11

Clause structure

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1   Introduction

This chapter is concerned with the clause structure of Brazilian Sign Language (LSB) and American Sign Language (ASL). In order to investigate clause structure, we devote some consideration to issues of basic and derived word order. These considerations allow us to formulate a proposed structure which captures the word order possibilities.

We find that LSB and ASL share a basic word order of Subject-Verb-Object (SVO). However, other word orders are also possible due to a variety of syntactic processes including topicalization, object shift and focus.

The chapter also discusses ways in which clause structure is different for sentences with agreeing verbs versus plain verbs (cf. chapters in this volume by Mathur and Rathmann and by Padden *et al.* on verb agreement). These differences motivate distinct phrase structures for sentences of the two types.

The structures in this chapter are presented using the terminology of generative syntax (see, among others, Chomsky 1995, Bošković & Lasnik 2007). We find that the formalism of this approach allows us to ask specific, detailed questions and make explicit proposals. The observations and generalizations we make are empirically based, however, and should be of interest to linguists using other approaches as well.

Our approach contributes to the overall goal of this volume by exploring the crosslinguistic similarities and differences between two geographically distinct sign languages. LSB and ASL have many similarities in word order and clause structure, but they also show intriguing differences. A detailed study of these similarities and differences helps to reveal patterns of crosslinguistic variation in sign languages, which we compare with known patterns of crosslinguistic variation in spoken languages.

In this chapter, we will first examine the underlying word order of LSB and ASL. Then, we will look at word order changes and their derivation.

2   Overview of word order and clause structure

Word order is a basic concept related to the phrase structure of a language. The idea that languages may differ in their basic word order has played a significant role in linguistic analysis. For instance, Greenberg (1966) observed that of the six possible combinations of subject (S), object (O) and verb (V), certain word orders are much more common than others. Languages often allow several variant orders, but Greenberg observed that even though this variation exists, usually each language has a single dominant word order. According to him, the dominant order is either SOV, SVO or VSO. He observed that the ordering of the elements tended to be consistent, i.e., a VO language will have the object of the preposition after the preposition, while an OV language will have the opposite order, object then postposition.

In addition to the term "basic" word order, "canonical" and "underlying" word order are also used to describe word order in different languages. From typological studies to formal ones, we see a distinction between "basic" or "canonical" word order and "underlying" word order. The first is related to the surface word order in a language. In any particular language the decision to label a particular word order as dominant is based on the word order of unmarked simple clauses, that is, clauses in a neutral setting.

On the other hand, the "underlying" word order is that which is generated in the deep structure. "Deep structure" is the bare structure in the sense of Chomsky (1965), i.e., the structure before any transformations have been applied to it. Deep structure does not obligatorily correspond in form to what is pronounced (i.e., surface structure); it is an abstract level of syntax which relates the computational system and the lexicon, and thus, it is an "internal interface." Variation in word order will be expressed by the phonological component, in which the elements in the structure are pronounced. At this level of the computational system of language, we observe the result of the transformations in different derivations. This gives us the possible word orders allowed by the language.

The underlying word order, in this sense, is related to a parameter, known as the "head parameter". "Underlying" order(s) is(are) the one(s) that the operations will apply to. For example, the underlying word order of a topicalized sentence will be one in which there is no topicalization. Variation in word order is the result either of different derivations being allowed by different languages, or of different settings of the head parameter.

3   Clause structure in LSB and ASL

There are numerous works that mention the flexibility of word order in ASL (Fischer 1974, Fischer 1975, Liddell 1980, Padden 1988, Brennan & Turner 1994,

Table 11.1 *Distribution of word order in ASL and LSB*

Word order	Yes	No	With restrictions
SVO	X		
OSV			X
SOV			X
VOS			X
OVS			X
VSO		X	

Wilbur 1997, Neidle *et al.* 2000); LSB (Felipe 1989, Ferreira-Brito 1995, Quadros 1999, Quadros 2003) and other sign languages (for example, Deuchar 1983 and Sutton-Spence & Woll 1999, for British Sign Language; Engberg-Pedersen 1994 for Danish Sign Language; see also papers in Brennan & Turner 1994). The word order possibilities for ASL and LSB are summarized in Table 11.1.

