7

Agreement Phenomena in Sign Language of the Netherlands

INGEBORG VAN GIJN AND INGE ZWITSERLOOD

7.1 Introduction

For some years, linguists have tried to account for the occurrence and interpretation of null arguments by relating them to (rich) agreement (among others Taraldsen 1980; Chomsky 1981; Rizzi 1982). However, numerous problems were encountered. Some languages (such as German) appear not to allow null arguments, even though they have rich agreement systems. Other languages (such as Chinese) do allow null arguments, but have no agreement at all. For the latter type of languages, alternative analyses have been suggested, in which, not agreement, but a null topic recovers the content of the null argument (Huang 1984; Raposo 1986). Signed languages complicate matters even more due to the fact that they allow null arguments with all verbs but, although they have a rich agreement system, only a subset of verbs can have agreement marking. Lillo-Martin (1986; 1991) suggests a combined recovery strategy for the content of null arguments in American Sign Language (ASL): agreement and null topics. Since then, new facts have come forward, which we will address here and which we will relate to the matter of the recovery of null arguments.

We discuss the agreement system and verb types of signed languages with special reference to Sign Language of the Netherlands (NGT). In contrast to previous analyses we argue that the person and number do not play a role in the verb agreement system and the pronominal system of signed languages. We claim that the only two relevant types of features in signed
languages are gender and location. Verb semantics determines which of the two types of agreement fills an agreement slot. We further show that besides agreement verbs that show agreement for their complete θ grid and verbs that show no agreement at all, verbs occur that have agreement for some of their arguments only. In NGT (as in ASL) null arguments can occur with all verb types, in the right pragmatic contexts. This means that agreement in NGT does not represent argument structure (Jelinek 1984; Chapter 9 below; Baker 1996), and that agreement cannot be the only device to recover the content of null arguments. We extend Lillo-Martin’s proposal, which is based on Huang (1984), and incorporate ideas by Raposo (1986) and Huang (1995) to explain the linking and the recoverability of (multiple) null arguments within a discourse.

Since the start of the linguistic investigation of signed languages in the 1950s and early 1960s (Tervoort 1953; Stokoe 1960), both similarities and differences between signed and spoken languages have been found. Like words in spoken languages, signs are built up of smaller units comparable to phonemes in spoken languages. And by uttering signs in a linear string a sentence can be formed. Prosody, expressed by systematic non-manual behaviour, determines the sentence type. For example, raised eyebrows and a lowered chin signal that a sentence is a yes/no question, whereas a wrinkled nose and a raised chin signal a wh-question (Baker-Shenk and Cokely 1980; Coerts 1992). A difference between spoken and signed languages is the use of signing space in the latter for the expression of pronouns, verb agreement, and spatial relations. Signing space is the space around the signer and various discourse referents. We will explain this use of signing space in section 7.2.1.

The structure of the chapter is as follows. In the next section we will explain how agreement works in signed languages, using data from NGT. Furthermore, we will discuss what θ-features are relevant in NGT and what different types of verbs occur. We will focus on null arguments in NGT in section 7.3. In this same section we will review the proposals that have been made in the literature to explain the occurrence of null arguments. These proposals can be divided into two: sentence-internal accounts versus discourse-based accounts. In section 7.4 we give an integrated account of null arguments in signed languages and introduce an identification hierarchy for null arguments. Our findings are summarized in section 7.5.

7.2 The agreement system of NGT

Many languages have a system of verb agreement: a systematic marking on the verb that refers to a referent of that verb. The most common case is an affix that
carries (a subset of) the $\varphi$ features (features of person, number, and gender) of the referent. Such affixes form paradigms. As we will show in section 7.2.2, signed languages use special means of referent marking on the verb: verb agreement is expressed by locations in signing space (see also Padden 1988; Bos 1993; Janis 1995; Mathur 2000; Meir 2002). Besides this, there is also a small set of verbs that take gender agreement markers. This will be explained in section 7.2.3. The set of NGT verbs that show agreement is limited (section 7.2.4). In section 7.2.5 we discuss the type of agreement marking that occurs on particular verbs. In section 7.2.6 we discuss the possibility of yet another way to mark agreement in signed languages, viz. by non-manual markers. We adjust the universal set of $\varphi$ features in such a way that the agreement features of all (spoken and signed) languages are captured in section 7.2.7.

7.2.1 Referential locations

Verb agreement involves particular locations in signing space. Some locations, viz. those of the discourse participants (such as the signer, the addressee, and other referents) that are actually present at the time of the utterance, are fixed: they are determined by the locations they occupy (in practice, often a location just in front of their body is used). When a referent is not physically present, this person or object is assigned an abstract location in signing space. There are several ways to assign a location to a referent. One of these is making the sign for the referent and subsequently pointing to a particular location in signing space, as in (1). This is called ‘localization’.

1 In our examples we do not use the gloss notation that is often used in the signed language literature. We choose to give as close a representation of the structure of the signs as possible. This is done by drawing the signs. The front-view drawings are mirror images of a signer; the views from above include the signer and dots representing referents. When we cite examples by other authors, we will use their notation. It is conventional to use capitals for signed language glosses, subscripts for agreement morphology, and superscripts for aspect morphology. Usually, prosodic sentence-marking is indicated in a separate line above the gloss (sequence). In some of our examples we will use this prosodic marking above the pictures of the sign sequence.

2 The pointing signs that are used in localization of a referent have the same form as pronouns. We distinguish between these signs by glossing the former as ‘be at-x’ and the latter as ‘prn-x’.

(1) a. view from above

Marijke be at-left

‘Marijke is here’
After localization, the referent and the location are connected, until a new discourse topic is introduced. The locations for physically present and non-present referents are used in the verb agreement system as well as in the pronominal system. Basically, every point in signing space can be used as a possible location, not only those on the horizontal plane.³

7.2.2 Location agreement

As in all signed languages investigated hitherto, a subset of verbs in NGT can show agreement with one or more of its referents (Bos 1990; 1993). This is done in the following ways. First, a verb can be made near the location of a referent in signing space. In (2a) the intransitive NGT verb for ‘to wait’ is shown in its citation form: it is made in neutral signing space (neutral signing space is the space in front of the signer, to which no referents are connected), and in an inflected form (2b), where it is expressed near the location of a referent.

³ In everyday conversation it is quite rare to use more than three or four different locations per discourse, which is probably due to memory and perceptual limitations. Still, these three or four locations can be anywhere in signing space.
Secondly, some transitive verbs in NGT can show agreement with two arguments by means of two locations. The movement and/or the orientation of the verbs are adjusted in order to include the two locations of both referents. (3b,c) are examples of the inflected NGT verb for ‘to visit’ in which the movement of the sign is directed from the location of the subject (x) towards the location of the object (y).

As we will explain in section 7.2.7, we claim that inflected verbs have one or more abstract location features which are coindexed with those of the referents taking a role in the event described. We call this ‘location agreement.’

