arguments. The pronouns are optional, depending on the context.

87. (IX₂) (IX₁) ₂CALL₁ [LIS/NGT]
'You call(ed) me'

88. CHILD_{LFT} (IX_{RGT}) BOOK_{LFT}CL: ^GIVE_{RGT} [LIS/NGT]
'A/The child gives a book to him/her'

While the verb in (87) is accompanied by two arguments, in (88) the agreeing verb has three arguments: the 3rd person subject/agent CHILD_{LFT} (i.e. signed on the left side of the signer), the indirect object/beneficiary 3rd person pronoun IX_{RGT} (signed on the right side), and the 3rd person direct object/patient BOOK. All three arguments precede the verb GIVE in both LIS and NGT. The SOV order of these languages is thus better described as S-iO-dO-V. According to Pfau & Bos (2008), NGT also allows for the order S-dO-iO-V. I do not know whether this variation is attested in LIS, too. In either case, the objects precede the verb and follow the subject in both LIS and NGT. This observation is sufficient for the purpose of this dissertation. In (88), the verb agrees in location with subject and indirect object. In this case, a classifier (CL) occurs. The classifier is obligatorily incorporated³² into the verb, that is, the classifier handshape which refers to some physical properties of the direct object (the book) combines with the verb (thus moving from left to right). Here I will not go into detail about the nature of classifiers (the reader is referred to Corazza (1990) and Emmorey (2003), amongst others). I restrict myself to noting that, by means of the classifier, the verb acquires some properties that refer to the object. Zwitserlood & Van Gijn (2006) explicitly argue that the occurrence of classifiers in NGT verbs is an instance of agreement (or class agreement). In an independent research, Bertone (2007) argues that classifiers on LIS verbs are also an instance of

³² Here, I do not use the word "incorporation" in the sense of Baker (1988). The word "incorporation" is employed here to parallel its use in "numeral incorporation", where the handshape representing the numeral is incorporated into the base sign of the "numbered" noun, becomes a part of it, and takes on the movement of the base sign (if the base form of the sign has a movement). That is, I simply imply that the shape of the classifier takes on the movement of the base verb so that the classifier becomes a part of the verb (it becomes its handshape).

gender/class agreement. In LIS, the handshape of the noun appears to be occasionally incorporated into the verbal movement, as in the case of the two-handed sign BOOK in (89). Such a strategy seems not to be allowed in NGT. However, as far as I could observe, such incorporating forms are not compulsory and using just a base verb GIVE is grammatical, as in the NGT example (90).

89. (IX₁) (IX₂) (BOOK) ₁BOOK[^]GIVE₂ [LIS]
 ‘I give you a/the book’

90. [NGT: Pfau 2008b:200]
 IX₁ IX₂ GRAAG³³ BOEK ₁GEVEN₂
 ix1 ix2 with-pleasure book 1s-give-2O
 ‘I would like to give you a book’

Throughout the dissertation, I will employ the label “synthetic inflection/agreement” to refer to agreement expressed by spatial modifications that change the start- and end-point of the verb. I will call “synthetically inflected verbs” all verbs that are spatially modified to show agreement by changing the start- and end-point of their movement.

Let us now consider the position of some time adverbs. Time adverbs, when employed, usually appear sentence initially in both languages, leaving the basic sign order unchanged, as can be seen in examples (93) and (94) as compared to (91) and (92):

91. IX₂ (IX₁) ₂GO₁ [LIS/NGT]
 ‘You come to me’

92. CHILD_{RGT} SCHOOL_{LFT} (IX_{LFT}) _{RGT}GO_{LFT} [LIS/NGT]
 ‘A/The child goes to (the/that) school’

³³ Van Gijn & Baker (2003: 199) recorded two NGT signs for English ‘want to’: a sign glossed WILLEN which they render as ‘really want’ and a more neutral form glossed as GRAAG-WILLEN.

Also the NGT online dictionary (http://www.kegg.nl/egg_gebaren.php) reports two different signs for ‘want to’, glossed as WILLEN and GRAAG. Given that two different forms exist and that their meanings must be kept distinct, I translate Baker’s gloss GRAAG literally as ‘with-pleasure’, even though it fulfils the function of English ‘want-to’.

93. TOMORROW (IX₂) (IX₁) ₂GO₁ [LIS/NGT]
 ‘Tomorrow you (will) come to me’

94. YESTERDAY CHILD_{RGT} SCHOOL_{LFT} (IX_{LFT})_{RGT}GO_{LFT} [LIS/NGT]
 ‘Yesterday a/the child went to (the/that) school’

The resulting order of elements is AdvSOV. However, notice that in (93) and (94), the verb itself does not change its form to express tense. In (93) the future tense is encoded only by the sentence-initial sign TOMORROW, but the phonological form of the verb is identical to that in (91). Likewise, in (94) the past tense is expressed only by the sentence-initial sign YESTERDAY, but the verb is not different from (92). In LIS there is no tense inflection, at least not in the sense in which tense is usually understood (see Zucchi (2009) for an alternative account which involves nonmanual tense marking: shoulders forwards=future, shoulders backwards=past).

Also notice that without adverbs, sentences like (93) and (94) can be interpreted as present tense unless tense is specified otherwise in the context. Signs meaning ‘now’, however, can also appear sentence-initially, as indicated in NGT example (95): the same sign order is also grammatical in LIS³⁴.

95. [NGT: adapted from Pfau & Bos 2008:125]
 NU IX₁ STATION IX_{3b} ₁GAAN_{3b}
 now ix1 station ix3 1s-go-3o
 ‘I go now to the station’

So far the two sign languages behave alike. As was shown in chapter 1, however, some differences exist between them. In the context of plain verbs, which cannot be spatially modified to express agreement synthetically, the two languages may resort to two different analytic inflection strategies, namely the use of indexes or of an auxiliary agreement marker (see §1.1.4):

³⁴ Pfau & Bos (2008) do not specify whether third person locations are “right” or “left”, but label them generically as “3a” or “3b” in their examples.

96. IX₁ WAIT IX₂ [LIS]
 ‘I wait(ed) for you’

97. [NGT: adapted from Pfau & Steinbach 2007:317]
 ALWAYS IX₁ WAIT++₁ OP₂
 ‘I always (have to) wait for you’

The LIS verb WAIT in (96) appears between two indexes which, however, do not function as pronouns but as agreement markers. In particular, they do not have the tense movement characteristic of strong pronominal indexes. Bertone (2007) therefore classifies this type of indexes as clitics or weak pronouns. The verb intervenes between these markers just as synthetically inflected verbs appear between agreement suffixes in (93) and (94). In contrast, the NGT verb WAIT in (97) precedes the auxiliary OP which encodes both subject and object agreement, so that in this case, subject agreement follows the verb. Double agreement as in (98) is also observed in NGT, albeit not frequently, thus suggesting the existence of two distinct positions for agreement in the sentence:

98. [NGT: adapted from Pfau & Steinbach 2007: 317]
 IX₃ TEASE₁ OP₁
 ‘He teases me’

Another difference between the two sign languages concerns the position of adverbs of frequency, for instance, the signs for ALWAYS. In LIS the sign ALWAYS appears postverbally as in (99.a), while in NGT it can be preverbal as in (99.b). In this case, it follows the subject, but it precedes both verb and object.

99.

a. IX₁ KEY LOSE ALWAYS [LIS]
'I always lose my keys'

b. [NGT: adapted from Pfau & Bos 2008:128]
IX₁ ALTIJD SLEUTEL KWIJT
ix1 always key lose
'I always lose my keys'

In conclusion, the basic order of both LIS and NGT is S-O-V with a possible extension to S-iO-dO-V, though both languages allow for dropping the subject or the object under certain circumstances. Both languages have synthetically inflected verbs which agree overtly with subjects and objects. The way in which the verb is inflected, however, may vary between the two languages, yielding under certain conditions some differences in the position of the agreement markers. This difference might be related to other properties of NGT, as mentioned in §3.2.2. Also, the adverbs of frequency occupy different positions in the two languages. What is relevant for the moment, however, is the fact that LIS and NGT verbs show rich person inflection (albeit not always overtly) which encodes object and subject agreement and that this inflection appears directly on the verb, at least in some verb classes.

3.1.2 Aspect

This section describes the form, distribution, and ordering of some aspectual markers with respect to the verb in LIS and NGT.

As pointed out in §3.1.1, verbs do not overtly inflect for tense in LIS and NGT, although they do inflect for person agreement. In addition to this, both LIS and NGT have a rich system of aspectual marking. This is achieved in different ways, for instance, by reduplicating the verb, changing the duration of its movement, or adding some special sign. Aspectual marking is a widespread phenomenon across sign languages (see, for instance, Fischer (1973), Klima & Bellugi (1979), and Liddell (2003) for ASL; Hoiting & Slobin (2001) for NGT; Zucchi (2003) for LIS). Thus, in LIS and NGT sentences (100), (101) and (102), perfect aspect is realized by adding a lexical marker after the verb. The marker employed in NGT is the two-handed sign READY (in Dutch “klaar”) while

the marker employed in LIS is the one-handed sign *DONE* (in Italian “fatto”). These markers also retain a completive meaning ‘to have finished’³⁵ *x-ing*. They follow both agreeing and plain verbs, that is, their position does not depend on the presence of overt person agreement. Thus, LIS and NGT display the ordering of elements **Verb-Perfect** (see (100), (101) and (102)):

- 100.
- | | | |
|----|---|-------|
| a. | IX_1 EAT DONE | [LIS] |
| b. | IX_1 EAT READY
‘I (will) have eaten’ | [NGT] |
- 101.
- | | | |
|----|---|-------|
| a. | $1ASK_2$ DONE | [LIS] |
| b. | $1ASK_2$ READY
‘I (will) have asked you’ | [NGT] |
- 102.
- | | | |
|----|--|-------|
| a. | $LFTPHONE_1$ DONE | [LIS] |
| b. | $LFTPHONE_1$ READY
‘S/he (will) have phoned me’ | [NGT] |

The markers of perfect aspect, though often used in past contexts, are compatible with future tense since the informants also judge them grammatical in contexts where anteriority is involved but not past tense. Both (103.a) and (103.b) can refer to the present or the future.

³⁵ In LIS also a second form exists, glossed as *FINISHED* (“finito”), which is similar to the NGT perfect marker and slightly different from the LIS sign *DONE* (it is two-handed). It is not clear to me whether it is a variant of this latter sign or whether it also bears a different nuance of meaning.

103.

- a. TOMORROW, ₁PHONE₂ DONE, (IX₁) SCHOOL_{RGT} IGO_{RGT} [LIS]
 ‘Tomorrow, (after) I have called you, I will go to school’
 ‘Tomorrow, I will call you and then I will go to school’
- b. [NGT: adapted from Pfau 2008b:199]
 IX₁ BOEK LEZEN KLAAR, IX₁ BOEK ₁GEVEN₂
 ix₁ book read ready, ix₁ book 1s-give-2o
 ‘When I have read the book, I will give the book to you’

In LIS the one-handed sign DONE is produced immediately after the verb, thus forming one prosodic unit. It is articulated at the (end) location of the verb. In fact, first the verb PHONE or ASK moves, and only after it has reached its endpoint, the hand articulates the sign DONE in that location. In (102.a) and (100.a), for instance, the perfective marker is performed near the signer’s body while in (101.a) and (103.a), it is performed further away from it, towards the 2nd person location. It thus seems that DONE can be cliticized onto the verb, but further research is required on this issue. In contrast, the two-handed NGT marker READY, according to my observations, is always signed in the neutral space; that is, it does not cliticize to the verb, although it follows the verb.

Durative aspect can be marked on verbs by extending the duration of the verb. This can be achieved in different ways, depending on the phonology of the verb. In some cases, the duration of the verb is prolonged in one position by holding the verb in its final location. In other cases, it is the movement of the verb that is extended, yielding different types of continuous movement. Thus in (104), the verb PHONE clearly shows the durative affix realized by holding the verb in its final (1st person object) position, in (105) WORK shows a simple continuous movement, and in (106) EAT is articulated with a (continuous) two-handed alternating movement, which possibly leads to a sort of circular movement. In any case, the duration of the action is directly encoded by the duration of the continuous movement or the hold.

104. IX_{RGT} RGTPHONE₁^{hold} [LIS/NGT]
 ‘S/he has been phoning me for a long time’

105. IX₁ WORK^{cont} [LIS/NGT]
 ‘I worke(d) for a long time (continuously)’

106. IX₁ EAT^{twohandalt} [LIS/NGT]
 ‘I eat/ate for a long time (continuously)’

The speed at which an action is carried out can be conveyed through a specific marker, the counterpart of the celerative aspect morpheme attested in some spoken languages. Cinque (1999) reports Fula/Fulfulde as having a verbal suffix for celerative aspect (quoting Arnott (1970) and Fagerli (1994)). On the basis of the distribution of adverbs in English and Italian, he then argues (p.103) for a high celerative marker, corresponding to ‘quickly’, and a low celerative marker, corresponding to ‘fast’, which I am discussing here. In LIS and NGT, this marker, quite intuitively, is realized as a fast or slow (feature on the) movement of the verb; see (107) and (108).

107. IX₁ WORK^{fast} / WORK^{slow} [LIS/NGT]
 ‘I worke(d) fast/slowly’

108. IX_{RGT} SIGN^{fast} / SIGN^{slow} [LIS/NGT]
 ‘S/he signs at fast/slowly’

Celerative and durative morphemes affect different features of the verbal movement (e.g. speed, duration) and are thus potentially combined within a single verb, instead of appearing in linear order. It is therefore not easy to determine whether a morpheme precedes or follows another. For instance, the movement of one verb can be prolonged and quick at the same time as in (109), and it is thus impossible to say whether durative marking precedes celerative or vice versa. According to the informants’ judgement, the form of (109) is acceptable in both LIS and NGT.

109. IX₁ WORK^{fast+cont} [LIS/NGT]
 ‘I work(ed) fast for a long time’

Some of the markers, however, do appear in a specific order. In (110) and (111), for instance, the perfect markers, which are lexical, clearly follow

the verbs on which the [+duration] “hold” durative marker or the [+fast] celerative marker appears.