Research on word order points out that these languages have different possibilities for ordering the words in the sentence, but even with this flexibility, there seems to be a basic order SVO. We will review empirical support for the conclusion that SVO is basic in ASL and LSB in section 3.1. The evidence comes from simple sentences, sentences with embedded clauses and sentences with adverbs, modals and auxiliaries. The varied word orders allowed in ASL and LSB result from movement operations leading to structures with topicalization, object shift and focus. We discuss these constructions in section 3.2. LSB clause structure reveals that there are important differences between sentences with and without verb agreement. In section 3.3, we propose a representation of phrase structure capturing both the basic and derived orders.

3.1   Evidence for clause structure

3.1.1   *Basic sentences*

Sentences like (1) are very natural in LSB and ASL, and examples using SVO order as in these examples are very generally considered grammatical. The sentence in (1a) contains an "agreeing verb," i.e., a verb which displays person or location inflection.[1] The sentence in (1b) has a "plain verb," i.e., a verb that does not mark overt agreement. We present sentences with both kinds of verbs, because the agreement asymmetry that distinguishes these verbs in LSB and ASL can have, and probably must have, different behavior in the syntactic structure (to be

discussed in section 3.3). Also, these examples have in common the special non-manual marker that can be associated with the subject and object of the sentence, i.e., eye gaze toward the object (cf. Bahan 1996). For our purposes, we are considering only eye gaze with agreeing verbs.

(1)   <u>   eg:a</u>   <u>   eg:b</u>   (LSB;[2] also ASL)

   a. IX <det> JOÃOa   a ASSISTIRb b TV.
   'John watches TV.'

                                    <u>   hn</u>
   b. IX <det> JOÃO GOSTAR FUTEBOL.
   'John likes soccer.'

Fischer (1974, 1975) presented an analysis of word order in ASL considering syntactic and semantic aspects. Her analysis indicates that SVO is the basic word order in ASL, since it is the order that is found with reversible subject and object, and the one that appears in embedded clauses with any two full NPs (as shown in (2a–b). She observed that we cannot have SOV word order when the object is an embedded clause (whether this order is base-generated or derived by extraction), as shown in (3). This is true for both LSB and ASL.

(2)   a. MAN NOTICE CHILD   (ASL; also LSB)
      'The man noticed the child.'
                                                (Fischer 1975:5)

      b. ME THINK ED FINISH PAY JOHN
      'I think Ed has paid John.'
                                                (Fischer 1974:200)

(3)   <u>   eg:loc</u>
      a. IX <1> THINK [IP IX <det> MARYa   aLEAVEloc].
      'I think that Mary left.'
                                             <u>   eg:loc</u>
      b. * IX <1> [IP IX <det> MARYa aLEAVEloc] THINK.

Based on these facts and others to be presented in this chapter, we assume that SVO word order is the basic order in LSB and ASL. Having determined the basic word order, we turn now to the goal of identifying the sentential phrase structure. We need to know what positions are occupied by each element in the sentence. We will discuss the distribution of adverbs and modals, as well as that of the LSB auxiliary sign glossed AUX, since it is very important to identify the position of these elements to be able to define the phrase structure. Also, we will show that

these elements can give additional support for the conclusion that the basic word order in LSB and ASL is SVO.

3.1.2   *Clause structure and adverbs*

It is interesting to analyze examples with adverbs because they can normally be adjoined to different parts of the sentence, although observing some restrictions. If there are restrictions in some cases, these may provide suggestions about the phrase structure. Also, adverb distribution in the sentence has been used as evidence to show movement of constituents. Therefore, we present some examples considering the placement of adverbs in sentences with the basic word order SVO.

The first case that is analyzed includes temporal adverbs.

(4)   a. IX < det > JOHN BUY CAR YESTERDAY.   (ASL; also LSB)
      'John bought a car yesterday.'
   b. * IX < det > JOHN YESTERDAY BUY CAR.
   c. * IX < det > JOHN BUY YESTERDAY CAR.
   d.   YESTERDAY IX < det > JOHN BUY CAR.

(5)   a. IX < det > JOÃOb a ENCONTRARb MARIAb JÁ.
                                          (LSB; also ASL)
      'John already met Mary.'
   b. * IX < det > JOÃOa JÁ aENCONTRARb MARIAb.
   c. * IX < det > JOÃO aENCONTRARb JÁ MARIAb.
   d.   JÁ IX < det > JOÃOa aENCONTRARb MARIA.