**7.2.3 Gender agreement**

In a subset of NGT verbs, viz. those verbs that express motion, location, and existence of a referent, the hand configuration is determined by characteristics of the referent such as its shape or animacy. Often the hand configuration globally reflects the shape of the referent. This is illustrated in (4).
If a signer wants to express that a particular entity falls down (e.g. a glass) the signer will use a hand configuration that matches the cylindrical shape of a glass (4a). If the referent that is falling is a long, thin entity (e.g. a pen) he will use an extended index finger (4b), and if the entity is a human being or an animal, usually a hand configuration with two extended fingers is chosen (4c).

In (4), alongside the hand configuration, there are DPs referring to the falling referent. These DPs are in a fixed position before the predicate. Because of this, the hand configuration cannot be analysed as an incorporated argument of the verb. Clearly, the hand configuration indicates a referent involved in the event expressed by the verb. The set of meaningful hand configurations that can be used to represent referents on these predicates

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4 In some cases, the referent noun is mentioned in the previous discourse and does not occur within the same sentence as the predicate. We analyse this as an empty noun occurring in the same sentence, which will be explained in more detail in section 7.4.

5 As we will see in section 7.3.1, DPs in NGT cannot be analysed as adjuncts as is done by Jelinek (1984) and Baker (1996).
form a small, closed class. Furthermore, they appear obligatorily on verbs of motion, location, and existence. For this reason we consider these hand configurations to be agreement markers, following Supalla (1982), Glück and Pfau (1998; 1999), and Zwitserlood (2003a). This analysis is not uncontroversial, however. In the previous signed language literature, these hand configurations are usually described as ‘classifiers’ but no further account of these elements is provided. For spoken languages it is claimed that classifiers are not agreement markers, because the set of classifiers in a language is often very large, and classifiers are not obligatory (Croft 1994; Corbett 1991). However, in view of the above-mentioned characteristics of meaningful hand configurations, we reject this claim, at least for signed languages.

We call hand configuration agreement ‘gender agreement,’ because the semantics of the genders and the assignment of noun referents to these genders is reminiscent of those in the gender agreement system found in Bantu languages. Within the set of gender agreement markers, we distinguish between subject and object agreement. Subject gender agreement markers occur only on intransitive verbs. The hand configurations involved in subject gender agreement can be described by the features [animate], [legged], [straight], [small], [flat], and [volume] in NGT.6 These hand configurations and their features are shown in Table 7.1.

Object gender agreement markers occur only on transitive verbs. They represent referents that are being manipulated by another entity. We have found no need to distinguish the features [legged], [animate], or [volume] in these markers. However, it proves necessary to posit a feature [control], in order to capture the measure of control exerted in the manipulation of a referent. The object gender agreement markers are illustrated in Table 7.2.

Some examples of verbs showing object gender agreement are shown in (5).

(5) a. 

Johan book he-move down-flat entity

‘Johan puts a book down’

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6 The feature [+legged] indicates that the referent has legs, the feature [+straight] that the referent is not bent; the feature [+volume] indicates that the volume of the referent is represented as opposed to its outline. The features [animate], [small], and [flat] are self-evident. If a feature value is not relevant for a particular agreement marker, this cell is left empty.

7 In this table, we do not include allophonic and free variation that can sometimes be observed in the choice of a particular hand configuration.
Table 7.1. Hand configurations involved in subject gender agreement in NGT

<table>
<thead>
<tr>
<th>Hand configuration</th>
<th>Features</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Animate</td>
</tr>
<tr>
<td>![Hand Configuration]</td>
<td>+</td>
</tr>
<tr>
<td>![Hand Configuration]</td>
<td>+</td>
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<tr>
<td>![Hand Configuration]</td>
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<tr>
<td>![Hand Configuration]</td>
<td>+</td>
</tr>
<tr>
<td>![Hand Configuration]</td>
<td>+</td>
</tr>
</tbody>
</table>

b.

Johan glass he-move down-cylindrical entity

'Johan puts a glass down'
It may be necessary to expand the gender agreement features in order to capture the agreement hand configurations in other signed languages as well. For instance, it is proposed that in Taiwanese Sign Language and Japanese
Sign Language (Smith 1989; Fischer and Osugi 2000) there are specific hand configurations for male and female human beings, and American Sign Language (Supalla 1982; 1986) has a specific hand configuration for vehicles.

7.2.4 Mismatches between argument structure and agreement markers

We saw in sections 7.2.2 and 7.2.3 that NGT verbs can show subject agreement and object agreement (location and gender agreement). In the case of ditransitives the predicate can even show agreement for the subject and for both objects, as in the sign for ‘to give’ (6), which has location agreement for the subject and indirect object, and gender agreement for the direct object.

(6) ![Sign for 'to give']

he-give-thin entity-addresser
‘(he) gives (you) (a pen)’

However, not every verb shows agreement for all of its arguments. Some verbs do not show agreement at all. It is, however, not the case that it is always the subject or always the object that is left unspecified by agreement. Let us look at some examples. In the set of intransitive verbs the verb can show location or gender agreement for its argument, as has already been shown for the NGT verb for ‘to wait’ in (2) that shows location agreement, and the verb for ‘to fall’ in (4), that shows gender agreement. But there is also a group of intransitives that shows no agreement, as in the predicate that expresses ‘to be poor’ (7). This predicate has the same form for all types of referents.

(7) ![Sign for 'to be poor']

‘I/you/he/she/we/they am/is/are poor’

8 Note that in the signed language literature much attention is given to agreement verbs. Because of this, one may get the impression that the set of agreement verbs is the most attested type of verb in signed languages. In NGT, however, this set of verbs is rather small compared to the group of non-agreement predicates. Interestingly, though, it seems as if, over time, some non-agreement verbs tend to become inflecting for one or more arguments. A discussion on the possible consequences of this fact is outside the scope of this chapter.
Alongside transitive verbs that show agreement for both arguments, like in the sign for 'to visit' in (3), there are also transitive verbs that do not show agreement for every argument. For example, the verb for 'to find' (8a) has no subject agreement, and the verb for 'to meddle' (8b) has no object agreement. Moreover, the verb for 'to love' in (8c) shows no agreement at all.

The same holds for ditransitive verbs: some of these verbs only agree with a subset of their arguments. The verb for 'to send' in (9a) has agreement for its subject and indirect object only. Both are expressed by location agreement. Conceptually, the verb expresses the motion of an entity, so a gender agreement marker for the direct object should be possible. However, this argument is not expressed on the verb. The verb for 'to sell' (9b) only agrees with one of its arguments, and the verb for 'to rent' (9c) does not show any agreement marking.