110. $IX_{RGT} RGT_{PHONE_1}^{hold} DONE / READY$ [LIS/NGT]
 ‘S/he made me a long phone call to me’

111. $IX_1 WORK^{fast} DONE / READY$ [LIS/NGT]
 ‘I (will) have been working fast’

The perfect markers follow the verb, that is, they are articulated once the signer has finished holding the sign in (110) and after the fast movement of the verb is terminated in (111). The opposite order is not attested. If the durative and the celerative markers were added after the perfect marker, then the perfect marker should be affected by them. For instance, one would obtain the signs *DONE/READY* combined with a hold (112.a), (112.b), contrary to fact³⁶:

112.
 a. $*IX_{RGT} RGT_{PHONE_1} DONE^{hold} / READY^{hold}$ [LIS/NGT]

b. $*IX_{RGT} RGT_{PHONE_1}^{hold} DONE^{hold} / READY^{hold}$ [LIS/NGT]
 ‘S/he has been phoning me for a long time’

³⁶ For similar reasons (anticipating the discussion in the next section), aspectual markers cannot be added to modals. If, for instance, the durative marker were added after modals, held modals would obtain, contrary to fact.

1. $IX_{RGT} RGT_{PHONE_1} *MUST^{hold}$ [LIS/NGT]

As Anne Baker points out, ungrammaticality may derive from the fact that the semantics of modals cannot be modified by aspectual markers. This is not incompatible with a rigid ordering of projections within IP, since I am assuming that the hierarchy of syntactic projections reflects scope and semantic relations. In other words, the restrictions on the syntactic hierarchy and the semantic restrictions do not compete, but match. Otherwise, assuming these projections without any semantic reflex, would be an ad-hoc proliferation of structural positions just to solve a theory-internal problem of successive raisings. See the second part of this chapter for the proposed structures.

It is relevant to note that the sentences above are ungrammatical, regardless of whether only the perfect marker is inflected, as in (112.a), or both the perfect marker and the verb, as in (112.b). The ungrammaticality lies in the fact that the perfect marker is inflected. This means that sentences are grammatical only if the celerative or durative marker first combines with the verb (as an affix which modifies the verbal movement). Then the perfect marker (which is lexical) is added. In conclusion, although LIS and NGT verbs do not overtly inflect for tense, they show rich agreement with both object and subject and they inflect for various aspectual features. The order of aspectual markers in both languages is **V-Durative-Perf** and **V-Celerative(*fast*)-Perf**.

3.1.3 Modals

This section describes the ordering of LIS and NGT modals with respect to both the verb and some aspectual markers presented in §3.1.2.

Modals in LIS are postverbal (Cecchetto et al. 2004; Bertone, in preparation). As for NGT, there is still uncertainty about their position. A small-scale study by van den Bedem (2006) suggests that they can occur postverbally, preverbally or doubled, that is, preverbally and postverbally at the same time. Because the two languages appear to be quite different with respect to the position of modals, I will present the data of each language here separately.

LIS has different modal signs for CAN, (BE-)ABLE, MUST, (HAVE)OBLIGATION/HAVE-TO, and WANT. Some of the modal meanings overlap, as is also commonly observed in spoken languages, but they are not completely synonymous. Modals are postverbal and are usually invariable, that is, not inflected for agreement or aspect. For instance, agreement, if overt, is marked on the lexical verb. See the following declarative sentences containing modals and both overtly inflected (113)-(116) and noninflected (117) verbs.

113. (IX₁)₁ASK₃ CAN [LIS]
 ‘I can (possibly) ask him/her’
114. (IX₁)₁ANSWER₂ ABLE [LIS]
 ‘I can/am able to answer you’

115. (IX₂)₂GO₃ MUST [LIS]
'You must go there (to him/her)'
116. (IX₂)₂GO₃ OBLIGATION [LIS]
'You have to go there (to him/her)'
117. (IX₂) WORK MUST [LIS]
'You must work'

Modal signs can be inflected when the lexical verb must retain an infinitival/impersonal form. For instance, in (118.a) the LIS verb FINIRE ('finish') agrees only with its object NP LAVORO ('job') (which is accompanied by an optional index) and is nonmanually marked as the topic of the whole sentence (see chapters 4 and 5 for the discussion on topicalized constituents). The Italian gloss LAVORO means both 'work' and 'job'. However, since in other examples WORK is a verb, I translate LAVORO as 'job' in (118.a) and (123.b) in order to make clear that we have to do with a noun in this case. In (118.a), subject agreement occurs on the modal NON[^]PUÒ, which agrees with the third person subject, the index IX_{3b}. The same modal, however, does not agree in (118.b) which has an unmarked order of signs. The modal employed is glossed NON PUÒ (lit. 'cannot') by Bertone, but corresponds to what I gloss ABLE[^]NEG in other examples in this dissertation³⁷. In fact, according to Bertone herself, the modal is best translated as "not manage to" or "not to be able to". This is indicated in the interlinear literal translation (notice also, that Bertone does not mark third person locations on verbs and nouns as "right" or "left" here, but labels them generically as "3a" or "3b").

³⁷ As will become clear in the second part of this chapter, in this dissertation, I use the gloss [^]NEG to represent all special negative modal forms that do not follow the usual pattern of standard LIS/NGT negative constructions.

modals are able to appear in different positions within the sentence; see, for instance, (121)-(124) for the different positions of CAN. In (121) the modal precedes the verb, though following the subject. In (122) the modal is postverbal. In (123) the modal is postverbal, but precedes the postverbal subject index (recall from §3.1.1 that the subject can be doubled by a subject index in NGT). In (124) the modal is doubled: it appears once in preverbal position, after the subject, and once in postverbal position, following the time phrase and again preceding the postverbal subject index. Notice that van den Bedem labels third person locations simply as “3” in these examples.

121. [NGT: adapted from v.d. Bedem 2006:27]

IX₃ KUNNEN HELE DAG LOPEN
 ix3 can whole day walk
 ‘She can walk for a whole day’

122. [NGT: Crasborn et al. 2004, in v.d. Bedem 2006:27]

BETEKENIS GEBAREN ZONDER-STEM ₁AFLEZEN₃ KUNNEN
 meaning sign without-voice pick up can
 ‘He can pick up the meaning of the signs even though I do not use my voice’

123. [NGT: adapted from v.d. Bedem 2006:27]

VERZOEK TAS-AFHALEN, IX₁ ZITTEN KUNNEN IX₁
 request bag-take ix1 sit can ix1
 ‘Please, will you take your bag from the bench/sofa? Then I can sit’

124. [NGT: v.d. Bedem 2006:28]

IX₃KUNNEN ANTWOORDEN ONTHOUDEN VOOR EXAMEN KUNNEN IX₃
 ix3 can answer remember (be)for(e) exam can ix3
 ‘He can remember the answer before/for the exam’

Examples (125) and (126) illustrate different positions of MUST. In (125) the modal sign occurs before the verb and after the subject. In (126) the modal is postverbal.

125. [NGT: v.d. Bedem 2006:29]
 DAARNA IEDEREEN MOETEN VERHAAL VERTELLEN
 then everybody must story tell
 ‘Then everybody must tell a story’
126. [NGT: from v.d. Bedem 2006:29]
 IX₁ VERGADERING GAAN MOETEN
 ix1 meeting go must
 ‘I must go to a meeting’

In her survey, the author lists other possible word orders involving NGT modal signs. She remarks that double modal constructions may encode focus on the modal itself as in the *focus doubling* construction of ASL and Brazilian Sign Language (Nunes & de Quadros 2004; Petronio & Lillo-Martin 1997), but does not point out any other special properties possibly related to the different positions in which NGT modals appear. I was not able to detect possible influences on the ordering of modals either. However, the ungrammaticality of the following examples suggests that the ordering of aspectual markers and modals is subject to some restrictions. The same restrictions hold in both languages. The durative marker cannot follow the modal, or else the modal would be affected by the aspectual “hold” modification, contrary to fact, as in (127). Likewise, the celerative and durative markers cannot be added after the modal in (128). Also the perfect marker, which is lexical, cannot follow the modal in (129).

127. *IX_{RGT} RGT^{PHONE₁} MUST^{hold} [LIS/NGT]
128. *IX₂ WORK MUST^{fast+cont} [LIS/NGT]
129. *IX_{RGT} RGT^{PHONE_{LFT}} CAN DONE [LIS/NGT]

Notice that in sign languages, one sign may often retain the same form even though it fulfils different functions. Moreover, both verbs and adjectives in LIS and NGT can either agree overtly or not. Thus, even morphology may not be sufficient to distinguish verbs and adjectives. Finally, remember that LIS and NGT also lack an overt copula. Out of

context, it is therefore difficult to determine whether a sign means, for instance, just ‘nice’ or ‘(be/am/is/are) nice’. This implies that it is almost impossible to determine whether the modal signs must be understood as real modal verbs (or markers), as adverbs, or as adjectives. For instance, in principle, the same LIS sequence: IX₁ 1GO₃ CAN might mean really ‘I can (possibly) go’ or ‘(that) I go (is) possible’, or even something like ‘me going there (is) possible’. As argued later in §3.1.5, however, these signs will be analyzed in the second part of this chapter, assuming that they are modals, not adjectives.

3.1.4 Negation and negative modals

This section compares the functioning and the distribution of the negation and negative lexical elements (as NOT-YET, NOBODY, NOTHING) in LIS and NGT. It will take into consideration negative NMMs, too. It also describes negative modal signs, that is, dedicated negative forms employed in the two languages to negate some modals. Also some data from other sign languages are presented briefly for comparison.

The expression of negation is a source of crosslinguistic variation between LIS and NGT, as it is generally among other sign languages. As already hinted at in §1.1.3, the expression of negation is one of the aspects of grammar where sign languages vary (see a.o. Zeshan (2006); Hendriks (2007, 2008)). With respect to this, LIS and NGT behave differently in that the former encodes negation through an obligatory clause-final lexical marker (Franchi 1987; Laudanna 1987), which I gloss as NOT³⁹, whereas in NGT, it is possible to negate a proposition using only the compulsory negative NMM “side-to-side-headshake” (Coerts 1992; Pfau & Bos 2008). In fact, in NGT, the manual negative sign NOT is employed very rarely. In other words: LIS is a manual dominant sign language and NGT is nonmanual dominant sign language (Zeshan 2006). Compare the LIS sentence involving lexical negation in (130.a) with the

³⁹ Although Franchi (1987) and Laudanna (1987) gloss the manual negation as NO, this sign is different from the pro-sentence negation ‘no’ (also called negative interjection), which also exists in LIS. In fact, the latter has a quicker and more tensed movement. Indeed, LIS negation is usually glossed NOT/NON in other works (a.o. Cecchetto et al. 2004; Geraci 2005; Brunelli 2006; Branchini & Donati 2007). For the same reason I gloss it NOT here.

However, in LIS the sentence-final lexical marker NOT is required to make the sentence grammatical, as in (130.a), because the nonmanual marker alone is not sufficient to negate a proposition, as shown in (132.a). In NGT, in contrast, the “side-to-side headshake” alone in (130.b) is sufficient to encode negation, while the use of the lexical sign in the absence of nonmanual marking does not *per se* make the sentence grammatical (132.b).

- 132.
- | | | |
|----|---|-------|
| | neg | |
| a. | *(IX ₁) IASK _{LFT} | [LIS] |
| b. | *(IX ₁) IASK _{LFT} NOT | [NGT] |
- ‘I do/did not ask him/her’

The LIS NMM is not restricted to the clause-final negative particle NOT; it also accompanies other negative signs, for instance, negative quantifiers, and may then spread over a longer string of signs. Yet, this spreading does not occur randomly, but is related to the position of the negative element (see Geraci 2005). When the negative sign is clause-final as in (133.a) and (134.a), the NMM only accompanies the negative sign. When it is in situ as in (133.b) and (134.b), the NMM spreads between this position and the end of the clause, that is, it extends as much as to include the in situ negative element. Geraci (2005) states that «the Neg-NMM starts from the position where the n-word is met» referring to his example (35), where the n-word (i.e. the negative quantifier) appears in situ and the NMM reaches the end of the clause. Thus, he assumes that the negative NMM starts from the in situ position and spreads rightwards. This may suggest that the spreading has a direction according to Geraci and, consequently, that it involves some sort of movement (given that direction exists when something moves). However, here we do not necessarily have to do with something that moves. Rather, we just have to do with something (the NMM) that is longer or shorter depending on certain conditions. The data show simply that one boundary of the NMM is invariably the end of the clause and that the other boundary may be closer to or farther away from it, but this does not prove that one boundary is the starting point of the NMM and the other is the endpoint. For this reason, I restrict myself to observing that the NMM extends or spreads “between” position/elements, rather than saying that it starts, extends or spreads “from...to”. Here, I would also like to be clear about

the fact that the spreading of the negative NMM does not go beyond the end of the negative clause. If a LIS sentence contains a negative clause, followed by an affirmative clause, only the first clause displays the negative NMM. That is, the NMM reaches the end of the clause, not necessarily the end of the sentence. In (138.b) and (139.b) the NMM spreads between the negative sign and the end of the clauses.

133. _____ neg
 a. GIANNI SIGN NOTHING⁴² [LIS: Geraci 2005: ex. 17]
 ‘Gianni signed nothing’

b. _____ neg
 GIANNI NOTHING SIGN [LIS: Geraci 2005: ex. 35]

134. _____ neg
 a. CONTRACT SIGN NOBODY [LIS: Geraci 2005: ex. 16, 22]
 ‘Gianni signed nothing’

b. _____ neg
 NOBODY CONTRACT SIGN [LIS: Geraci 2005, ex. 23]

A similar phenomenon is observed in NGT (135.a). The negative adverbial NOT-YET appears in preverbal position (again unlike LIS) and the NMM spreads from its position to the end of the sentence. Unfortunately, I have not been able to determine whether this position is the only option in NGT or whether the clause-final position is also available for NOT-YET, as it is in LIS. LIS, too, has a clause-final sign that Geraci (2005) glosses NEG and labels “presuppositional not” referring to Zucchi (2003). This sign seems to have the meaning of ‘not-yet’. Unfortunately, I have no data about the NMM accompanying this sign, although Geraci (2005) claims that negative signs bear a NMM. Notice however that NGT has NMM spreading also in (135.b), where the negative element is clause-final.