There is a clear preference for placing the temporal adverb in the initial position of the sentence, as in (4d) and (5d). In the examples in (4a) and (5a), with the adverb in final position, the interpretation is one of confirmation, but not new information. The examples in (4b) and (5b) can be pronounced with a break before and after the adverb, and "John" must be topicalized; without these markers the sentences are ungrammatical. Therefore, we will not consider this special case here (topicalization will be discussed in section 3.2.2). The most important examples for our purpose are (4c) and (5c), since they show us that there is a strong restriction against breaking the constituent VP that includes the verb and the object. This gives support to VO as the basic word order. Considering this distribution, we assume that temporal adverbs are left- or right-adjoined to Inflection Phrase – IP (or Agreement with Subject Phrase – AgrSP).

Adverbs of frequency have a different distribution from temporal adverbs; however, they observe one restriction in common. It is not possible to insert a frequency adverb between the verb and the object. This is observed in (6c) and (7c).[3]

(6)   a. IX < 1 > BEBER LEITE AS-VEZES.   (LSB; also ASL)
     'Sometimes I drink milk.'
    b. IX < 1 > AS-VEZES BEBER LEITE.
    c. * IX < 1 > BEBER AS-VEZES LEITE.
    d. ? AS-VEZES IX < 1 > BEBER LEITE.

(7)   a. IX < 1 > ASSINAR IX < det > DOCUMENTO NUNCA.
                        (LSB; also ASL)
     'I've never signed the document.'
    b. IX < 1 > NUNCA ASSINAR IX < det > DOCUMENTO.
    c. * IX < 1 > ASSINAR NUNCA IX < det > DOCUMENTO.
    d. ? NUNCA IX < 1 > ASSINAR IX < det > DOCUMENTO.

The initial position of frequency adverbs can be acceptable only with a break between the adverb and the rest of the sentence, or with special intonation (head nod above the sentence after producing the adverb). Given the facts in (6) and (7), we assume that the frequency adverb is adjoined to the left and right of the VP (as Braze 2004 assumes for ASL).

In sum, the distribution of temporal and frequency adverbs suggests that there is a constituent VP in LSB and ASL that includes the verb and the object: [$_{VP}$ [V NP]]. This relation cannot be interrupted by an adverb, providing another argument that VO word order is the basic one in these two languages.

Moreover, we assume that temporal adverbs are right- or left-adjoined to IP (AgrSP) and the frequency adverbs are right- and left-adjoined to VP. This distribution can be used to show the position of different syntactic categories.

3.1.3   *Clause structure and modals*

In both LSB and ASL, modals can occur between the subject and the verb, as in (8).

(8)   DADa MUST PAY B-I-L-L.   (ASL; also LSB)
    'Dad must pay the bill.'

In previous research on ASL, Padden (1988) concludes that modals are verbs which take clausal complements (like modals in Italian). Petronio (1993) argued against Padden's conclusion and argued that modals in ASL occupy the position of Infl (or T), the same conclusion arrived at independently by Neidle *et al.* (2000) (a common analysis for many spoken languages including English). However, Matsuoka (1997) proposed that modals in ASL head a separate projection (ModP). Given the distribution of modals with respect to negation and adverbs in ASL and LSB, we adopt Matsuoka's analysis here.

Cinque (1999) proposed that for each position occupied by an adverb and/or modal, there is a different functional projection, and the interpretation of these elements depends on their hierarchical position. Modals can be interpreted as having root modality or as having epistemic modality. "Root modals typically denote permission, obligation, or ability, specifying characteristics of the subject of the sentence. Epistemic modals typically indicate possibility or entailment" (Braze 2004:45). Root modals are considered to be in a syntactically lower position than epistemic modals (Butler 2003).

Cinque observed a different distribution between root and epistemic *can* in Italian, as illustrated in examples where the modal interacts with an adverb. Such examples from LSB are given in (9) and (10).[4] The sentences in (9a) and (10a) must be interpreted with root modality and the sentences in (9b) and (10b) must be interpreted with epistemic modality.