For spoken languages it is often assumed that a lacking agreement morpheme is actually a zero morpheme. Such an analysis is not possible for NGT, because there are no deficit paradigms. First, for verbs such as that for 'to send' in (9a), the direct object could be referred to by gender agreement (as is the case in the sign for 'to give'). However, it does not show agreement for the direct object.

Bos (1994) observes that signers can make use of an auxiliary to indicate the (human) referents of a transitive predicate. Logically, this auxiliary would be used when a verb agrees with only a subset or none of its arguments. However, the use of this auxiliary is not restricted to these verbs; it is also used with fully inflected verbs.
The assumption of a deficit agreement paradigm would force us in this case to posit, not one zero morpheme, but zero morphemes for the whole paradigm of possible referents. Second, anticipating the discussion on location agreement in section 7.2.7, it is not possible to indicate a paradigm at all for this type of agreement.

Explanations of argument–agreement mismatches in the signed language literature are given by phonological and morphological accounts. For instance, Zwitserlood (2003a) uses a phonological explanation, in which she assumes that non-agreement verbs or partially agreeing verbs are (partially) phonologically specified for location and/or hand configuration, in contrast to fully agreeing verbs. This phonological analysis may even have a morphological basis (see Zwitserlood 2003b), in that the location and hand configuration slots contain morphemes with specified phonological features. Therefore, these slots cannot be used for agreement morphology. An alternative analysis is provided by Meir (2002), who relates the (location) agreement possibilities to the presence of a directional morpheme (dir) in the predicate. We will not further pursue this issue here.

7.2.5 Which agreement marking on which verb?

We have described two kinds of agreement in NGT, location and gender agreement. We are not aware of any signed language that does not make use of these two types of agreement. We saw that verbs can show location agreement only, as in the verbs for ‘to wait’ in (2) and ‘to visit’ in (3), or gender agreement only, as in the verb for ‘to fall’ (4). However, combinations of location and gender agreement are possible too, as we have seen in the verb for ‘to give’ in example (6). Another example of this is the verb for ‘to move’ in (10), where the hand configuration refers to a person (Johan) and the locations to the places involved (home and school).

view from above

(10) school.move.animate entity.house
‘(Johan) goes (home from school)’

The type of agreement marking that a verb will take for its referents can be predicted from its semantic roles. First, a note on argument structure must be made here. Usually, the semantic roles Source, Goal, and Location are not
considered arguments, but adjuncts (although some verbs subcategorize for a spatial argument). However, since in signed languages it is possible to make use of space, spatial expressions play a much more prominent role than in spoken languages. Verbs that express the motion, existence, or location of a referent in space show agreement marking (location agreement) with spatial arguments. Therefore, we claim that in signed languages Source, Goal, and Location are verbal arguments. For example, the locations in (10), viz. that of the school and that of the house, are agreement markers for the Source and Goal arguments respectively.

The patterns observed in signed languages are the following: Agents, Patients, Recipients, Sources, Goals, and Locations are expressed by location agreement. Theme arguments (arguments that are in a state or location, or that are undergoing a motion: Gruber (1976); Jackendoff (1987)) are expressed by gender agreement.

\[(11) \text{ Agent, Patient, Recipient, Source, Goal } \rightarrow \text{ locus agreement} \]
\[(11) \text{ Theme } \rightarrow \text{ gender agreement} \]

Although the semantic roles determine the type of agreement, we will use the grammatical notions ‘subject’ and ‘object’ when we refer to the agreement slots in the remainder of this chapter.

### 7.2.6 Non-manual agreement

Neidle et al. (2000) claim that there is an additional way to mark agreement in ASL, which they call non-manual agreement. This is because this kind of agreement is expressed by non-manual markers, viz. head tilt for subject agreement and eye gaze for object agreement. An example is shown in (12) below, in which the head is tilted towards the right: to the location of the subject referent. The signer’s eye gaze is directed towards the left: the location of the object referent.

\[(12) a. \text{ view from above} \]
\[(12) b. \text{ (Neidle et al. 2000: 65, fig. 5.1)} \]

\[x\text{give}_y \text{ (something)} \]
Neidle et al. claim that these non-manual markers have a fixed scope. Following Chomsky (1995), they assume two functional projections for agreement above VP. They further claim that the non-manual agreement markers are associated with the agreement features in the heads of these agreement projections. With this they can explain that the non-manual agreement markers start before the signing of the predicate. The subject agreement marker starts before the object agreement marker, because AgrS dominates AgrO. These markers obligatorily spread over their c-command domain. This is illustrated in (13).

\[(13)\]

\[
\text{HT right} \quad \begin{array}{c|c|c}
\text{EG left} & \text{EG neutral} & \text{EG left} \\
\end{array}
\]

\[
\begin{array}{c}
\text{prn-signer} & \text{believe} & \text{Inge} & \text{like} & e \\
\end{array}
\]

'I believe that Inge likes him/her'

In (14) the head tilt (HT) to the right that refers to the embedded subject ‘Inge’ already begins on the matrix verb for ‘to believe’, of which ‘Inge’ is not the subject. The eye gaze (EG), which is towards the location of the null object to the left, occurs two times. The first occurrence starts during the matrix verb and extends over the boundary between the matrix and complement clause. The domain of the null object is not constituted by both clauses together. The second occurrence starts during the complement verb to which the null argument belongs, not before the predicate, as predicted by Neidle et al. In another instance (15), the non-manual markers are reversed: the eyes gaze to
the location of the subject (left) and the head tilt is towards the right, which is the location of the null object.

Even if we assume that the head tilt marks object agreement instead of subject agreement in this case, it is puzzling that it already appears above the matrix verb (‘want’), instead of before the verb sequence ‘to learn–to know’ of which the null object is an argument. Thus, if the non-manual markings eye gaze and head tilt occur at all in NGT, they do not systematically mark subject and object agreement. Therefore we do not consider these markers as agreement markers.10

7.2.7 Relevant ϕ features

We now turn to a discussion of the relevant ϕ features in signed languages. Most researchers of signed languages assume that these languages have person and number features (e.g. Padden (1988) and Rathmann and Mathur (2003) for ASL, Bos (1990; 1993) for NGT, Glück and Pfau (1999) for German Sign Language, Sutton-Spence and Woll (1999) for British Sign Language). However, the presence of a grammatical category person has been questioned. With Lillo-Martin and Klima (1990) and Keller (1998) we argue that there is no formal distinction between ‘persons’. We therefore claim that this category does not exist in signed languages. Furthermore, we claim that signed languages (at least, NGT) have no grammatical category number. We will first discuss the category ‘person’, then the category ‘number’.