⁴² The non-manual marker is not reported in Geraci (2005), but it appears on the same sentence in Cecchetto, Geraci & Zucchi (2009: ex. 23b).

135.

a. [NGT: GIDS, ontkennde zinnen 18/24]

_____ neg
AIRPLANE NOT-YET LAND
'The airplane has not landed yet'

b. [NGT: Coerts 1992:209]

_____ top _____ neg
AIRPLANE COME NOT
'As for the airplane, it did not come'

As for negating a sentence which contains a modal, it has been repeatedly observed that sign languages commonly employ specific negative modal signs, which encode both the modal meaning and negation at the same time, instead of applying the standard negation strategy employed with lexical verbs (Zeshan 2006; Neidle et al. 2000; Skant et al. 2002; Aarons et al. 1995; Shaffer 2002; Yang & Fischer 2003). For instance, Pfau & Quer (2007) report that DGS and LSC employ negative modals which they gloss as DARF[^]NEG (DGS for 'may not'), MUSS[^]NEG (DGS for 'not have to'), and PODER-NO (LSC, 'cannot'). Crucially, the DGS sentence in (136.a) cannot be negated by adding the standard negative particle NICHT ('not') to the modal as in (136.b), nor by adding the standard negative NMM 'headshake', which usually can be superimposed to other verbs as in (136.c). Only the specific negative modal sign DARF[^]NEG in combination with the NMM (136.a) is grammatical. Constructions (136.b) and (136.c) are not grammatical. Note that Pfau & Quer distinguish between fully suppletive negative forms and semi-transparent negative forms that they define as "cliticized". Here, I will simply make a distinction between modals that combine with the (manual or nonmanual) negation in the same way as lexical verbs do (that is, according to the standard manual or nonmanual strategy of the language), and modals that resort to specific, dedicated negative forms. The reason for this will become clear in the analysis in §3.2.4.

136. [DGS: Pfau & Quer 2007: 8]

- a. headshake
 GARTEN IX₃ KIND++ SPIEL DARF[^]NEG
 garden ix child-PL play may[^]NEG
 ‘The children may not play in the garden’
- b. h.shake
 *GARTEN IX₃ KIND++ SPIEL DARF NICHT
 garden ix child-PL play may not
- c. h.shake
 *GARTEN IX₃ KIND++ SPIEL DARF
 garden ix child-PL play may(+NEG)

A similar phenomenon occurs also in LIS and NGT. LIS has specific negative modal signs at its disposal which I will gloss CAN[^]NEG⁴³, MUST[^]NEG, ABLE[^]NEG/UNABLE⁴⁴ (similar to DEAD but accompanied by a blow). NGT has signs for CAN[^]NEG and MAY[^]NEG (*mag-niet* in Dutch, see GIDS and the Effatha website www.kegg.nl/egg_gebaren.php). As far as I could observe, the NGT sign MAY[^]NEG also has the function of LIS MUST[^]NEG, ‘mustn’t’. I have not found any specific NGT negative sign for MUST[^]NEG. In fact, I have found two signs for MAY[^]NEG which are both glossed as MAY-NOT (*mag-niet* in Dutch) on the Effatha website. One of these combines the sign MAY and the sign NO/NOT (*niet/nee* in Dutch). Despite the appearance, this is not a standard negative form in NGT because verbs are usually negated only with a negative NMM in

⁴³ I gloss them with [^]NEG, following Pfau & Quer (2007), in order to make clear that these negative modal signs do *not* contain any sign NOT. However, Pfau & Quer (2007) use the gloss [^]NEG to represent only negative modal forms of DGS and LSC that they take to result from cliticization of negative features onto the modal. They gloss suppletive negative forms in a different way. In this dissertation, I employ [^]NEG to gloss all negative modal forms that do not combine modal and negation according to the pattern of standard LIS and NGT constructions (i.e. neither verb + negative lexical particle NOT, nor verb + negative NMM).

⁴⁴ Recall that in principle, it is not possible to decide whether these signs are verbs or adjectives. Hence my hesitation in using only one gloss for each sign. It is not entirely clear to me whether ABLE[^]NEG/UNABLE means just ‘I am not able’ or if it bears also other nuances of meaning.

NGT. The other sign seems to be just the sign NO/NOT with a longer movement. In GIDS, I have found no such signs. In order to convey the idea of “do not want”, LIS uses a sign roughly glossable as DISLIKE/LIKE[^]NEG⁴⁵, which is related to the sign LIKE but bears a “refusal” facial expression. NGT, too, resorts to a suppletive form glossed WANT[^]NEG (*wil-niet* in Dutch, see Effatha website), which contains a refusal expression. The following examples illustrate the use of negative modals in LIS and NGT. Note that, because of the possible variation observed in the ordering of NGT verbs and modals (see §3.1.3), the NGT examples do not include lexical verbs. This makes it possible to focus on the modals and to ignore their position with respect to a lexical verb (nonmanuals are not transcribed in these examples).

137.

a. (IX₁)₁ASK₃ CAN[^]NEG [LIS]
 ‘I cannot (possibly) ask him/her’⁴⁶

b. (IX₁) CAN[^]NEG [NGT]
 ‘I cannot/am not able’

138. (IX₁)₁ANSWER₂ ABLE[^]NEG [LIS]
 ‘I am not able to answer him/her’

139.

a. (IX₂)₂GO₃ MUST[^]NEG [LIS]
 ‘You must not go there’

b. (IX₂) MAY[^]NEG [NGT]
 ‘You must/may not’

⁴⁵ If a more suitable word is available to gloss the sign, both that word and the [^]NEG form may be indicated (e.g. DISLIKE/LIKE[^]NEG). In this case, DISLIKE is more suitable because it stresses the fact that the sign indicates a refusal, rather than just absence of pleasure. Distinctions like this are relevant for the analysis (in the second part of the chapter).

⁴⁶ Geraci (2005) lists also the negative construction with standard negation CAN+NOT as grammatical (CAN NON, in his example (12)). My informants, however, claim that the combination of the modals CAN and MUST with the negative particle NOT results in ungrammaticality. Maybe, in this case different varieties of LIS are at stake.

Crucially, as far as I could observe, both languages use standard negative constructions to convey the meaning of ‘need not / do not have to / haven’t got to’. As shown in (140) and (141), LIS employs its lexical negation while NGT adds the negative nonmanual marker to the base form of the modal.

140. (IX₂)₂GO₃ OBLIGATION NOT [LIS]
 ‘You don’t have to go there / you need not go there’

141. $\frac{\text{neg}}{\text{---}}$ (IX₂) HAVE-TO [NGT]
 ‘You don’t have to / you need not’

3.1.5 Summary

Two important observations emerge from the discussion in the previous sections. First, although LIS and NGT do not have tense inflection, they nevertheless have a rich system of verbal inflection since (some of) their verbs do not only overtly agree with subjects and objects, but also encode aspectual features. Secondly, although the verb in both languages tends to follow subjects and objects (i.e. the languages are SOV), it is not always clause-final since it can be followed by a variety of functional elements – even though these elements and their linear orders are partially different in the two languages. As for person agreement, LIS and NGT verbal inflection can be realized in different ways (synthetically on the verb or by means of specific functional signs) depending on different verb classes (agreement/spatial versus plain verbs). Interestingly, the two languages behave alike with respect to synthetically inflected verbs, but employ language-specific strategies when they mark agreement with functional signs. In the context of plain verbs, LIS subject agreement is encoded by a preverbal index (clitic or weak according to Bertone 2007), while object agreement is encoded by a postverbal index. In contrast, in NGT both subject and object agreement are encoded on a postverbal auxiliary (Bos 1994). Moreover, the person feature of the subject may be marked by a postverbal unstressed index (Bos 1995), which can co-occur with a subject (pro)noun in canonical position (that is, preceding both object and verb). NGT shows also double agreement.

As for aspect and modal markers, the linear order of markers in the two sign languages is not always easy to determine. However, I was able to establish that LIS shows the orderings **Verb-(Celerative/Durative)-Perfect**, **Verb-Modal** and, in general, **V-Aspect-Mod**. NGT shows the sequences **V-(Cel/Dur)-Perf** and both **Mod-V** and **V-Mod**. Also, the unmarked position of the LIS adverbial *ALWAYS* is postverbal, while its NGT counterpart appears preverbally. This is reminiscent of the nominal quantifier *ALL*, which was shown to be postnominal in LIS, but prenominal in NGT (see §2.1.2).

It is important to note that modals usually do not show subject agreement unless the verb is topicalized, since agreement is usually realized on the lexical verb (at least on synthetically inflected verbs). Aspectual inflection, too, is not realized on modals, but on lexical verbs or through lexical aspectual markers added after the verb. In turn, lexical aspectual markers, like modals, do not inflect for person agreement. These observations form the basis of the analysis that I propose in §3.2 for the position of modals and aspectual markers. This analysis will then be extended to negation.

Negation is primarily expressed nonmanually in NGT and lexically in LIS, where a NMM also occurs, however. Usually, the negative NMM spreads over strings of signs in NGT, but is restricted to the clause-final negative sign in LIS. Yet, with negative arguments⁴⁷ in situ, the LIS NMM spreads. It extends over a chunk of the sentence long enough to include the in situ negative sign, that is, it extends between the position of the in situ negative sign and the end of the clause.

LIS and NGT standard negation is used with lexical verbs and with the modals expressing ‘obligation’, ‘to have to/need’. With other modals, dedicated negative modal signs are employed, which have their own specific lexical form different from their positive counterpart. Due to the specific properties of these two sign languages, it is not easy to determine morphologically and syntactically whether their modal signs are really modal markers (or verbs) or whether they are just adjectives or adverbs⁴⁸.

⁴⁷ Possibly, this is true even with other negative elements in situ, for instance, with adverbs as *NOT-YET*. This would make LIS even more similar to NGT. However, I have only been able to collect data about negative arguments in LIS.

⁴⁸ Bertone (in preparation) explicitly points out that some LIS modals could well be adjectives and that their status is still to be determined. Some of them can indeed be used as adjectives or even nouns and the way they are glossed or called colloquially

In the literature, however, they are usually classified as modals and in the following sections, I will try to analyze them as such.

3.2 Analysis

3.2.1 Introduction

After having shown that the two sign languages under investigation, LIS and NGT, display both overlapping and diverging (morpho)syntactic properties, we shall now see how the ordering and the properties of some elements within the IP domain of LIS and NGT can be accounted for. In particular, I attempt to verify whether they can be accounted for within an antisymmetric model.

The data described in the previous section are not sufficient to allow for a conclusive and comprehensive analysis of the IP domain of NGT and LIS. The results will thus be necessarily provisional. However, they reveal some specific patterns in the ordering of elements. In addition, they also bring to light some remarkable properties of these sign languages which, in a very general way, may favour an analysis in terms of a Specifier-Head-Complement deep structure. The analysis is divided into two parts. First, in §3.2.2, I provide a general discussion on antisymmetric versus nonantisymmetric hypotheses about the structure of IP. Second, in §3.2.3 and §3.2.4, I present a discussion of negation and negative modals, respectively. General conclusions follow in §3.3. As mentioned earlier, the uncertain status of LIS and NGT modals imposes some limits on the analysis, even though the order of signs can be accounted for in the majority of cases. Since in the literature, they are generally classified as modals, I will analyze them as such. However, the uncertainty concerning the status of these signs makes it difficult to analyze properly some of the examples, especially some LIS sentences with two co-occurring modals (see §3.2.4).

is testimony of this fact. For instance, the sign for CAN is often labeled both PUÒ ('can') and POSSIBILE ('possible'). Likewise CAN[^]NEG is labeled NON-PUÒ as well as IMPOSSIBILE. The sign CAN in LIS is also able to occur with a numeral in sequences like CAN TWO, CAN THREE ('there are two/three possibilities/options'). I have not explored this possibility for NGT. However, if modal signs are taken as adjectives with a null copula 'it is (im)possible that', their analysis is trivial. Here, I am exploring the possibility to treat them as modals.

As already mentioned in §3.1, I will not account for the SOV order, nor will I analyze the agreement system of LIS and NGT in this dissertation. Clearly, in an antisymmetric model, the SOV order must be derived from an underlying SVO order through leftward movement of the object. Thus, for instance, Zwart (1997) suggests a derivation of SOV order in Dutch assuming a head-initial deep structure. In LIS and NGT, there seems to be an interesting relation between the agreement system and SOV order, but this issue has to be treated separately in future research. In this dissertation, I can only suggest some speculations concerning this issue. However, these are not presented in this chapter. Rather, they will be briefly mentioned in the final discussion in chapter 6 for two reasons. First, these speculations are based on a comparison between the preverbal position of object NPs and the postverbal position of object subordinate clauses, but subordinate clauses are discussed only in the subsequent chapters (chapters 4, 5 and 6). Secondly, I take as a starting point some general counterarguments against antisymmetry brought forward by Cecchetto, Zucchi & Geraci (2009), which I address briefly in chapter 6 after presenting the general conclusions of this dissertation. This means that the analysis proposed in the following does not account for the data presented in §3.1.1, although it is based on some phenomena described there. Rather, it accounts for the data in §3.1.2, §3.1.3, and §3.1.4.

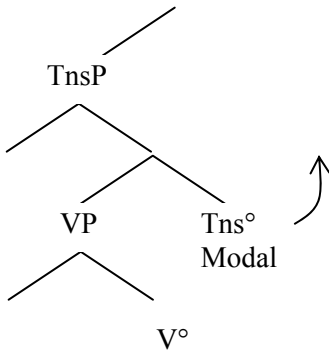
3.2.2 Structure of IP: the position of aspectual and modal projections

This section analyzes the ordering of the verb vis-à-vis modals and aspect markers in light of the fact that LIS and NGT person agreement, especially subject agreement, usually appears on the synthetically inflected verb, even when modals and aspect markers occur. On the basis of this, I propose an antisymmetric structure and a hierarchy of projections in the spirit of Cinque (1999, 2006) where only leftward movements apply.