(9) a. IX < det > MULHER AS-VEZES PODE BEBER CERVEJA
                                                    (LSB)
        (Context: The woman is taking medicine which allows her to drink alcohol only sometimes.)
        'That woman is sometimes permitted to drink beer.'
        *'That woman is sometimes able to drink beer.'

     b. IX < det > MULHER PODE AS-VEZES BEBER CERVEJA.
        (Context: The woman has a stomach condition which makes her unable to tolerate alcohol sometimes.)
        *'That woman is sometimes permitted to drink beer.'
        'That woman is sometimes able to drink beer.'

(10) a. IX < det > MULHER SEMPRE PODE SUBIR-MONTANHA.
                                                    (LSB)
        (Context: The owner of the mountain gives out special permission for certain climbers.)
        'That woman is always permitted to climb the mountain.'
        *'That woman is always able to climb the mountain.'

     b. IX < det > MULHER PODE SEMPRE SUBIR-MONTANHA.
   (Context: The woman works out regularly and is in very good health.)
        *'That woman is always permitted to climb the mountain.'
        'That woman is always able to climb the mountain.'

We conclude that in LSB, frequency adverbs must follow the modal when it has a root reading, and precede the modal when it has an epistemic reading. Such a distribution can be best accounted for by assuming that the modal

heads its own projection. This projection must be located between IP and VP, as illustrated in (11).

(11)
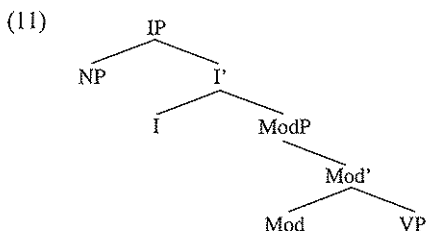
There are several other positions in which modals appear, which we will only briefly mention here. First, it has been observed that modals may occur in the sentence-initial position. However, Braze (2004) and Quadros (1999) observe that such a position for modals is permitted only in particular discourse contexts, so it will not be considered further here.

Modals may also occur in both the preverbal and sentence-final position. These examples are related to focus, which will be discussed in detail in section 3.2.4.

3.1.4   *Clause structure and auxiliaries*

In LSB and some other sign languages, but not ASL, there is an auxiliary (glossed here AUX) as shown in examples (12b–c).

(12)

            eg:a   eg:b   (LSB)

a. IX < det > JOÃOa   GOSTAR IX < det > MARIAb.
   'John likes Mary.'

               eg:a   eg:b   hn

b. IX < det > JOÃOa   IX < det > MARIAb aAUXb GOSTAR.
   'John likes Mary (aAUXb).'

                         eg:b   eg:a   eg:a-b   hn

c. IX < det > MARIAb IX < det > JOÃOa   aAUXb GOSTAR.
   'John likes Mary (bAUXa).'

AUX in LSB is a pure expression of agreement by movement from one point to another point (these points are those of the subject and the object of the sentence). Mathur and Rathmann's chapter on verb agreement in the present volume uses the expression "area in signing space associated with the referent of the subject/object" to refer to these points in the signing space. AUX cannot occur alone, but must be signed together with a plain verb, a verb that lacks overt

agreement. Through its direction of movement, AUX expresses the relation established between the arguments of the sentence.

Following Lasnik's (1995) proposal for auxiliaries in English, in LSB it seems that the auxiliary AUX is the head of IP (or the head of TP, considering the split of IP into AgrSP, TP and AgrOP). AUX in LSB establishes a relation between the subject and object in sentences with plain verbs. It seems to compensate for the lack of agreement in these sentences. AUX is required only when the word order differs from the canonical one and has no way of identifying the subject and the object in a sentence with a plain verb. This context is observed in (12b–c), in which we have a sentence with reversible arguments (JOÃO and MARIA) and we can have the word order SOV or OSV.

3.1.5 *Summary*

We have seen several types of evidence that SVO is the basic word order in LSB and ASL. After Fischer's analysis, many other studies investigated word order in ASL. Basically, all of them conclude that ASL has SVO word order as the basic order. One exception is Friedman (1976), who argues that the flexibility of word order in ASL is the result of a lack of any fixed word order. A similar conclusion was reached for Quebec Sign Language by Bouchard and Dubuisson (Bouchard & Dubuisson 1995, Bouchard 1996), and some researchers looking at other sign languages have also come to a similar conclusion (cf. some papers in Brennan & Turner 1994). We mention this position just to show the potential alternative possibilities of analysis that might be considered to explain the apparent flexibility of word order. Liddell (1980) provided arguments against Friedman's analysis, and further discussion of the derivational alternative is given by Kegl *et al.* (1996) and by Sandler and Lillo-Martin (2006). We turn now to an examination of derivational analyses of word order changes in LSB and ASL.