The person distinction in the pronominal system of signed languages has been linked to the use of locations in signing space. A sign that is directed

10 For ASL, the non-manual agreement analysis appears to be somewhat problematic, too. In the first place, as Neidle et al. (2000) themselves indicate, they are not obligatory. That is, they are only obligatory in case null arguments occur with non-agreeing verbs. In the second place, Thompson (2003) shows that eye gaze in ASL also occurs in contexts where it has no agreement interpretation, which makes it a hard task for the addressee to figure out whether it should be interpreted as agreement or not.
towards the location of the signer is taken to be the ‘first person’ pronoun, a
sign that points to a location opposite of the signer is the ‘second person’
pronoun, and the various other locations in signing space indicate ‘third
person’ pronouns, as in Figures 7.1 and 7.2.

Some have claimed that the direction of the movement is distinctive for
every person. The movement of the ‘first person’ pronoun is always directed
towards the signer; the ‘second person’ pronoun points away from the signer;
and any ‘third person’ pronoun moves towards positions at the left or at the
right of the signer. However, not the movement, but rather the location of the
referent is involved in the pronominal system. Moreover, the locations of
the referents are not fixed as in Figure 7.1. Rather, the positions of the
addressee and non-discourse participants vary with the discourse situation.
For instance, the addressee can be next to the signer, and a non-discourse
participant can be opposite the signer. Thus, it is nearly impossible to make a
formal distinction between ‘second person’ and ‘third person’ pronouns.

Meier (1990) claims that ASL only has a distinction between ‘first person’
and ‘non-first person’. However, other observations make clear that there is no

Figure 7.1 Reference in signing space (Lillo-Martin and Klima 1990: 193, fig. 10.2)

Figure 7.2 Person distinction in the pronominal system of ASL (Lillo-Martin and
Klima 1990: 192–3, figs. 10.1, 10.2)
unique 'first person' pronominal, either. In the first place, Lillo-Martin and Klima (1990), as well as our own data, show that it is possible to assign the signer and the addressee arbitrary locations in signing space (even though this is a rather marked situation). These locations can be used in further discourse in the pronominal system as well as in the verb agreement system. At the same time the physically real locations of signer and addressee can be used in the usual way for pronominal reference. It is impossible to capture this in common personal pronominal systems without adding extra information. In the second place, locations do not change along with changes in conversational perspective (Ahlgren 1990). This is illustrated by the following example. In English, if person A and person B are talking to each other and person A is speaking at the moment, the pronoun I will refer to person A and the pronoun you will refer to person B. If the conversational perspective changes, i.e. person B starts to speak, the pronoun I will no longer refer to person A but to person B, and the pronoun you refers to person A and not to person B. If person A and person B are talking with each other in NGT they will use their locations for grammatical reference. Thus, if person A is signing he will point to person B if he wants to convey the meaning of English you. Person B will use the same location to convey the meaning of English I when he takes on the conversational role of speaker. Therefore, we claim that the locations used in the pronominal system and in verb inflection are absolute. This means that a location that is linked to a referent is constant during a discourse. Thus, this type of agreement is location-deictic, not person-deictic.

For the reasons mentioned above, we argue that signed language pronouns and location agreement markers do not distinguish a grammatical category person. Instead, these systems make use of a grammatical category 'location'. As stated in section 7.2.1, basically every location in signing space can be used for reference marking. If one assumes that locations are morphemes, this would mean that signed languages have an infinite set of location morphemes. It is unlikely that the lexicon would contain a set of morphemes with an infinite number of forms. The locations do not show a paradigm like the category 'person' in spoken languages, because of this infiniteness. We therefore assume that there is one abstract feature [locus], extending a proposal by Lillo-Martin and Klima (1990) for locations within the pronominal system to include the verb agreement system. Lillo-Martin and Klima argue that ASL has only one pronoun, which consists of a pointing gesture towards a location in signing space. A referent is connected to a location (an

11 See Van Hoek (1996) for the same phenomenon with 'third person' pronouns in signed languages.
R-locus) in the sense of Chomsky (1981). When the referent is physically present, the R-locus is automatically coindexed with the referent. When a referent is not physically present or the signer chooses to connect it with a different location, it is assigned an arbitrary R-locus in signing space, which can be used in further discourse. Lillo-Martin and Klima assume that the association of the referents and R-loci takes place in Discourse Representation Structures (DRSs) in the sense of Kamp (1981), Heim (1982), and Roberts (1985) (in spoken languages R-indexing happens covertly, whereas in signed languages the index is visible). This analysis elegantly accounts for the referential phenomena in signed languages, not only in the pronominal system but also in the verb agreement system.

With respect to gender agreement, this type of agreement does not show person distinctions either. All discourse participants with the same gender features are expressed by the same hand configuration.

Concerning the category number, we claim that there is no systematic distinction between singular and plural. With respect to nouns, NGT does not take an obligatory plural marker when they refer to plural referents. In contrast to what has been claimed before (Koenen et al. 1993), plural referents are not necessarily marked by repetition of the sign. Although there are several ways for a signer to indicate plural referents, e.g. by numeral incorporation or by localization of the referents in signing space, these are not systematic number markers on the noun.

Regarding verbs, many languages obligatorily mark plural referents (sometimes in a portmanteau affix in which person and number features are combined). This does not hold for NGT. There are several ways to mark plurality of referents, depending on the viewpoint of the signer, but these are not obligatory. These ways are illustrated in (16).

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Views from above

(16) a. b. c.

'I (I give (them as a group) a book'
'I give (them all) a book'
'I give (each of them) a book'
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12 Numeral incorporation is the replacement of the hand configuration by a hand configuration that indicates a number. This is restricted to a subset of the nominals, viz. those that have a hand configuration that consists of an extended index finger, and to a limited set of numbers (one to ten).

13 See Nijhof and Zwitserlood (1999).

14 The same is argued by Keller (2000) for German Sign Language.
If the signer considers multiple referents as a group, he will use an agreement form that is in no way distinct from the ‘singular’ form. He will direct the verb movement towards a central location in the group of referents, as in (16a). When a signer wants to indicate which referents are intended, he incorporates the locations in signing space that have been assigned to these referents. This can be done in a sweeping movement including all of these locations, as in (16b). If the signer wants to indicate that each of the individual referents is involved, the verb is repeated and the repeated motions are directed towards the locations of all of the intended referents (16c).

Both signed and spoken languages express verb agreement, but in different ways. Agreement markers in spoken languages contain person, number, and gender features, whereas those in signed languages contain gender and locus features. For these reasons, we conclude that the universal set of $\varphi$ features, consisting of features for person, number, case, and gender, that has been assumed so far needs to be extended with a locus feature. Thus, $\varphi$ features have to be distributed over spoken and signed languages, as in Table 7.3.

As far as we are aware, locus features are not attested in the verb agreement systems of spoken languages. The fact that locus is one of the most prominent $\varphi$ features in signed languages may be due to the visual-gestural articulatory-perceptual channel (as opposed to the oral-auditory channel of spoken languages), or, in other words, due to the use of signing space in signed languages to express spatial relations, pronominals, and agreement.

### 7.2.8 Summary

In contrast to what is known about agreement in the world’s languages, agreement morphology in NGT is not a regular mapping of the arguments.