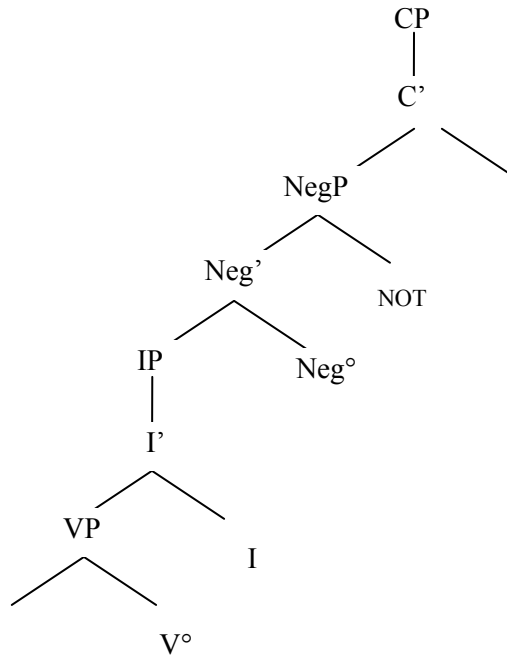
Based on the ordering of elements in SOV sign languages, such as LIS and NGT, it has often been suggested that they should be treated as head-final languages. More generally, a number of SOV and SVO sign languages have been analyzed assuming (parts of) deep structures where heads and possibly specifiers are located to the right of the complements (a.o. Pfau & Glück (2000) for DGS; Quer (2002) for LSC; Petronio &

Lillo-Martin (1997) and Neidle et al. (2000) for ASL; Cecchetto et al. (2004) and Branchini & Donati (2007, 2009) for LIS). From this perspective, the ordering **Verb-Mod**, **V-Asp**, or **V-Neg** in sign languages is taken as a direct effect of the head-final ordering of projections. For instance, Pfau & Quer (2007) propose the derivation (142.a) for LSC and DGS **V-Mod** sequences, whereas Geraci (2005) proposes (142.b) for the LIS sentence-final negation⁴⁹. Such a view entails that the verb stays in situ or very low in the structure.

142. a. DGS and LSC



b. LIS



In (142.a) the modal is generated higher and to the right of the verb and raises further up rightwards. In (142.b) the negation sits higher and to the right of both the verb and the inflection phrase, so that, even though the verb raises to the head of IP, the negation still remains higher and to the right of the verb. Thus, (142.b) should derive correctly the clause-final

⁴⁹ In Cecchetto et al. (2009), this structure is further refined. However, for the purpose of this discussion, the simplified version of Geraci (2005) is sufficient.

position of the LIS lexical negator. As for the position of modals, if we consider LIS and NGT as head-final languages, it is to be expected that the simple structure in (142.a), originally proposed for DGS and LSC postverbal modals, can also derive the postverbal modals of LIS and NGT⁵⁰.

Within this approach, sequences like LIS WORK MUST (117) or NGT SIT CAN (123) are easily accounted for. Also the postverbal position of LIS lexical negation in PAOLO CONTRACT SIGN NOT (131.a) is straightforwardly derived. Along the same lines, one can derive EAT DONE/READY (100.a), (100.b) and TASK^{fast} DONE/READY (111) by adding aspectual projections to these structures. Such an account also has the advantage of being in line with assumptions usually made for other languages. Indeed, in languages like Italian (or Dutch), the modal is considered to raise while the lexical verb stays lower. Given that subject agreement occurs above VP, in an IP/AgrSP projection to which finite French and Italian verbs and finite Italian auxiliaries raise (Pollock 1989; Chomsky 1991, 1995; Belletti 1990, 2009) and given that Italian modals agree with their subjects, Italian modals, too, must raise to a structural position higher than the lexical verb, at some point of the derivation. The same must be concluded for Dutch modals, which also show subject agreement, given Zwart's (1997) assumption that finite verbs raise to AgrSP in Dutch subject-initial clauses. In contrast, nonfinite verbs, such as infinitives and participles, remain lower in the structure. Notice that also Grohmann (2000) suggests that modals raise from Mod^o to T^o.

Aspect, too, is assumed to be encoded higher than the lexical verb. Travis, Guifoile & Hung (1992) propose an aspectual projection higher than the one occupied by the lexical verb (though both are within the VP-shell) for Tagalog. Cinque (1999) proposes a universal hierarchy according to which various aspectual and modal projections are located higher than VP. Notice that concerning sign languages, Aarons et al. (1992), assume, too, that ASL has an aspectual projection higher than VP (but lower than subject agreement). Neidle et al. (2000) also claim that AspP is higher than VP in ASL (but higher than subject agreement)

⁵⁰ To the best of my knowledge, to date, no tree structure has been proposed for NGT. However, I adopt (142.a) here because it is a very simple head-final structure. If even such a simple structure turns out to be unsuitable for the NGT (and LIS) data, this will be an important clue that head-final approaches to these sign languages are faced with some problems.

It may thus be tempting to adopt this approach for LIS and NGT, assuming that in these languages, too, the verb is structurally low.

However, the fact that in these two sign languages, verbs bear a rich range of morphemes (see the discussion in §3.1.1, §3.1.2, and §3.1.5) has important consequences for this approach. First, in languages with rich verbal inflection, the inflected element is assumed to undergo movement⁵¹, as we have just seen. This would require also the NGT and LIS verb to move. Secondly, if the verb moves, does it move to the left or to the right? If rightward verb movement applies, some problems arise with respect to LIS and NGT. Recall, indeed, that in these sign languages, the inflected verb precedes the invariable perfective marker as in (143.a), possibly after combining with durative/celerative morphemes. Along the same lines, in LIS the postverbal modal is usually invariable, while the lexical verb is inflected, as in (144.a). In contrast, languages such as Italian have inflected modals and auxiliaries that precede the lexical verb, which surfaces in an invariable participial (perfect) or infinitival form as in (143.b), (144.b), (144.c). The verb may optionally combine with object (here, dative) clitics, but it does not carry any subject agreement. Thus, the inflected element bearing subject agreement occurs to the left of the invariable one in LIS and NGT, as it does in Italian, in all the sentences in (143) and (144). To make this clearer, the ordering of the relevant elements (subject agreement, modal and aspect) is shown in italics in an additional line between the glosses and the interlinear translations.

143.

a.	<i>3PHONE₁</i>		<i>READY/DONE</i>		[LIS/NGT]
	<i>sbj.agr on the verb</i>		<i>perfect marker</i>		
	'S/He has phoned me'				

b.	<i>Mi</i>	<i>ha</i>	<i>telefonato</i>		[Ital.]
	<i>CLT</i>	<i>sbj.agr on the aux.</i>	<i>perfect verb</i>		
	(to) me	has	telephoned		
	'S/He has phoned me'				

⁵¹ Usually the verb is assumed to undergo head movement. As argued later in this section, both the possibility of head movement and the possibility of phrasal movement must be considered, although I am personally inclined to follow Cinque's proposal that the verb raises with XP movement. However, further investigation is necessary.

144.

- | | | | |
|----|---|--|---|
| a. | ${}_1$ ASK ₃
<i>sbj.agr. on verb</i>
'I can ask him/her' | CAN
<i>modal</i> | [LIS] |
| b. | Posso
<i>sbj.agr. on modal</i>
(I) can
'I can ask him/her' | domandargli/le
<i>infinitive verb(with clitic)</i>
ask him/her | [Ital.] |
| c. | Gli/Le
<i>CLT</i>
(to) him/her
'I can ask him/her' | posso
<i>sbj.agr. on modal</i>
(I) can | domandare
<i>infinitive verb</i>
ask
[Ital.] |

Under a “head-final” hypothesis, this would require inflection, especially subject agreement, to be lower than aspect and modals in the structure of LIS and NGT, differently from assumptions commonly made for other languages (for instance, past participles, which have a perfect aspect meaning, are lower than inflected verbs and auxiliaries in Pollock (1989), Belletti (1990, 2009), and Chomsky (1991, 1995); in Travis, Guilfoile & Hung (1992), aspect is taken to be inside the VP-shell, that is, lower than IP/AgrSP). Indeed, in head-initial languages such as Italian, the inflected modal is assumed to raise leftwards to IP for subject agreement, while, according to a structure where “the higher you go, the more on the right you are”, the LIS/NGT inflected verb should follow the invariable modal or perfective marker if it raised above them. In other words, despite the apparent parallelism with head-initial languages (the modal also raises in LIS and NGT), there is a major inconsistency, namely the fact that the derivation predicts a different sentential position for LIS and NGT verbal agreement with respect to head-initial languages, contrary to fact.

Although it is not clear where subject agreement sits with respect to tense, aspect, and modals (Cinque 1999, 2006; Julien 2002), even a very consistently head-final language such as Turkish (145) has the modal or aspectual affix “trapped” between verb and subject inflection.

145. Oku-yabil-ir-im [Turkish: Kornfilt 1997: 375]
verb-mod-tns-agr.
 ‘I can/am able to/am permitted to read’

The 1st person agreement *-im* in (145) appears further away from the verb stem, and hence should be located higher in the structure than the modal. Indeed, according to Baker’s (1985) Mirror Principle, the order of affixes in morphology reflects the syntactic derivation. In Baker’s (1985: 378) words, given a sequence *verb-affixA-affixB* and the cyclic nature of morphology, «the syntactic process associated with affixA must occur before the syntactic process associated with affixB». When raising is considered, earlier syntactic processes are those which involve features hosted in lower projections and earlier steps of the movement, whereas later syntactic processes involve higher projections and later steps of the movement. Thus, informally, we can say that Baker’s principle ultimately reflects the relation “the closer to the verb stem, the lower in the structure, and the farther from the stem, the higher in the structure”. In contrast to Turkish, the LIS and NGT subject agreement (if overt) appears directly on the verb.

Leaving now Turkish aside, we have seen that a head-final approach based on rightward movement can account for the fact that the orders **V-Asp** and **V-Mod** observed in LIS and NGT are the opposite of what has been observed in head-initial languages, but it cannot account for another important difference, namely that in the former languages subject agreement is encoded on a different element than in the latter languages. In other words, such an approach fails to capture an important parallelism between LIS/NGT, on the one hand, and head-initial languages, on the other hand: the inflected element – be it a lexical verb or a modal/aspectual marker – precedes the uninflected one. Despite this parallelism, in order to derive the grammatical order of signs, the rightward movement account requires the additional assumption that LIS and NGT subject agreement occurs in a structural position distinct from the position assumed for other languages.

Alternatively, in order to maintain that heads (and specifiers) are on the right and that subject agreement occurs above aspect and modals, further assumptions are necessary. In principle, it is possible either to assume lowering of features, instead of verb raising, or to assume

rightward remnant movement. However, these hypotheses are faced with problems. First, assuming feature lowering means that agreement features in LIS and NGT move to the verb, which is located lower and to the left of inflection. Crucially, one is then forced to switch the movement from “raise-the-verb” to “lower-the-features” just to maintain that it is leftward. Thus, in this case, too, an additional stipulation is necessary to correctly derive the order of signs, despite the parallelism observed in the distribution of subject agreement in LIS, NGT and head-initial languages as Italian⁵². Second, one could still posit a rightward remnant movement by which the inflected element (the verb), high and on the right, is crossed over by an XP containing the uninflected element (as well as the trace of the verb). In this way, the uninflected element raises above and to the right of the inflected element, that is, modals and aspectual markers raise to the right of the verb. This ensures that the position of postverbal aspectual markers and modals is derived correctly even in the presence of verb raising. In doing so, however, the head-final hypothesis loses its appeal as a simple theory that should be preferred because of its ability to explain transparently what other theories explain in a more complex way. As it appears in this dissertation, a Spec-Head-Compl structure is often associated with the idea of remnant movement to derive the observed surface orders of signs or words. In this light, remnant movement might appear as an additional stipulation that somewhat complicates the derivation. However, in the present context, the data would require remnant movement also with head-final structures. At this point, preferring a rightward movement derivation for LIS and NGT, over the leftward movement derivation already employed for Italian, appears as a choice that unnecessarily prevents a uniform account for LIS, NGT, and head-initial spoken languages.

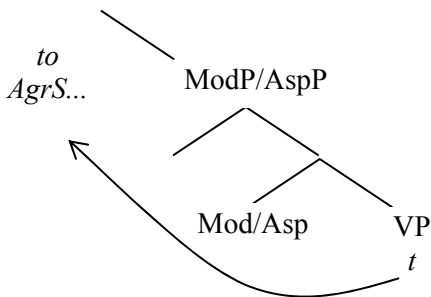
In conclusion, a nonantisymmetric approach to LIS and NGT would require additional stipulations (a low position of AgrP or lowering of agreement features) or, at best, would introduce an unnecessary element of difference between these sign languages and head-initial spoken languages, such as Italian. Moreover, in all the three rightward movement accounts sketched above, the fact that LIS and NGT subject agreement precedes modals and aspectual markers becomes a further burden for the

⁵² I thank Roland Pfau for drawing to my attention the fact that lowering of features would have to cross other heads, an assumption that most scholars would probably exclude.

analysis, in the sense that it appears as an additional, independent phenomenon which the analysis must account for (in addition to deriving the grammatical order of signs).

In contrast, an antisymmetric approach to LIS and NGT does not require additional assumptions and, at the same time, provides a uniform account with head-initial spoken languages, while relating the position of LIS and NGT subject agreement to other properties of these sign languages. In fact, with a Spec-Head-Compl structure, movement in LIS and NGT is consistently leftward and upward just as in head-initial languages such as Italian. The structural position of (subject) agreement, although not known in detail, can simply be taken to be as high as in head initial languages. This derivation is sketched in (146).

146. LIS orders **V-Asp** and **V-Mod** (with Spec-Head-Compl)



As (146) shows, two parallelisms are brought to light between NGT and LIS, on the one hand, and head-initial languages as Italian, on the other hand. First, LIS and NGT subject agreement occurs above modals and aspect markers and therefore, necessarily precedes them. Consequently, the element bearing subject agreement precedes the invariable one in LIS and NGT, just as in head-initial languages. Second, LIS and NGT verbs raise leftwards toward the position of subject agreement as do finite verbs (and auxiliaries) in head-initial languages. No rightward movement is necessary.