<table>
<thead>
<tr>
<th>Table 7.3. $\varphi$ features for spoken and signed languages</th>
</tr>
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<tbody>
<tr>
<td>Spoken languages</td>
</tr>
<tr>
<td>Person</td>
</tr>
<tr>
<td>Number</td>
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<tr>
<td>Case</td>
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<tr>
<td>Gender</td>
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</table>
of the verb: some verbs agree with all of their arguments, other verbs agree with only a subset of their arguments, and a third group of verbs does not show any agreement at all. We have shown that no zero agreement morphemes can be assumed in NGT. Furthermore, we have argued that the grammatical categories person and number do not play a role, and we have modified the universal set of φ features by adding the locus feature.

7.3 Licensing of null arguments

In this section we will discuss the licensing possibilities of null arguments in languages as a background for the discussion of the licensing of null arguments in NGT. We will discuss several proposals from the literature to account for null arguments. These can be divided into two types: sentence-internal accounts and discourse-based ones. But first we will give some information about contexts in which null arguments appear in NGT.

7.3.1 Null arguments in NGT

In NGT, arguments can, but need not, be expressed overtly. Not only is it possible to leave the subject of the sentence unexpressed, but the object(s) can be left unexpressed, too. Null arguments occur in the presence of agreement, as in (17).

(17) a. e

pro he-visit-her pro
‘He visits her’

b. prn-x

he-visit- her prn-y
‘He visits her’

Furthermore, null arguments also occur in the absence of agreement. The only restriction seems to be that the referents are clear from the context (linguistic or deictic) as in (18).
Interestingly, this phenomenon is optional in signed languages. In other words, there is not necessarily a difference in emphasis or focus, as in Spanish, whether an argument is expressed overtly or not. Compare (17) with (19).

(19) a. e visita a María Spanish
    ‘He/she visits María’
   b. Él visita a María
    ‘He visits María’

Structures such as (17) might, at first glance, be considered to be pronominal argument phenomena (Jelinek 1984; Chapter 9 below). That is, agreement morphemes are considered to be the arguments of the predicate, whereas overt DPs are considered adjuncts. However, this analysis is not possible for NGT. First, verb inflection cannot be regarded as representing the verb’s arguments, because of the occurrence of null arguments in the absence of agreement. Thus, in such cases there is no element that represents the arguments. Second, DPs in NGT cannot be analysed as adjuncts. Evidence for this comes from the fact that the word order is fixed. Although variation is possible in the order of the verb and the object, the subject must be expressed sentence-initially, i.e. the NGT basic word order is SOV or SVO.\(^\text{15}\) Hence there is a structural relation between the subject and the object. Moreover, in contrast to pronominal argument languages, DPs in NGT cannot be discontinuous. In other words, NGT is a configurational language or, in terms of Jelinek, a lexical argument language.

7.3.2 Sentence-internal accounts

Several proposals have been made in the literature to explain the occurrence of null arguments. Some proposals account for null arguments within the sentence, whereas other proposals seek a sentence-external explanation. We will start with a discussion of the former. The possibility of null arguments

\(^{15}\) Coerts (1994a; 1994b) claims that the basic word order in NGT is SOV. Our data suggest that it can be either SOV or SVO.
in a language is often explained by the occurrence of a rich agreement paradigm in that language (Taraldsen 1980; Chomsky 1981; Rizzi 1982). It is argued that in such languages null arguments are permitted because the agreement is rich enough to identify or license the null arguments: the pro-drop parameter. Italian and Spanish are the most cited examples of this type of language.

We saw that agreement in signed languages is extremely rich, but only with those verbs that show agreement. This is especially the case in locus agreement, because the morphemes have unique reference as a result of overt indexing (see section 7.2.7). Ambiguities of the following sort that could arise in Spanish do not exist in signed languages with locus agreement. In a Spanish discourse in which Juan and Enrique have been introduced, the sentence in (20) would cause ambiguity, since it would not be clear which of them (or perhaps even another person) has visited María. The third person agreement on visitar can refer to any third person referent, including Juan and Enrique.

\begin{equation}
(20) \quad e\text{ visita María} \quad \text{Spanish}
\end{equation}

‘he/she visits María’

In a similar discourse in NGT, María, Juan, and Enrique each have their own R-locus in signing space: Juan was localized at location x, María at location y, and Enrique at location z. The NGT verb for ‘to visit’ starts at the locus of the referent that visits María and ends at the locus of María, and thereby unambiguously indicates who exactly is the one who visits María (see (21)).

\begin{equation}
(21) \quad a. \quad \begin{array}{c}
\begin{array}{c}
\text{x-visit-}y
\end{array}
\end{array}
\quad \text{x-visit-}y
\end{equation}

\begin{equation}
(21) \quad b. \quad \begin{array}{c}
\begin{array}{c}
\text{z-visit-}y
\end{array}
\end{array}
\quad \text{z-visit-}y
\end{equation}

‘He\text{Juan visits her} María’ ‘He\text{Enrique visits her} María’

Agreement in signed languages would thus be rich enough to identify or license null arguments. In NGT, however, null arguments can also occur in environments where there is no agreement, as in (18). From this we must conclude that agreement cannot identify or license all null arguments. Exactly

\footnote{16 This does not imply that there are no ambiguities in signed language pronominal marking. Ambiguities are of a slightly different kind.}
this point has been part of proposals made by Lillo-Martin (1986; 1991) for ASL, to which we will turn in section 7.4.1.17

A sentence-internal proposal for the licensing of null arguments in the absence of agreement (e.g. in Chinese) comes from Jaeggi and Safir (1989a). Their Morphological Uniformity Condition (MUC) states that null arguments, in this case null subjects, are permitted in languages that have a morphologically uniform paradigm, i.e. a paradigm that consists of either only uninflected verbs or of only inflected verbs. Obviously, the MUC cannot account for the NGT phenomena either, since NGT has agreement and non-agreement verbs. As a matter of fact, analyses that make use of verbal paradigms (e.g. Rohrbacher 1994; Speas 1994; Koeneman 2000) cannot account for the data from signed languages at all, since, as we have seen in 7.2.7 above, it is impossible to state a paradigm of verb locus agreement.

Summarizing, not all null arguments in signed languages can be licensed sentence-internally by agreement. We will discuss additional, discourse-based licensing strategies in the next section.

7.3.3 Null arguments and discourse

Huang (1984) was the first to link the occurrence of null arguments to discourse. His analysis is based mainly on data from Chinese, a language that does not have verb agreement. He proposes a special account for null arguments in discourse-oriented languages such as Chinese, in contrast to sentence-oriented languages such as English. According to him a null argument is either pro or a variable. Pro is coindexed with the closest nominal element (Generalized Control Rule).18 The nominal element can be a DP or an agreement marker. Variables, on the other hand, are traces left by movement of a zero topic to a sentence-initial topic position. Huang assumes that at LF there is a rule which coindexes such an empty topic with an appropriate preceding topic made available by the previous discourse or pragmatic context. Examples of both analyses are presented in (22) and (23).