Moreover, the Spec-Head-Compl hypothesis also relates two otherwise unrelated properties of these sign languages. In structure (146), the fact that subject inflection occurs on the verb and appears to the left of other functional markers is a direct effect of leftward movement of the

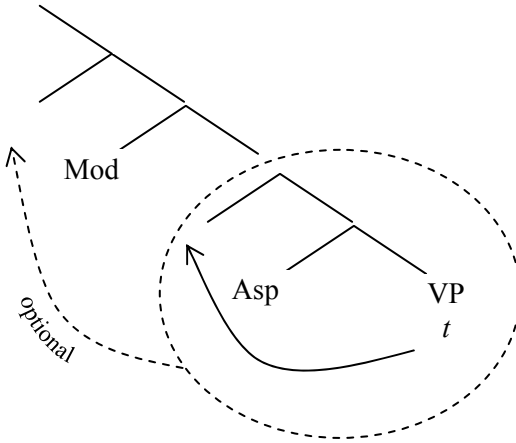
verb. Or, conversely, the order of elements is straightforwardly derived as a consequence of subject inflection being attached to the verb, rather than to modals or auxiliaries⁵³. LIS **V-Perf** and **V-Mod** orders are thus swiftly explained, as well as NGT **V-Mod** sentences like (122). Yet, this derivation can only apply partially to NGT. In fact, we have seen above that in this language, the inflected verb precedes the aspectual perfective marker, but does not consistently appear before modals. Rather, both orders **V-Mod** or **Mod-V** are attested, in contrast to the single order **V-Perf**. This, however, can be put in relation to what we observed in the LIS example (120), repeated here as (147), where both modal and aspectual markers are postverbal and appear in the order **V-Perf-Mod**.

147. IX_{RGT} RGT^{PHONE}_{LFT} DONE CAN [LIS: repeated from (120)]
‘He has possibly phoned her’
‘It is possible that he has phoned her’

Extending the Mirror Principle to the present analysis, the LIS ordering derives from a hierarchy **Mod>Asp>V** and successive leftward movements. First, the verb raises to the left of aspect and then the verb and the aspect marker raise together to the left of the modal as sketched in (148). This assumption, in turn, implies that there is an intermediate step in the derivation, hence a position in the structure, where verb raising could stop. If the verb stops in this intermediate position, it precedes aspectual markers, but follows modals, as is indeed possible in NGT (in LIS verb raising proceeds further up). The first step occurs obligatorily in both languages while the second step occurs in LIS, but is optional in NGT.

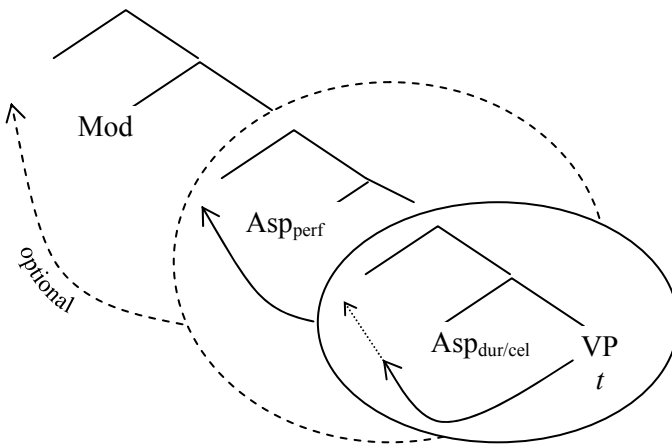
⁵³ It is not necessarily meant here that subject inflection triggers the raising. The present analysis captures the relation between the order of elements and the position in which subject agreement appears, i.e. on the lexical verb. Whatever be the cause of the former, it is also the cause of the latter.

148. LIS/NGT **V-(Perf)-Mod** ordering and NGT **Mod-V** ordering (with Spec-Head-Compl)



At this point, considering that various aspectual markers can co-occur with the verb and that both languages show the ordering **V-(Cel/Dur)-Perf**, the structure can be further refined assuming separate projections for different aspect types. In particular, the projection dedicated to celerative/durative aspect is located below the one dedicated to perfect aspect, which in turn is located below the modal projection. Thus, (148) can be expanded into (149).

149. LIS/NGT structure (with Spec-Head-Complement)



This structure matches Cinque's (1999, 2006) universal hierarchy of projections: **(Mod)** >...**Asp_{perf}**>...**Asp_{dur}** >...**V** and **(Mod)** >...**Asp_{perf}** >...**Asp_{celer}** I> ...**V**. Under this view, LIS and NGT diverge only to the extent to which leftward raising applies. Not only are these languages minimally different from (other) head-initial languages by conforming to such universal hierarchy, they are also minimally different from each other. The differences lie only in what element raises (i.e. modal or auxiliary in Italian, the lexical verb in LIS and NGT) and in how far up the raising proceeds (in LIS it reaches a projection higher than in NGT).

This leaves open the question whether the raising actually involves a head or a maximal projection, that is, whether we are dealing with X^o movement or XP movement. The structures represented so far suggest that most of the movements involved are raising of some maximal projections. However, in principle, some head raising cannot be excluded. For instance, the first step of the derivation in (149) is represented by a partially dotted line to make clear that either head movement or phrasal movement may be involved. The durative and celerative morphemes appear incorporated in the verb as “prosodic” features (e.g. hold or speed) which modify its movement and cannot be detached from it: this would suggest a head movement V^o → Dur^o/Cel^o. Alternatively, one can assume VP movement to the specifier of the lower aspectual projection, where the verb agrees with a lexically empty head Dur^o/Cel^o which, however, hosts the aspectual features. The aspectual marking appears then on the verb because of Spec-head agreement, rather than direct checking/incorporation of the prosodic features of the aspectual head. The perfect marker and the modals, in contrast, are realized as free lexical morphemes. These have an “independent life” with respect to the verb, in the sense that the verb can be topicalized (and marked by “raised eyebrows”) while they remain part of the rest of the clause (without topic marker). In this case, the modal may even inflect autonomously as, for example, in (118.a). Such behaviour suggests that in the case of modals, and possibly the perfective marker, the raised verb acts as a maximal projection which can even be topicalized on its own. This, in turn, implies that the verb is able to occupy specifier positions. It is then tempting to generalize the XP movement to all instances of verb raising. Cinque (2008b) explicitly proposes XP movement of the verb around modals, aspect, and tense projections, which he takes to parallel XP movement of the noun around demonstratives, numerals, and adjectives:

«The same parameters (with VP in place of NP) [...] appear to provide an account of the attested and unattested orders of Mood, Tense and Aspect with respect to the verb.» (Cinque 2008b: 10).

This hypothesis requires further research to be confirmed. However, I would like to point out that it is less costly to make consistent use of the same type of movement, rather than specifying for which projections X° movement applies and for which ones movement of an XP applies. This would support the generalization of XP movement. In addition to this, it is interesting to note that the derivation suggested in (148), (149) is not too different from what I propose for the DP in the two sign languages in chapter 2. As I have argued there, the NGT noun raises leftwards across lower projections, but optionally past higher ones, while the LIS noun always raises further leftwards. In fact, in both languages, the distribution of the verb with respect to aspect markers and modals parallels the position of the noun with respect to adjectives. The LIS noun appears to the left of all modifiers, as the LIS verb does, while the NGT noun may appear to the right of some higher modifiers, just like the NGT verb (interestingly, even the unmarked position of NGT adverbs ALWAYS/OFTEN, which quantify over events, is preverbal, just as the nominal quantifiers ALL/MANY are prenominal; conversely, in LIS both adverbs and quantifiers appear in the opposite order⁵⁴).

Also notice that, in principle, the different positions of the NGT modals might be related to distinct nuances of meaning. For instance, double modal constructions in NGT may involve focalization (van den Bedem (2006); also see Petronio & Lillo-Martin (1997)). At present, I do not have any evidence for distinct readings associated with preverbal and postverbal modals, but if future investigation revealed that the unmarked position of modals is postverbal in NGT as it is in LIS, then the same derivation could fully apply to both languages.

Another possibility to explore in order to explain the “floating” position of NGT modals with respect to the verb, is that this peculiar behaviour may be related to the special properties of NGT verbal

⁵⁴ Cinque (1999), however, suggests that ‘always’ sits in the specifier of AspPerfP.

agreement, especially to the optional presence of double agreement, which suggests two distinct positions for person inflection in NGT⁵⁵.

As for LIS inflected postverbal modals, such as in (118.a), they may appear as a counterexample to the analysis presented here. In fact, this derivation does not predict that the verb precedes a finite modal, because it is the modal itself that bears subject agreement, given its finiteness. However, the verb which precedes the modal in (118.a) is marked by a ‘raised eyebrows’ facial expression, a NMM which signals topichood (see chapter 4). Crucially, LIS (and NGT) topics occupy the left periphery of the sentence. Thus the modal, inflected and yet postverbal, does not conflict with the present analysis. Rather, in these cases, the modal raises leftwards to check inflection, but is crossed over by phrasal movement of an XP containing the verb, motivated by the need for the verb to reach the topic projection to the left of the IP domain. As a result, the verb still appears to the left of the modal, even though the modal has previously raised to check person inflection features.

3.2.3 The behaviour of negation

This section attempts to extend the antisymmetric model proposed for aspect markers and modals in the previous section to the derivation of negative clauses. The distribution and the extension of NMMs which occur in negative clauses is explained on the basis of some assumptions made also for other syntactic phenomena in chapter 4 (and also extended to other constructions that will be treated in chapter 5).

In an antisymmetric framework, the leftward raising proposed above can be extended to explain the functioning of negation. Within this approach, the scope of the NMM reflects the amount of material raised to (or above) [Spec;NegP], much like what I am going to suggest in chapter 4 for interrogative clauses following Pfau’s (2006a) and Aboh & Pfau’s (2011) proposal of sentence raising to [Spec;InterP].

Let us first consider LIS. Consider examples (130.a) and (131.a), repeated here as (150) and (151) and compare these to (133.a), (133.b),

⁵⁵ Interestingly, from discussions with the informants, it appears that the agreement auxiliary OP cannot co-occur with the aspect marker READY. Given the different function of these elements (agreement vs. aspect), this behaviour is unexpected. If confirmed, this would suggest that the two elements compete for the same position at some point during the derivation.

repeated as (152.a),(152.b), and to (134.a), (134.b), repeated as (153.a), (153.b).

150. (IX₁) 1ASK_{LFT} NOT [LIS]
 ‘I do/did not ask him/her’

151. PAOLO CONTRACT SIGN NOT [LIS: Geraci 2005, ex. 20]
 ‘Paolo did not sign the contract’

152.
 a. GIANNI SIGN NOTHING [LIS: Geraci 2005: ex. 17]
 ‘Gianni signed nothing’

b. GIANNI NOTHING SIGN [LIS: Geraci 2005: ex. 35]

153.
 a. CONTRACT SIGN NOBODY [LIS: Geraci 2005: ex. 16, 22]
 ‘Gianni signed nothing’

b. NOBODY CONTRACT SIGN [LIS: Geraci 2005, ex. 23]

Recall that LIS shows a negative “headshake” NMM only on the clause-final lexical negative particle (151) or negative quantifier/argument (152.a), (153.a). Geraci (2005) assumes that the lexical negation, which bears the NMM, sits on the right in [Spec;NegP]. Along the same lines, the clause-final negative quantifiers *NOBODY* and *NOTHING* move from their argumental base position rightwards to [Spec;NegP] and are also associated with the NMM. This correctly predicts that these elements are clause-final and bear the negative NMM. As he points out, however, such elements may also appear in situ if the NMM spreads such that it extends over the respective negative element in its base position as in (152.b), (153.b). He then proposes that in such cases, the negative sign moves rightwards covertly at Logic Form. Taking this perspective, the negative NMM spreads between the in situ position where the sign occurs overtly and the final position where that sign moves covertly. Even though Geraci (2005) suggests a starting point for the NMM, his analysis does

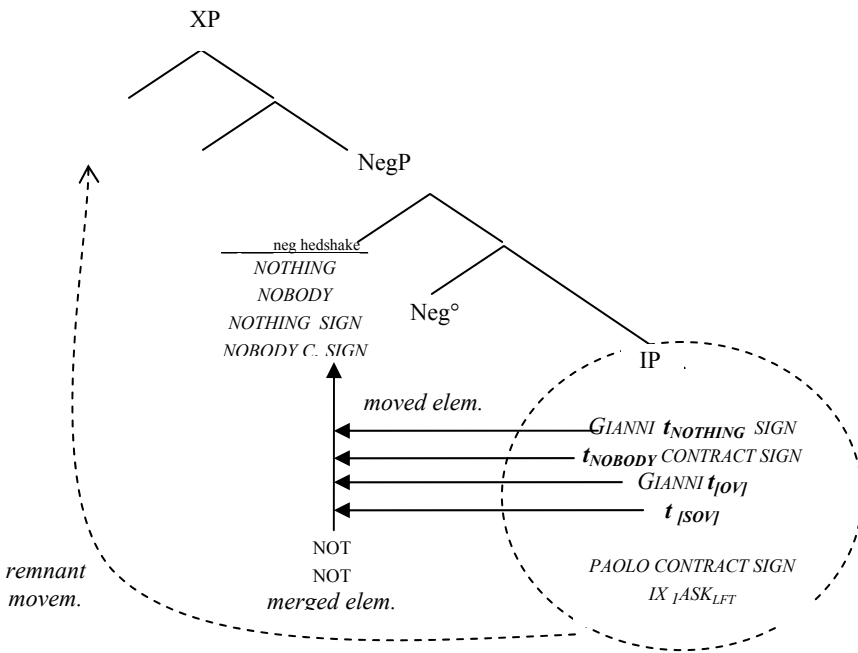
not require to determine a starting point for the NMM. The existence of two positions **between** which the NMM extends is sufficient. (As will become clear, my analysis does not require any specific starting point for the NMM either.) To the best of my knowledge, Geraci (2005) does not specify how the NMM is associated with the negative sign. He observes that the negative NMM patterns like the *wh* NMM⁵⁶. Apart from this, he simply refers to the spreading of the negative NMM as «the other option (NMM) to establish contact with the head of the chain» (created between the positions of the overt and the covert instance of the negative sign).

Under an antisymmetric account, in contrast, the scope of the NMM reflects the chunk of material moved (leftwards) to [Spec;NegP], simply assuming that the negative NMM is assigned in [Spec;NegP] under spec-head agreement in exactly the same way as interrogative (and topic) NMMs are taken to be assigned under spec-head agreement in chapter 4. Given that negative constructions and *wh* interrogative constructions pattern alike, as observed also by Geraci, the hypothesis put forward for interrogative NMMs can be extended assuming that the negative NMM is assigned in [Spec;NegP]. According to this line of reasoning, the clause-final negative quantifiers NOTHING in (152.a) and NOBODY in (153.a) are taken to move to [Spec;NegP] (following Geraci, but leftwards), followed by remnant movement of the remaining portion of the sentence to a higher position (i.e. a position even more to the left). Consequently, only the negative quantifiers bear the NMM in (152.a) and (153.a). Along the same lines, NOT in (150) and (151) is merged in [Spec;NegP], as proposed by Geraci. There it receives the NMM, while the remaining material (in this case, the whole clause) raises to a higher position, to the left of the negation and outside the NMM. In (152.b) the negative quantifier NOTHING moves to [Spec;NegP] together with the verb, whereas remnant movement brings the subject to a higher position. The NMM then spreads over negative quantifier and verb. In (153.b) the negative quantifier NOBODY moves to [Spec;NegP] with both the object and the verb. The NMM then spreads on the whole clause. This is shown

⁵⁶ Geraci (2005), commenting on his example (36), states that: «Neg-movement in (36) is replaced by wide spreading of the NMM. The same pattern has been observed for *wh*-movement...». Later in the same subsection, he says that «Neg-movement patterns like *wh*-movement both when it is overt and when it is covert: ... in the latter case broad spreading of the proper NMM is required» (Geraci assumes that movement may be either overt or covert).

in figure (154) where different LIS negative clauses are derived. Elements may be moved to or merged in [Spec;NegP], while the remainder of the clause raises to some higher projection. As will become clearer in the next lines, the extent and the composition of the chunk moved to [Spec;NegP] can vary in the two languages depending on the absence or presence of a lexical negative element and on the clause-final or in situ position of it.

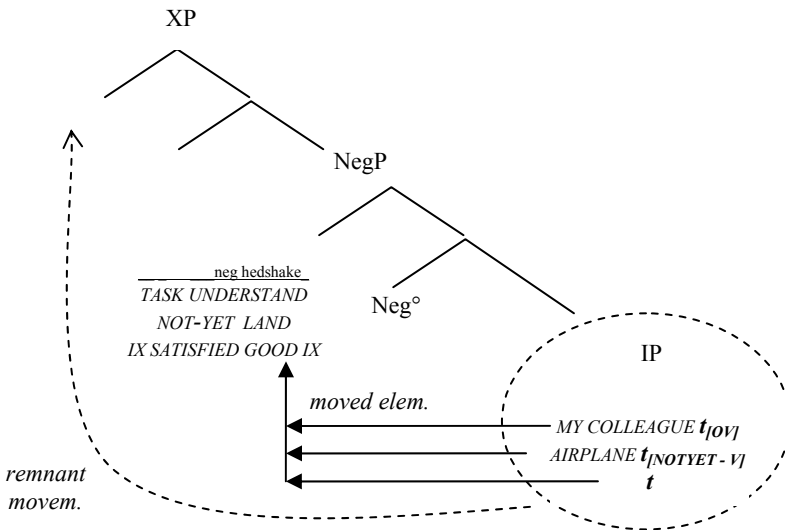
154. Negation in LIS (with Spec-Head-Complement)



Taking this perspective, the sentences in which the negative element remains in situ and the NMM spreads over more than one element of the clause result from movement of a bigger portion of the clause to [Spec;NegP]. In LIS (152.b), the in situ negative element is an object and the OV complex raises, whereas in (153.b), the negative element is a subject, so that the whole SOV sentence raises to [Spec;NegP] in order for the negative element to check its Neg feature in compliance with the neg-criterion (Haegeman & Zanuttini 1991: 244; Haegeman 1995: 106) while still remaining in situ. In other words, sentences with a negative element in situ are treated just like all other negative sentences. Whatever

NGT behaves much like LIS but, having no negative sign NOT in [Spec;NegP] in (155) and (156), it always requires the raising of a part of the sentence (verb and possibly object) to [Spec;NegP]. The same can be assumed to occur with the NGT sign NOT-YET in (157), which remains in situ⁵⁷ and thus requires the raising of a bigger constituent, containing also the verb. As proposed for LIS, then, remnant movement occurs subsequently and brings the remaining portion of the NGT sentence above and to the left of NegP. Thus, we are once again dealing with some element varying in size (e.g. a constituent containing verb and, possibly, object or negative adverb) that raises to [Spec;NegP], and the remainder of the clause (i.e. the subject) that moves to a higher projection, as in LIS. Only the elements in [Spec;NegP] are marked by the negative NMM. This is shown in figure (158).

158. Negation in NGT (with Spec-Head-Complement)

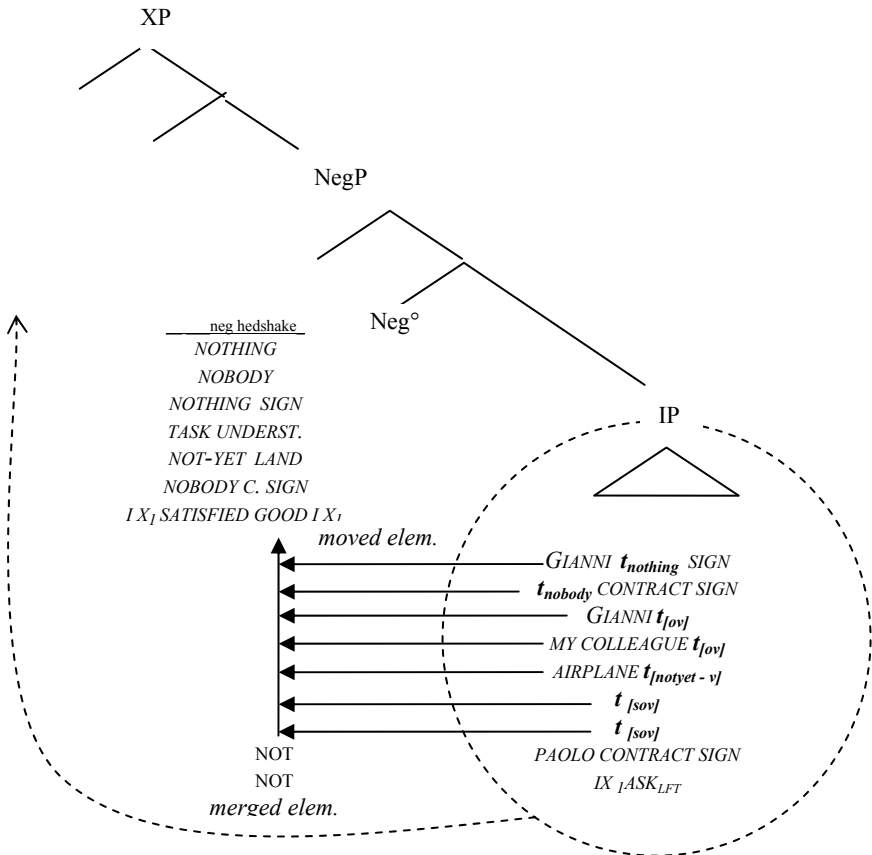


In particular, the difference between LIS (130.a)=(150) and NGT (130.b)=(155) is that the the whole clause raises to [Spec;NegP] in NGT,

⁵⁷ As pointed out by Roland Pfau, the sign NOT-YET has an aspectual component, in addition to its negative meaning. This may well interact with its position in the clause. A finer-grained structure of NGT will shed light on this fact. However, here I am addressing only the issue of movement in relation to negative features.

whereas the LIS verb ASK raises above NegP together with the remainder of the clause, because [Spec;NegP] is occupied by NOT in LIS. Thus, in NGT (155), the negative NMM appears on the verb, while in LIS (150), the NMM is restricted to the clause-final sign NOT (as observed by Geraci). The derivations of LIS and NGT negative clauses can be represented together in figure (159), thus showing that the two languages are minimally different from each other.

159. Negation in LIS and NGT (with Spec-Head-Complement)



Of course, within such a model, the (remnant) leftward movement invoked here to bring part of the clause outside the negative NMM assigned in [Spec;NegP] must be motivated. In fact, according to this hypothesis, the remnant movement is not even always really “remnant”,

in the sense that it occurs also when nothing else has moved (but LIS NOT has been merged, for instance). I will come back to this issue in §3.3. Notice also that NGT (135.b) cannot be accounted for under the present analysis, unless we assume that NGT NOT occupies a structural position different from the position of LIS NOT.

3.2.4 The behaviour of negative modals

This section discusses some properties of negative modal signs, focusing in particular on the scope relation that they have with the negation. I will compare this relation with the scope relation existing between the negation and other verbs, which require a standard negative construction. Starting from these considerations and sticking to the antisymmetric framework, I will then argue for a hierarchy of syntactic projections in the spirit of Cinque (1999, 2006).

Negative modal signs, such as those in (137)-(141), which encode both modality and negation at the same time, are attested in various sign languages, as already pointed out in §3.1.4. Pfau & Quer (2007), referring to van der Auwera (2001), observe that this is a well-known crosslinguistic pattern among languages in general: even spoken languages may encode modality and negation within a single word. Pfau & Quer propose to analyze the negative modal signs in LSC and DGS as modal forms incorporating a negative affix, possibly by cliticization, during their (rightward) movement from T° via Neg° to a position above Neg° . Movement of an element from Neg° to T° is suggested also by Wood (1999) for the ASL sign NEVER.

Notice that, in my opinion, some movement from Neg° to T° is implied also in Neidle et al.'s (2000) analysis of ASL. They state that modals have the same distribution as tense markers and that both occur in T° (Neidle et al. 2000:79f). They also assume that the lexical negation NOT is in Neg° , which also contains the negative features realized as a 'headshake' NMM that is able to spread over strings of signs. Given that the modal precedes the negation, falling outside the headshake NMM that affects NOT and the lexical verb that follows, they argue for a $TP > NegP...>VP$ hierarchy of projections in the structure. In their view, the negative headshake NMM spreads from Neg° onto NOT and on the following verb without affecting the modal, which occupies T° . However, they observe that the modal may contract with the negation (e.g. SHOULD[^]NOT), in which case the modal does bear the negative NMM. In

light of these observations, two accounts are possible, in my opinion. The negative modal is merged in Neg° (just like NOT, as it bears negative features) and raises to T° (as also other modals sit in T°). Alternatively, the modal is merged in T° and the negative affix in Neg°, and the headshake NMM raises to T° to join the modal. In either case, something must move from Neg° up to T°. Here, I will discuss some properties of NGT and LIS negative modals, which do not depend on the issue of movement, but rather represent a previous step of analysis. For this reason, the discussion will rest on empirical grounds. The basic question is: why do only few verbs, and frequently the same across languages, have the peculiarity of lacking a standard negative construction? In principle, if negative incorporation is a syntactic phenomenon available to the language, it could affect all verbs in the same way.

In §3.1.5, LIS and NGT were shown to employ specific negative modal signs for CAN[^]NEG, MUST[^]NEG, ABLE[^]NEG, and DISLIKE/WANT[^]NEG, while both languages use their standard negation strategy for the modal of obligation: OBLIGATION + NOT in LIS and HAVE-TO + NMM in NGT. These two exceptional cases in (140) and (141), are repeated here as (160) and (161):

160. (IX₂)₂GO₃ OBLIGATION NOT [LIS]
 ‘You don’t have to go there / you need not go there’

161. (IX₂)^{neg}HAVE-TO [NGT]
 ‘You don’t have to / you need not’

Crucially, the combinations OBLIGATION NOT and HAVE-TO, on the one hand, and the sign MUST[^]NEG, on the other hand, entail different scope relations with the negation. OBLIGATION NOT and HAVE-TO+NMM entail “negation of an obligation/necessity” (it is not necessarily the case that you must...), whereas MUST[^]NEG entails “necessity of negation” (it must necessarily be the case that you do not...). Put it in other words, the former negate (the presence of) a restriction: *take obligation and negate it*. In contrast, the latter encodes the presence of a different (opposite) restriction: *restriction to do... vs. restriction not to do...*

A behaviour similar to that of MUST[^]NEG is observed in the signs for ‘do not want’: LIS DISLIKE/LIKE[^]NEG and NGT WANT[^]NEG. Despite their translations (‘wil-niet’, ‘non-volere’, ‘not-want’...), they do not negate a

desire, but rather express an opposite desire⁵⁸. These signs do not simply negate the presence of one's wish (thus possibly implying a neutral attitude: neither like nor hate), but they express the wish “not to have (to do with)”. This is also visible in the “refusal” facial expression which accompanies these signs and, for this reason, I have chosen the gloss *DISLIKE* for the LIS sign as an alternative to *LIKE^NEG*. As for its NGT counterpart, I have maintained the gloss *WANT^NEG* (*wil-niet* on www.kegg.nl/egg_gebaren.php). Taken together, these facts imply that *MUST^NEG*, *DISLIKE/LIKE^NEG*, and *WANT^NEG* encode information that is partially different from that of their alleged positive counterparts and that they have a different scope relation with the negation than other verbs do. This is not a peculiarity of sign languages since, for instance, a similar observation can be made for the Latin verb *nolo* (negative of *volo* ‘I want’) the use of which went far beyond the function of negating the property of the positive modal (cf. e.g. the negative imperative *noli me tangere* ‘don’t touch me!’).

At this point, it is worth noting that some languages display ambiguities in that they only use the standard negation and do not resort to specific forms. Take the Italian negative modal form *non devi* in (162) and (163), for instance: the sequence *non devi* conveys “obligation not to do” in the first example and “non-obligation to do” in the second one.

162. Non devi parlare durante la riunione ≈ Guai se parli... [Ital.]
 ‘You must not speak during the meeting’ (you better not speak!)