17 Recall that in section 7.2.6 we discussed the proposal by Neidle et al. (2000) about non-manual agreement. This proposal was made to account for the occurrence of null arguments in the absence of manual agreement: null arguments are, in their analysis, always licensed by agreement, either manual or non-manual. However, as discussed in section 7.2.6, we refute their analysis.

18 Closest is defined by Huang (1984) as follows: A is closer to B than C is iff A c-commands B but C does not c-command B. Furthermore, for two nodes A and C, both of which c-command B, A is closer to B than C is if A but not C occurs within the same clause as B, or if A is separated from B by fewer clause boundaries than C is.
(22) The null argument is pro:

a. Zhangsan\_i\ xiwang \[e_i\ keyi\ kanjian\ Lisi]\ Zhiangsan hope can see Lisi
   ‘Zhangsan hopes that (he\_i) can see Lisi’
b. * Zhangsan\_i\ xiwang \[Lisi\ keyi\ kanjian\ e_i\] Zhiangsan hope Lisi can see
   ‘Zhangsan hopes that Lisi can see (him\_i)’ (Huang 1984: 538, ex. 22)

(23) The null argument is a variable:

\[\text{Top}e_i\] ; \[Zhangsan\ shuo\ [Lisi\ bu\ renshi\ e_i]\]. Zhiangsan say Lisi not know
   ‘Zhangsan says that Lisi didn’t know him’ (Huang 1984: 542, ex. 34)

In (22a) we see that the subject of the embedded sentence can be pro (in Chinese the embedded subject is the only argument that can be pro), because its content can be recovered by the matrix subject which is the closest nominal element. An object in an embedded sentence cannot be recovered by the same process, because there is a closer possible antecedent, viz. the subject of the embedded clause. Coindexation with this antecedent results in a violation of principle B of the Binding Theory, which renders the clause ungrammatical (22b). (23), in which the object is not bound by the matrix subject but by an empty topic, is grammatical.

Huang links his null topic analysis to a more general parameter that distinguishes between discourse-oriented and sentence-oriented languages. Discourse-oriented languages have the following characteristics (Tsao (1977) cited in Huang (1984)): (a) they have discourse anaphora, viz. the anaphor can be bound in the discourse; (b) they allow Topic NP Deletion, viz. deletion of the content of a topic can take place under identity with a topic in the previous discourse (thus creating a topic chain); and (c) they have topic-prominent structures. However, linking the null topic account to the discourse-oriented versus sentence-oriented parameter is not unproblematic. As outlined by Authier (1988), null objects in KiNande (a Bantu language spoken in Zaire) that occur in the absence of verbal object agreement should be analyzed as variables. Yet KiNande conforms to only one of the three characteristics of discourse-oriented languages: it has discourse anaphora but it has no rule of deleting NP topics that results in a topic chain, and it has no topic-prominence structures. The last-mentioned characteristic poses yet another problem. Authier suggests that the topic-prominence characteristic fails to distinguish between sentence-oriented and discourse-oriented languages in general, because sentence-oriented languages like English can have topic-prominence structures, too. Thus, it appears that the assumption
of a parameter that links the discourse-oriented versus sentence-oriented status of languages to the possibility of having null topics is not correct. Therefore, we adopt an alternative view on this possibility, namely the rule of Predication parameter that is proposed by Raposo (1986) on independent grounds.

Raposo (1986) formalizes Huang’s proposal based on data from European Portuguese. In European Portuguese null direct objects occur, but the language has no verbal object agreement. The content of these null objects is recoverable from the linguistic or pragmatic context. Raposo claims that null objects are variables that result from moving an empty category to spec,CP, where it becomes an operator and locally A’-binds the null object. Evidence for a movement analysis comes from null object constructions that obey Subjacency (e.g. the Sentential Subject Constraint), that induce ungrammaticalities under violations of the Doubly Filled COMP filter, and that allow parasitic gaps, as illustrated in (24).

(24) (Context: People are talking about a new personal computer of IBM.)
   a. *Que a IBM venda e₁ a particulares surpreende-me
      ‘That IBM sells e₁ to private individuals surprises me’
   b. *[Para qual dos filhos] i é que a Maria comprou e₁ t₁ ?
      ‘For which of her children did Mary buy e₁ ?’
   c. Vi e₁ na TV sem reconhecer pg₁
      ‘I saw e₁ on TV without recognizing pg₁’
      (Raposo 1986: 382–4, exx. 18, 22, 23a)

Raposo claims in addition that a null topic is base-generated outside CP and that it is assigned an arbitrary index that differs from the index assigned to the operator and its trace, as represented in (25) (adapted from Raposo (1986: 380, ex. 15)).

(25) [TOPe₁] [CP OP₁ [a Joana viu t₁ na TV ontem]]
   Joana saw e₁ on tv yesterday

According to Raposo (1986: 385), ‘The discourse or context-bound interpretation of these sentences is thus provided by this rule, identifying the index of the zero topic with the index of the null operator and the trace it A’-binds, deriving a representation in the LF component of the grammar.’ Raposo suggests the parameter in (26) to distinguish between languages like European Portuguese and Chinese on the one hand and languages like English and French on the other.
(26) The rule of Predication of the LF' module of the grammar may (may not) refer to a pragmatic topic. (Raposo 1986: 385, ex. 24).

The parameter in (26) refers to special properties of the rule of Predication. In particular, in European Portuguese and Chinese the rule is open to pragmatics, viz. LF' is directly linked to pragmatics, whereas this is not the case in English and French. Thus, the rule of Predication appears to be independently motivated and does not encounter the problems Huang’s parameter was confronted with. Therefore, for signed languages we will adopt Raposo’s analysis, in particular the parameter he proposes for the licensing and identification of null arguments.

7.4 An integrated account for null arguments in signed languages

7.4.1 Two identification procedures for null arguments

Like NGT, ASL has a set of verbs that take agreement markers, but also verbs that do not have agreement markers. Both types of verb can, however, occur with null arguments. Null arguments can be both subjects and objects. Lillo-Martin (1986; 1991) discusses the licensing and identification of the null arguments in ASL, basing her analyses on Huang (1984). She claims that in ASL two identification procedures of null arguments are at work. In the first place, there is identification by agreement. Since ASL has subject and object agreement, both subject and object null arguments can be identified by the rich agreement system. Where agreement is present, the null argument is pro. Pro obeys the Generalized Control Rule: the empty pronominal is coindexed with the verb agreement. If no agreement is present but there is another nominal element present, then pro can be coindexed with that element, as is the case with null embedded subjects.