163. Non devi parlare durante la riunione, ma se vuoi puoi [Ital.]
 ‘You don’t have to speak during the meeting, but if you like you can/are allowed to’

Disambiguation is only possible either from to the context, as in the above examples, by means of intonation (stress on the modal *devi* and possibly a prosodic break between it and the negation), or with constructions like *non è che devi* ‘it is not (the case) that you “*devi*” ’

⁵⁸ This proves, once again, the importance (and the risk) of glossing signs. Glosses are often, albeit not always, based on the rough translations that signs have in spoken languages. However, translations may not cover the meaning exactly, and glosses based on wrong or incomplete translations may be misleading for the analysis.

which force the reading (163). In conclusion, in contrast to languages like Italian, NGT and LIS negative modals seem to take into account the fact that negation-of-X and opposite-of-X are not necessarily the same thing (although the latter entails the former).

As for other modals, negating ability amounts automatically to stating inability and negating possibility amounts to stating impossibility. Consequently, choosing one form over the other should not lead to any major differences in the modal meaning, although in my opinion, impossibility has some more semantic content than just negating possibility (impossible implies that it is *necessarily* not possible⁵⁹, and negative modals such as *non puoi* ‘you may not’ may take over other deontic functions such as *non devi* ‘you mustn’t’).

All in all, it appears that LIS and NGT use specific negative modals to encode some more semantic content than just negating the properties of a modal. In my opinion, this additional semantic import justifies the assumption that such signs are included in the lexicon directly with their own specific form and meaning, as distinct items or “words”. Negation is an additional property of these signs which stems from their semantics (since “opposite of x” entails “negating x”, even though “negating x” does not automatically entail the “opposite of x”⁶⁰). This also implies that the negative features of such signs are part of their lexical entry and, for this reason, they are an inherent part of the sign. The standard, “true” negation is compositional, in that it takes a positive verb and adds some negative features at the structural level⁶¹ through a syntactic operation. In contrast, the negativity of specific negative modal signs derives from their semantic content and is thus part of it. In this perspective, thus, these elements should not be considered incorporating signs in the sense that they incorporate some negative affix syntactically, but, rather, they should be considered as signs which incorporate negative features as part of their basic form. In other words, their negative feature is “built-in” in

⁵⁹ This intuitively relates to the well-known equivalence of modal logic $\neg\Diamond P = \Box\neg P$.

⁶⁰ Interestingly, Morgan (2006:117) states that some Japanese Sign Language signs constitute opposites and **can be taken as** negative: «JSL, like most sign languages, possesses numerous pairs of signs that are opposites, both semantically and, significantly, formationally [...] Such pairs can often reasonably be considered affirmative and negative pairs».

⁶¹ In “I do not go”, it is not the verb “go” itself which is negative, but the sentence, the combination (*do*)+*not*+*go*, i.e. the syntactic structure which underlies it and puts the verb in relation with the negation.

their lexical form: in addition to the modal content, they **carry** negative features, as usual lexical negators do⁶².

Such negative features must be associated with some head, as proposed for negative particles. Therefore, in addition to occupying a modal projection, it is likely that these negative modals move to (or are merged in) some negative projection. At this point, the question arises whether they occupy Neg° or $[\text{Spec};\text{NegP}]$. In my opinion, there are good reasons to assume that these negative modals are located in $[\text{Spec};\text{NegP}]$ at some point during the derivation. This may occur in different ways, in principle. First, the synthetic negative modals could either be generated below NegP and raised to NegP or be merged in $[\text{Spec};\text{NegP}]$ and raised to a higher modal projection ModP . Secondly, various types of movement may be involved. The negative modal may raise from spec to spec (as subjects are commonly assumed to raise from $[\text{Spec};\text{VP}]$ to $[\text{Spec};\text{IP}/\text{AgrP}]$). Alternatively, the modal may occupy the specifier of a maximal projection and that maximal projection raises into a higher specifier (e.g. ModP raises to $[\text{Spec};\text{NegP}]$ or NegP raises to a higher $[\text{Spec};\text{ModP}]$). As will become clear later, the modal may also occupy $[\text{Spec};\text{NegP}]$ even though being a head. It could be the head of a maximal projection which is either raised to or merged in $[\text{Spec};\text{NegP}]$.

At this point, I cannot be more precise about this issue. The position of NegP with respect to ModP is discussed later. In any case, the assumption that negative modals occupy $[\text{Spec};\text{NegP}]$ accounts without further stipulations for the fact that LIS negative modals do not co-occur with the lexical negation *NOT*, which Geraci argues convincingly to occupy $[\text{Spec};\text{NegP}]$. Moreover, given that specific negative modal signs carry negative features as do negations and negative arguments (rather than just being positive modals combined syntactically with a negation), it seems more natural to assume that they occupy the same position occupied by these negative elements, namely $[\text{Spec};\text{NegP}]$.

Alternatively, one can assume that the negative modal sits in Neg° at some point of the derivation. Again two options exist, in principle. Either the synthetic negative modals are generated in a Mod° below Neg° and raise to Neg° or they are merged in Neg° and raise to a higher Mod° . This requires assuming head movement of the modal from or to Neg° and a

⁶² From this point of view, I would rather call these synthetic signs *modal negators*, instead of negative modals.

double-fill filter preventing material in [Spec;NegP]⁶³. Assuming head movement of the negative modal would be in line with Pfau & Quer's (2007) account for DGS and LSC negative modals. However, in the present analysis, there are some difficulties with head movement. First, it requires an additional stipulation (double-fill filter) to account for the complementary distribution of negative modals and NOT in LIS. Second, in Pfau & Quer (2007), head movement of the modal to Neg° is necessary to combine the modal with the negative affix 'headshake', which they take to be encoded in Neg°. In contrast, the present analysis relies on the assumption that the negative headshake is a NMM assigned under spec-head agreement to the constituent(s) sitting in [Spec;NegP] (as Pfau (2006a) and Aboh & Pfau (2011) propose for interrogative NMMs). Third, in Pfau & Quer (2007), head movement of the modal is in line with head movement of the verb. Here, however, XP movement of the verb seems to be more likely both in the case of negation (see §3.2.3) and in the case of aspect markers and modals (see §3.2.2), even though this hypothesis must be strengthened with further investigations.

Fourth, in Pfau & Quer's (2007) analysis of LSC and DGS, head movement of the modal is related to their cliticization approach. In their view, head movement brings the modal to a F° head above NegP, a head to which [Spec;NegP] subsequently cliticizes. This accounts for the special form of negative modal signs of DGS and LSC. In other words, if I understand correctly, Pfau & Quer's analysis relies on a "compositional vision" of negative modals, of which the negative forms result from some syntactic operation. However, if LIS and NGT specific negative modals were the result of some syntactic operation, it would be unclear why this operation is not productive, that is, why it should affect only a closed class of elements. Interestingly, Pfau & Quer (2007) suggest a parallelism

⁶³ Geraci (2005) reports a negative element in [Spec;NegP] to co-occur marginally with a negative modal sign and takes this as evidence for head movement of the negative modal to Neg°:

1. ^{??}SMOKE CANNOT NOBODY (LIS, Geraci 2005:ex. 28)
However, as he notices, this sentence has a double-negation reading. This is a reading different from that of other negations analyzed here, where negative elements in [Spec;NegP] co-occur with an empty Neg° containing only [+neg] features. In my opinion, the double-negation reading resembles cases where negative features are encoded twice (there is *nobody* such that s/he does *not*...). Clearly such cases require deeper investigation. Interestingly, however, Geraci assumes that in this case «CANNOT enters the lexicon with a negative feature».

between cliticization in LSC and DGS and cliticization of the Italian negative particle *non* ('not'). Crucially, however, the Italian negation *non* combines with lexical verbs, as well as with modals. My analysis, in contrast, relies on the assumption that specific negative modals (of LIS and NGT) enter the lexicon with their negative features and with their specific form because these are inherent to their specific additional semantic content⁶⁴.

In conclusion, not only does head movement seem less motivated in the case of LIS and NGT, but the semantic properties of LIS and NGT specific negative modal forms make it more likely for them to occupy [Spec;NegP]. With respect to cliticization, notice that it is relevant that Pfau & Quer's (2007) approach is based on the fact that LSC negative modals have the same 1-handshake (and possibly the same movement) as the negative marker and that DGS negative modals display an alpha-shaped movement of the hand. These facts suggest indeed the cliticization of some negative feature (a negative handshake or a negative movement) to the modals. In contrast, the LIS and NGT negative modals that I have observed do not only constitute a closed class of elements, but also do not even display a consistent pattern of cliticization: each negative modal has its own lexical form, although **some** of these are reminiscent of the lexical negation⁶⁵. This is also the reason why I do not divide negative modals into cliticized and suppletive forms (as was already discussed in §3.1.4).

The idea that negative modals occupy [Spec;NegP] is not incompatible with them being heads. Given that specifiers host maximal projections, [Spec;NegP] can host an XP the head X° of which is occupied by the modal. In fact, this hypothesis is not very different from the usual assumption that subjects are N° heads inside an NP/DP which in turn occupies [Spec;VP] (or [Spec;IP]). A further hypothesis to verify is that this more complex structure of the negative modal may reflect its more complex semantic content.

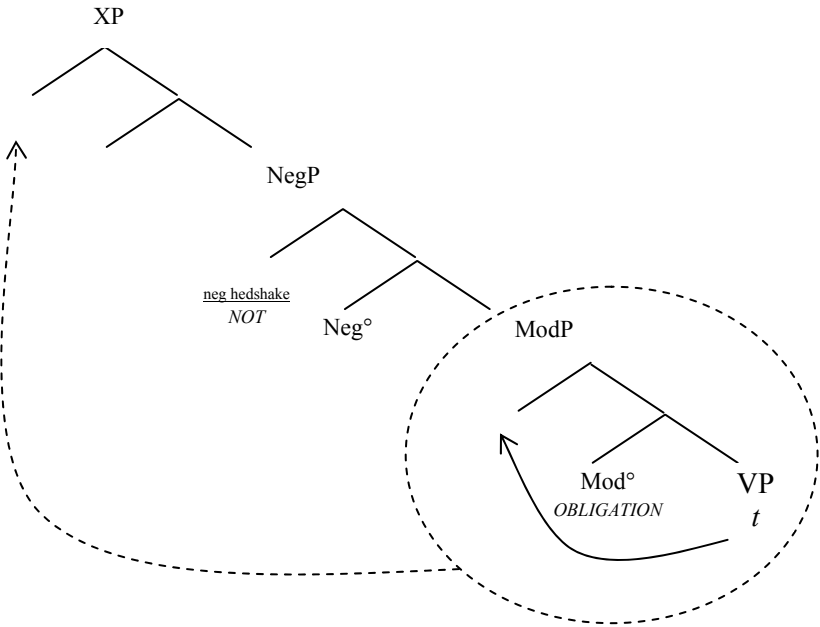
⁶⁴ This does not exclude the possibility that the lexical forms are compounded (as, for instance English *dis-like* or *im-possible*), but suggests that compounding takes place before the merger of the lexical element in the syntactic structure of the clause.

⁶⁵ For example, an alpha movement occurs in the LIS and NGT signs for CAN^NEG, but the signs MUST^NEG/MAY^NEG have an outward movement and the 1-handshake of the negative marker (instead of an alpha movement). The signs for WANT^NEG/DISLIKE have yet other properties.

The structure of the simple sentence: aspect, modals and negation

The exact position of the negative projection, however, is not easily determined because sentences may contain more than one negative projection, as already pointed out (Zanuttini 1997; Poletto 2008). Given the ordering **V-Mod(oblig)-Neg** of (140), and successive leftward movements, the projections should be ordered as $\text{Neg}\dots > \text{Mod}\dots > \text{V}$. This is represented in figure (164). The verb moves past the root modal of obligation, the LIS lexical negator is merged in $[\text{Spec};\text{NegP}]$, and then ModP , containing modal and verb, moves further up.

164. The hierarchy of projections $\text{Neg} > \text{Mod}_{\text{root}} > \text{V}$ (with LIS negator NOT merged in $[\text{Spec};\text{NegP}]$)



It is not clear, at this point, whether two LIS negations can co-occur in one clause. However, the following sentence suggests that two negative modal signs may be able to co-occur in LIS. This sentence (165) has been judged as infrequent, but not as “strange” or ungrammatical by my informants.

165. IX SWIM ABLE[^]NEG CAN[^]NEG [LIS]
 ‘It is impossible that s/he is not able’
 ‘S/he may not be not able’

This sentence suggests that there may be two distinct positions for negative signs⁶⁶. Taking into account the present leftward movement analysis, the ordering **V-NegMod-NegMod** of (165) would reflect the opposite order in the hierarchy of projections $\text{Neg}_{\text{can}} > \dots \text{Neg}_{\text{able}} > \dots \text{V}$. The

⁶⁶ I thank Roland Pfau and Anne Baker for pointing out that this co-occurrence of two distinct negative modals may be the result of a biclausal structure (‘it is impossible that he is unable to...’) and that the first part of this sentence may be topicalized (roughly ‘*he being unable to swim*, is impossible’). Such an analysis is certainly possible, due to the lack of an overt copula and to the fact that the same sign may act as an adjective (‘possible’) or a modal marker (‘can’). Hopefully, further research on NMMs will help to disambiguate the structure. Similar phenomena are also attested in spoken languages.

However, here I am referring to the possibility that LIS and NGT have a full-fledged IP domain allowing for two negations in one and the same monoclausal structure as, for instance, Italian *non lo posso non considerare* ‘it is impossible for me not to consider it’ (lit. ‘I it-cannot not to consider it’). According to Cinque (2006b), clitic climbing is a test to show that a monoclausal structure combines a lexical verb with a number of modal and aspectual verbs. Thus, comparing Italian sentences (1.a) and (1.b), which are both grammatical according to my judgement as a native speaker:

1.
 - a. Non posso non considerarlo un complimento/insulto
 Lit. I cannot not consider it (as) a compliment/insult
 - b. Non lo posso non considerare un complimento/insulto
 Lit. I it-cannot not consider (as) a compliment/insult
 ‘I cannot help considering it as a compliment/insult – It is impossible for me not to consider it as...’

it turns out that sentence (1.b) is monoclausal, given that the clitic *lo* (‘it’) has climbed near to the inflected modal *posso* (‘can’). The presence of two negations *non* (‘not’) in this structure would thus mean that Italian allows for two negations in the same monoclausal structure. I try to verify whether such a complex structure can be explained in principle with a Spec-Head-Compl framework even in an allegedly head-final language such as LIS (even though the existence of clitic climbing in LIS is not investigated here). This might be, in principle, at the base of sentences like (165). In particular, the study of NMM spreading could shed light on this issue.

order also suggests indirectly a hierarchy of modals $\text{Mod}_{\text{can}} > \text{Mod}_{\text{able}} > \text{Verb}$, because both negative modals must check their modal features, in addition to the negative features. Thus, it matches Cinque's (1999) hierarchy $\text{Mod}_{\text{aleth...}} > \text{Mod}_{\text{root}} > \dots > \text{V}$, with a higher "zone" for alethic modals such as "possibility/necessity", and a lower area for root modals expressing "ability/obligation/volition". Along the same lines, the ordering **V-Mod**(oblig)-**Neg** in (140) conforms to the hierarchy $\text{Neg} > \text{Mod}_{\text{root}} > \text{V}$.