In the second place, Lillo-Martin argues that null arguments that occur in an environment where no agreement or other nominal element is present are variables left by movement of an empty or an overt topic which is coindexed with an appropriate preceding topic (Huang 1984). She shows that these arguments must indeed be wh-traces, since they obey principle C of Binding Theory, Subjacency and the ECP. Since ASL is a discourse-oriented language, this second identification device is permitted.

19 In signed languages, topics are marked by several non-manual and manual characteristics, such as raised eyebrows, a lowered chin, a hold or lengthening of the sign (see Coerts (1992) and references; Aarons (1994) for ASL). Note that we have not found a distinction between moved and base-generated topics, in contrast to Aarons.
The occurrence of two different null arguments in ASL and Lillo-Martin’s analyses are illustrated by the following part of a signed narrative (adapted from Lillo-Martin 1991: 81, ex. 53), in which the daughter is the topic of the narrative.

(27) **ONE DAY, aDAUGHTER NOTHING #D-O, aE DECIDE aE WALK b-cWOODS. aE bWALK_c, dPRONOUN aE SEE_d dFLOWER, aE PICK-UP_d a pro, aE SEE_e cWATERFALL, aE cWALKe, aE FASCINATED_e cpro, aE LOST^resultative_.

‘One day, the daughter had nothing to do, so (she) decided to take a walk in the woods. (She) walked around, and saw there some flowers, and picked (them) up; (she) saw a waterfall, and walked (near it); and (she) was so fascinated (by it) that (she) became lost.’

Thus, in (27) two object pros occur that are identified by verb agreement (as can be seen from the corresponding subscripts): the null objects in the clauses ‘aE PICK-UP_d a pro’ and ‘aE FASCINATED_e cpro’. All other null arguments refer to the daughter who is the topic of the narrative. These latter empty categories mark the sites of a topic that is deleted under identity with a topic in a preceding sentence, resulting in a topic chain. The empty categories are called zero topics or variables.

Lillo-Martin’s approach appears to account in a structured way for the ASL facts. We will adopt her account in our analysis of the NGT facts, but suggest some improvements in order to account for the following issues. First, Lillo-Martin argues for ASL to be discourse-oriented. However, in section 7.3.3 we saw that there are several problems with linking the discourse-oriented parameter with the proposed characteristics of this parameter and with the identification and licensing of null arguments. Therefore, identification should instead be formalized within the proposal by Raposo (1986).

Second, as we claimed in section 7.2.3, some verbs take a gender agreement marker.21 Thus, agreement may identify more null arguments than was previously thought. For example, in the ASL predicate for ‘to walk’, occurring three times in (27), the hand configuration (probably) reflects the characteristic ‘legged’ of the argument ‘daughter’, and, as a consequence, is

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20 We inserted e for all empty variables and pro for all empty pronominals, as proposed by Lillo-Martin (1991).

21 Lillo-Martin mentions the type of verb that has these markers (usually called ‘spatial verbs’ in the literature), but only regards the loci in these verbs as possible agreement markers, not the hand configurations.
a gender agreement marker.\textsuperscript{22} This means that the three null arguments occurring with the predicate for ‘to walk’ are probably pros licensed by gender agreement morphology, instead of empty variables (as proposed by Lillo-Martin).\textsuperscript{23}

### 7.4.2 Null arguments in NGT

Like Lillo-Martin, we claim that null arguments in the presence of agreement are pros that are identified by the $\varphi$ features of the agreement marker. As discussed above, we consider both locus and gender morphemes as agreement markers that can identify or license null arguments. For NGT null arguments that occur in the absence of agreement, we adopt Raposo’s (1986) analysis outlined above. This means that, in the case of a transitive verb that shows agreement for its subject only and where both arguments are null, the null subject is pro (the content of which is recovered by the verb agreement), while the null object is a variable left by movement of an empty category to spec,CP, where it becomes an operator. The operator and the trace that it A’-binds are linked to the pragmatic topic by a rule of Predication at LF. Below we will illustrate some possibilities of null arguments in NGT.

\begin{equation}
(28) \text{(Context: Inge has R-locus x, at the signer’s right, and Roland has R-locus y, at the signer’s left.)}
\end{equation}

\begin{itemize}
\item[a.] (She) teases (him)”
\item[b.] “Who knows that she teases him?”
\end{itemize}

\textsuperscript{22} Unfortunately, from the gloss notation it cannot be ascertained whether this hand configuration is actually used.

\textsuperscript{23} Lacking subjacency data on this issue from ASL, we cannot prove that the null arguments occurring with these types of verb are true pros.
The verb in (28a) shows agreement for its subject and object. The null arguments in the sentence are pros, licensed by the verb agreement. This can be concluded from (28b), where sentence (28a) is embedded under a wh-island without violating subjacency. In contrast to this, the null argument in (29a) is an empty variable, viz. a wh-trace left by movement of an empty category to spec, CP.

In (29a) the verb carries no agreement marking that licenses the empty subject. According to the analysis in section 7.3.3, the empty subject is licensed by an empty operator. The rule of Predication links the operator and its trace to an empty topic. This is corroborated by (30b), where sentence (30a) embedded under a wh-island violates subjacency.

Our analysis of hand configurations as gender agreement is confirmed by the fact that the null arguments referred to by gender agreement are pros, licensed by this type of agreement, as is shown in (30).

(a) (Context: Inge has R-locus x, at the signer’s right.)

a. $e_x$

pro$_\text{Inge}$ exam pass

‘She passed the exam’

LF representation: $[\TOP e_j][\CP O_p][\IP e_x \text{ exam pass}]$

b. $e_x$

* who know pro$_\text{Inge}$ exam pass

‘Who knows that she passed the exam?’
Since the sentence in (30b) does not show a subjacency violation, the embedded empty direct object must be pro. It is licensed by gender agreement.

7.4.3 A note on topicality

In the case of more than one null argument in the absence of agreement, we have to assume that a clause has more than one empty operator and more than one null topic. Although sentences with multiple topics are not common in Germanic languages, other languages allow at least two topics, such as Chinese (Huang 1984). Sentences with two topics are also attested in ASL (Lillo-Martin 1986; 1991; Aarons 1994; Neidle et al. 2000). This is possible in NGT too, as can be seen in the examples in (31) and (32).