Taken together, these examples would thus suggest at least one low negative projection which separates the lower position of root modals from the higher position of (negative) alethic modals⁶⁷, that is: $\text{Mod}_{\text{aleth}} > \dots > \text{Neg} > \dots > \text{Mod}_{\text{root}} > \dots > \text{V}$. In contrast, the position of the higher negative projection (if any) cannot be determined on the basis of these data. If the co-occurrence of two distinct modal and negative projections within one monoclausal structure is ruled out, we are left with the hierarchies **Mod** > **Asp** > **V** and **Neg** > **Mod** > **V** anyway.

At this point, the issue remains of how specific negative modals come to be in [Spec;NegP]. Given their scope relation (Mod>Neg), it is natural to hypothesize that they target a modal projection that is higher than NegP. I am thus led to exclude the possibility that they raise from ModP to NegP. However, aside from these considerations, I have not managed to come to a conclusive hypothesis because the conclusion depends on different factors, in principle. I will list them briefly. First, the negative modal may either raise from spec to spec (e.g. from [Spec;NegP] to [Spec;ModP]) or through raising of the maximal projection in the specifier of which it sits (e.g. whole NegP to [Spec;ModP]). Second, the negative modal may be merged in [Spec;NegP] and raise to [Spec;ModP], or it may be generated somewhere below NegP, raise to [Spec;NegP], and proceed further up to [Spec;ModP]. Depending on the hypotheses, different remnant movements are required to ensure that the negative

⁶⁷ According to Cinque (2006), this is partially confirmed also in a head-final language such as Turkish:

1. oku - ya - ma - yabil - ir - im [Kornfilt 1997: 375]
vb - mod - neg - mod - tns- agr

'I may be unable to read / It is possible that I shall not be able to read'

where the negative affix takes scope over the root modal for ability '-ya-' but not over the higher alethic modal suffix for possibility '-yabil-'. Differently from Turkish, however, LIS agreement is on the left as in head-initial languages, directly attached to the verb and detached from modal/aspectual markers.

modal is stranded clause-finally. Very tentatively, I will assume that negative modals are merged in [Spec;NegP] (just like the LIS negative particle NOT) and raise to a higher [Spec;ModP], followed by one remnant movement which brings the rest of the clause to their left. There are two reasons for this assumption. First, this hypothesis requires only one remnant movement and is thus the most simple derivation among those proposed here. Second, assuming that specific negative modals are merged in [Spec;NegP] as are lexical negations (e.g. NOT) would be in line with the previous claim that negative modals share indeed important features with negations, crucially, that both carry negative features as part of their lexical entry.

3.3 Conclusions

This section summarizes my findings on the linear order and the properties of LIS and NGT modals, aspect markers, and negative elements, and also recapitulates the derivation that I have proposed for them following an antisymmetric model. It then suggests some parallelisms that can be observed between the DP and the IP of each language. It also provides some general conclusions and lists some questions which are left open for further investigation.

LIS and NGT orders of signs **V-Negation**, **V-Perfect**, **V-Modal** and, more generally, **V-Asp-Mod** are the opposite of what is commonly observed in head-initial languages. Yet, looking at more abstract features such as verbal inflection, there is an important similarity: subject agreement is to the left of modals and aspectual markers in these sign languages, as it is in head-initial spoken languages like Italian. In LIS and NGT, subject agreement appears on the lexical verb, which is thus argued to raise leftward, just as finite modals and auxiliaries are generally claimed to do in head-initial languages. Once independent evidence for leftward movement has been provided, the order of elements within the IP domain of LIS and NGT is derived through successive rolling-up leftward raising movements.

Thus, although, at first sight the order of aspectual markers, modals, and negation in LIS and NGT seems to suggest a head-final structure for the analysis of their IP domain, an antisymmetric structure with leftward raising(s) is able to derive the order of signs without additional

stipulations, relating it to the position of subject agreement which appears to the left of other elements and attached to the lexical verb.

The exact position of agreement is not easily determined, but it is sufficient to assume that it is as high in LIS and NGT as in other languages, such as Italian (or even Turkish). Starting from Cinque's (1999, 2006) universal hierarchy **Mod**>...**Asp_{perf}**>...**Asp_{dur/celerl}**>...**V** and matching Baker's (1985) Mirror Principle, the verb raises to the left and triggers successive "inverting" leftward movements which yield the observed postverbal order of elements **V-Celerative/Durative-Perf** and, in general, **V-Asp-Mod**. In NGT, this derivation works only partially because, even though the perfective marker is postverbal, the modals appear in both **V-Mod** and **Mod-V** order (as well as double-modal constructions which, according to van den Bedem (2006) may be an instance of focus-doubling). While such a variation within the same language suggests once more that a head-final hypothesis is not able *per se* to explain the position of NGT elements (in addition to the left position of subject agreement), the possibility of having a preverbal modal in this language strengthens the hypothesis of a modal projection above and to the left of aspect and verb even in a sign language where postverbal modals are attested. The variation may be the result of a general property of NGT, namely of allowing for piedpiping to a different extent than LIS does. Alternatively, it may be related to the fact that NGT, in contrast to LIS, allows double person agreement of the verb. As for the behaviour of agreement, further investigation is required about its position(s) in the structure of these sign languages, but note that the difficulty to locate the exact position of subject agreement has been observed across a wide range of so-called head-initial and head-final languages (Cinque 1999, 2006; Julien 2002). This difficulty then does not depend on the antisymmetric or nonantisymmetric nature of the deep structure. In contrast, as said above, determining the exact height of subject agreement in the structure is not even necessary under an antisymmetric analysis. The LIS verb raises more consistently and higher in the IP than the NGT verb does. This is reminiscent of a similar phenomenon observed in the DP of these languages. As described in chapter 2, the LIS noun raises higher and more consistently within the DP than the NGT one does.

In this perspective, these sign languages differ from head-initial languages and from each other only in the extent of their (leftward)

raising and in which element carries agreement. This minimal difference is an argument in favour of a uniformity of deep structures across languages, which is an interesting candidate for a language universal for Generative Grammar. Leftward raising within IP also goes hand-in-hand with leftward-raising phenomena observed in the left periphery of these sign languages (such as topicalization, see the discussion of the CP domain in chapter 4), and thus meets requirements of uniformity of structure within one and the same language (the structure of which must be either consistently Spec-Head-Compl or, at least, consistently Compl-Head-Spec, as seen in chapter 1).

Leftward movement can also be applied to the distribution of negative signs and nonmanual markers. Again, the derivation in LIS and NGT results from successive raising(s), always overt, to [Spec;NegP] or to a position above it, without the need for two distinct sorts of movement: overt vs. covert. Indeed, from this point of view, covert movement is a kind of optical illusion (or syntactic illusion) generated by the fact that the relevant element raises together with “surrounding” elements, possibly followed by remnant (still leftward) movement. In other words, covert movement, rather than being a movement which happens only at Logical Form, can be understood as the overt movement of an element, “covered up” by other elements which raise together with it and make its position seem unchanged (as is often the case in physics, it is the observational frame of reference that allows one to detect movement⁶⁸). Under the analysis proposed here, however, the distribution and the extent of the NMM still reveal the size of the constituent(s) raised to [Spec;NegP] together with the negative element. The distribution and the extent of the NMM also make it possible to relate the spreading of the NMM to the presence and the (in situ) position of the negative sign (without resorting to two different types of movement). When [Spec;NegP] is filled by the LIS negative particle NOT or by another negative element, the NMM accompanies only this sign. When the negative element remains in situ, or there is no lexical negation as in NGT, the spreading of the NMM signals that a bigger constituent was forced to raise and fill that specifier. The fact that a negative quantifier moves to NegP as part of a bigger chunk parallels similar proposals for

⁶⁸ For instance, one person in a train may be immobile with respect to his/her seat or the window near him/her, but may move together with the train with respect to objects which are outside the train.

wh elements moving to InterP within a bigger constituent, in both spoken and sign languages (such proposals are exploited in chapter 4 in order to derive wh interrogative clauses in LIS and NGT).

The special behaviour of some negative modal signs, which have a specific, dedicated negative form instead of the standard negation, is discussed in the light of their semantic content, which is partially different from just negating their alleged positive counterparts. These special negative modal forms also entail a scope relation with the negation, different from the scope relation of other verbs. The clearest point in case is that of “refusal” modals DISLIKE/WANT[^]NEG and negative restrictions MUST[^]NEG/CAN[^]NEG in comparison to the simple negation of a restriction (HAVE)OBLIGATION+NOT or HAVE-TO + negative NMM. In this case, LIS and NGT make a distinction between “negating X”, with standard negation (which takes a positive form and inserts it in a negative-marked structure), and “stating the opposite of X”, with a specific negative form (where negation is only a byproduct of opposition). In doing so, LIS and NGT appear more precise than languages in which the use of only standard negation may lead to ambiguities, such as Italian *non devi* ‘you mustn’t/don’t have to’. Other modals, like CAN[^]NEG or (BE)ABLE[^]NEG, seem to blur this distinction and indeed, no major differences arise between the meaning of such dedicated forms and that of standard negative forms such as Italian *non puoi* ‘you cannot/may not’ or *non sai* ‘you are not able to’⁶⁹. In this analysis, I do not assume any distinction between cliticized negative modal forms and suppletive negative modal forms. On the basis of their semantics, I argue that dedicated negative modal signs behave as lexical negations and occupy [Spec;NegP] (the same position occupied by the LIS lexical negator NOT). In principle, however, this does not exclude that these negative modals are heads of an XP hosted by [Spec;NegP]. As for the ordering of projections, in the light of the leftward movements proposed here, the LIS order **V-Mod(oblig)-Neg** suggests a hierarchy: **Neg...> Mod...> V**.

However, the analysis leaves at least three issues open. The first one concerns the position of NegP; the second one concerns the position of the landing site for the remnant movement which strands the negation

⁶⁹ As far as opposite and negative forms are (almost) equivalent, two different strategies may co-occur in the same language. This also holds for lexical verbs. For instance, in many (if not all) spoken languages, ‘remember’≈‘do not forget’ and ‘forget’≈‘do not remember’.

clause-finally; the third question is whether LIS and NGT allow for two negations in one clausal structure or require a biclausal structure. The position of the higher NegP may well correspond to Geraci's (2005) negation, which he assumes to be above IP; alternatively, NegP may be located lower in the structure. I have no data to clarify this and further research is necessary. The landing site for remnant movement depends on the position of the negation and it must be related to specific features in order to avoid an ad-hoc proliferation of projections. However, remnant movement requires just one higher additional projection. At this point, if NegP is above IP (as Geraci suggests), a good candidate for a next higher projection is FinP, while if NegP were within IP (below subject agreement), good candidates for landing sites could be TP⁷⁰ as well as some aspectual or modal projection. If the co-occurrence of two negative modals in one monoclausal structure is confirmed, there would be a lower NegP "trapped" between lower, root modals (for obligation, volition, ability) and higher, alethic modals (for "pure possibility"), which are lower than TP, according to Cinque. A remnant movement past the lower negation could then target the next higher aspectual or modal projection. In all these cases, no special features are needed to justify the landing sites, since the possible projections involved are largely independently attested in other languages. On this point, Geraci (2005: note 20) observes that in negative sentences as GIANNI NOTHING SIGN, the subject is marked with raised eyebrows. Since this NMM is employed with topicalized constituents, it may indicate that remnant movement brings the subject even to some topic projection, at least in some sentences. This implies that remnant movement might not always target the same landing site and may have different motivations, according to the context. Further research is necessary, however, in order to establish in detail which projections are actually involved.

The present analysis exploits the overt synthetic person inflection, especially subject agreement of verbs to determine the position of inflections with respect to modals and aspect and to argue for (leftward) verb raising. The presence of plain verbs in LIS and NGT does not *per se* contradict this proposal, because the fact that some verbs display no overt agreement does not mean that they have no agreement at all. This parallels well-known observations about other agreement phenomena

⁷⁰ With respect to TP, I am assuming that it is below subject agreement.

such as plural marking, for instance. The fact that some nouns retain the same form in both plural and singular does not prevent them from agreeing with other elements. For instance, in Italian *la città* ('the city') and *le città* ('the-PL cities', lit. 'the-PL city'), the invariable, but plural, noun *città* agrees with the plural article *le* even though such agreement is not expressed overtly. Were the noun not plural, the sequence would be ungrammatical. As already stated, however, the analytic inflection of verbs through indexes and/or auxiliaries must still be taken into account to fully verify the hypotheses put forward here and to possibly explain some differences existing between LIS and NGT order of elements.

A final question is whether the raisings are head movements or, rather, movements of maximal projections along the lines of Cinque (2008b). While head movement seems possible and maybe intuitively plausible in some instances, XP movement seems compatible with all the raisings involved, including sentences with topicalized verb and possibly inflected modal⁷¹. If confirmed, this latter hypothesis would also account for some similarities between the IP and DP domain of each of the two languages (the DPs were analyzed in chapter 2 with successive XP movements along the lines of Cinque (2000, 2005a)). More insight could derive from the ordering and the behaviour of other aspectual markers, as well as from the position of the object and object agreement, which have not been investigated here.

⁷¹ Note that VP movement is assumed also for ASL (Aarons et al. 1995; Wood 1999), albeit under certain conditions, different from those discussed here. Also Neidle et al. (2000:178) suggest that XP movement of the aspect phrase containing the verb may occur in some ASL sentences.