(31) [TOP book be-left ] [TOP Inge be-right ]

'As for the book, as for Inge,

[CP prn-she she likes it’  prn-it like prn-it]
This infers that two empty topics can be assumed as well. Along the lines of Rizzi (1997) we can assume furthermore that there are two functional projections above IP instead of one CP (for expository reasons we call them both CP). Both empty operators occupy a spec,CP position. The LF representation of a sentence with two null topics looks like (33).

\[
\text{TOP}_e \text{TOP}_{e'} \text{CP} \text{OP}_k \text{OP}_m[f_k \text{like } e_k \text{OP}_m[f_m \text{like } e_m]]
\]

‘(Inge) likes (the book)’

It is as yet unclear whether sentences with three null arguments and no agreement occur in NGT. In the current analysis we would have to assume three (empty) topics in these sentences. Since we have not come accross such sentences in our data, we will refrain from discussing this possibility here.24

7.4.4 Determining the recoverability mechanisms

As discussed in 7.2.4, most verbs in NGT do not show agreement marking. Other verbs take agreement markers, but some of these only agree with a subset of their arguments. The spoken languages treated in the literature on the occurrence of null arguments show more consistent agreement patterns. This means that in identification and licensing mechanisms for null arguments these languages are more straightforward as well. Null subjects are either licensed by subject agreement or by the matrix subject or a null

24 Neidle et al. (2000) reject the possibility of having three topics for ASL.
operator. Null objects are either identified by object agreement, or by a null operator. For instance, Campos (1986) argued for Spanish that null indefinite objects are variables, because Spanish has no object agreement. We know that subjects in Spanish are licensed and identified by subject agreement. Thus, two mechanisms can be at work in Spanish to recover the content of two null arguments of the same verb in (34b).

(34) a. ¿Compraste e café?
   pro buy-2p coffee
   ‘Did (you) buy coffee?’

   b. Sí, e compré e
      yes, pro buy-1p.past t
      ‘Yes, (I) bought (some)’ (adapted from Campos 1986: 354, ex. 2)

In signed languages the licensing and identification mechanisms are not as straightforward, since they depend on the agreement properties of the verb. This was shown in (28) and (29), where the null subject was licensed by agreement and a (null) topic, respectively. This may indicate that the null arguments in signed languages have to be identified by the closest possible element that can function as the referent.

We propose an identification procedure of null arguments (pros and variables) using the heuristic identification procedure as suggested by Huang (1995). Huang gives a discourse-pragmatic solution for the identification of null arguments. A null subject or null object is identified by a sentential topic if such a topic is available. Generally, a c-commanding antecedent is preferred over a non-c-commanding antecedent. But if there is no topic in the sentence that qualifies as a possible identifier, the previous clause will be examined for a possible identifier, until the topmost clause. If there is still no possible identifier, the null argument will be interpreted as ‘arbitrary’.25 Huang’s analysis stresses the fact that the interpretation of the null argument should be in conformity with our knowledge of the world. Such an account works well with respect to the recoverability of multiple variables.

The proposed identification hierarchy is situated at LF and LF’. We assume that LF’ forms the last stage towards pragmatics within LF. At LF, a null argument seeking to identify with a referent starts out at the left-hand side of the hierarchy. The null argument first looks for agreement for its identification. If agreement is not available, it will go on looking for a local subject or a local object. In these three cases, the null argument is a pro. If these identiers

25 As distinct from pro_{arb}.
are not available, the null argument will look for an appropriate sentential topic. In this case, the null argument is a variable, bound by the sentential topic. If a sentential topic is not available either, the null argument is identified by a discourse topic in the following way. The variable is bound by an empty operator. For every variable-empty operator chain there is a null topic that is linked with a discourse topic. The rule of Predication works in combination with the right-hand part of the identification hierarchy. It makes sure that the indices of a zero topic linked to a discourse topic are identified with the right variable-null operator chain. If there is no discourse topic available either, the null topic of a variable-empty operator chain is identified with the speaker, or it gets an arbitrary interpretation otherwise. In all cases, world knowledge plays an important role.

(35) Identification hierarchy of a null argument

\[ \text{agreement} < \text{local subject} < \text{local object} < \text{sentential topic} < \text{discourse topic} < \text{speaker} < \text{arbitrary interpretation} \]

/ world knowledge

We have discussed two types of null argument in NGT: pros and variables. The type of null argument depends on the agreement possibilities of the verb. Null arguments are recovered according to the universal identification hierarchy in (35), using the closest possible identifier.

7.5 Concluding remarks

In this chapter we have proposed that signed languages have two types of agreement: locus agreement and gender agreement. The distribution of these two agreement types among agreement verbs can be predicted by the verb semantics. The Theme argument of motion verbs is expressed by gender agreement only. All other arguments (Agent, Patient, Recipient, Source, Goal, and Location) are always expressed by locus agreement. Locus agreement is realized by directing the movement and/or orientation of a verb towards the loci of the referents in signing space, or by expressing the verb at the locus of a referent in signing space. Gender agreement is realized in signed languages by hand-configuration morphemes on the predicate. On the basis of the class of hand configurations that is used in NGT gender agreement, we have proposed a first characterization of this type of agreement by means of the features [animate], [legged], [straight], [small], [flat], [volume], and [control]. We did not adopt the analysis of Neidle et al. (2000) that the non-manual marking that in some cases accompanies verbs is agreement for NGT.
We also claimed that the \( \varphi \) features for person and number do not play a role in verb agreement in signed languages. Instead we proposed that the relevant \( \varphi \) features in signed languages are locus and gender. The universal set of \( \varphi \) features should be extended in order to include the locus feature as well.

With regard to verbs in signed languages, we demonstrated that the current classification of verbs in signed languages in agreement verbs on the one hand and non-agreement verbs on the other is not sufficiently fine-grained. Besides agreement verbs and non-agreement verbs, a third set of verbs should be recognized with predicates that show agreement for some arguments of their \( \theta \) structure only.

We showed that all arguments of every verb from every class can be null in the right context. From this we concluded, with Lillo-Martin (1986; 1991) for ASL, that agreement is not the only mechanism that is active in signed languages to recover the content of null arguments. We adopted Lillo-Martin’s analysis for two kinds of null argument in signed languages, viz. pros and variables, and extended her analysis to verbs with an ‘incomplete’ agreement pattern. As opposed to Lillo-Martin, we do not link the null topic analysis to the parameter that distinguishes between discourse-oriented and sentence-oriented languages, as was done first in Huang (1984), because of problems concerning the characteristics that differentiate between these types of language. Instead, we adopted Raposo’s (1986) proposal and associate the null topics in NGT to the rule of Predication parameter. The rule of Predication has to be assumed on independent grounds to account for the interpretation of constructions such as purposive clauses and relative clauses (Chomsky 1980; 1982). Raposo parametrizes this rule so that it either can or cannot refer to a pragmatic topic.

Although our conclusions from section 7.2 are not in accordance with the common analysis of agreement phenomena in signed languages, we would like to generalize our conclusions to all signed languages that have been investigated until now, on the basis of what is reported in the literature about these languages with respect to the use of signing space for verb agreement and the different verb types that occur.26 Unfortunately, this

same literature does not discuss the occurrence of null arguments, except for the literature on ASL. Therefore, we are slightly reserved in generalizing our conclusions from section 7.4 to all signed languages. We would instead like to present them here as analyses for NGT (and ASL) only, which still need to be verified for other signed languages.
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