3.2 Clause structure with movement operations

When we discuss complementizer, topic and focus positions, we are looking at derivations that project functional categories above IP (or AgrSP), i.e., A'-positions. Usually, the arguments (phrases) found in these positions were not base-generated there but moved there from A positions. Alternatively, elements in A'-positions are base-generated there but are not arguments. Arguments that move to a non-argument position do so for specific reasons. Linguistic theory is concerned with these specific reasons. What motivates an element to move to another position in a specific derivation? In this section, we discuss several such

Figure 11.1 *Topic nonmanual marking (tm1)*.

movements, which are motivated by grammatical and discourse-related considerations (topicalization, object shift and focus).

3.2.1   *Topicalization*

Since Fischer (1975), there has been an analysis of topicalization in ASL to explain the < O > SV and < VO > S word orders. Fischer observes that there is a break between the element topicalized and the rest of the sentence, and Liddell (1980:84) notes that there is "a change in the facial expression and head position from that indicating topic to some other expression." A set of nonmanual markings often including raised brows is associated with topics in ASL, LSB and other sign languages (to name a few: Argentine Sign Language, Massone & Curiel 2004; Australian Sign Language, Johnston & Schembri 2007; Danish Sign Language, Engberg-Pedersen 1993; Israeli Sign Language, Rosenstein 2001) (see Figure 11.1).

An important point observed by Liddell is that the topic nonmanual marker is separated from the negation nonmanual marker in sentences containing both. This is an indication of the position of Topic in ASL, at least over Negation Phrase. The following example illustrates this aspect in ASL, which also holds for LSB.[5]

(13) $\underline{\quad t \quad}$ $\underline{\quad neg \quad}$ (ASL; also LSB)
         CAT   DOG CHASE.
         'As for the cat, the dog didn't chase it.'   (Liddell 1980:84; original (22))

Following Chomsky (1977), Liddell assumes that topics in ASL are adjoined to the main clause. This assumption is in agreement with Fischer's (1975) analysis. Liddell also observes the same distribution for sentences with the entire VP topicalized, i.e., < VO > S, or the subject only, i.e., < S > VO. Another interesting fact observed by Liddell is that topics cannot be indefinites in ASL, as expected on

semantic and pragmatic grounds, if we make the common assumption that topics express given/old information.

There is another interesting case in which elements not constituents of the rest of the sentence are topics, as observed by Padden (1988). This is shown in the following example.

(14)   <u>top</u>   (ASL; also LSB)
        FOOD   1INDEX ONLY-ONE V-E-G.
        'With respect to food, I eat only vegetables.'

(Petronio 1993:21; original (4))

This kind of topic is also observed by Saito (1985) in Japanese. He uses this kind of construction as evidence for base-generated topicalization in this language, since the topic does not bind any argument position in the sentence. The following example illustrates this fact.

(15)   Sakana-wa [tai-ga   oisii]
        fish-top   red snapper-nom tasty
        'Speaking of fish, red snapper is tasty.'   (Saito 1985:282; original (6))

Petronio (1993) assumes that there are two kinds of topics in ASL: those which move to adjoin to CP and those which are base-generated in this position.

The first type includes topicalization of object, subject or VP. The second type includes topics as shown in (14). Petronio assumes that Topic position must be higher than CP based on evidence such as that shown in (16) below. In this kind of construction, there is a clear restriction against topics following a *wh*-word in CP (16a), while topics preceding the *wh*-constructions are grammatical (16b). The same distribution holds for LSB.

(16)   <u>wh</u>   <u>top</u>   <u>wh</u>   (LSB; also ASL)
        a. * ONDE   CAFÉ   COMPRAR

        <u>top</u>   <u>wh</u>
        b. CAFÉ ONDE COMPRAR.
        'Where do you buy coffee?'

Aarons (1994) investigates topics in ASL further and argues that there is more than one type of topicalization in ASL. In agreement with Petronio (1993), Aarons assumes that there are moved topics and base-generated topics. According to Aarons, topics occur in a structural position called Topic Phrase adjoined to the left of CP. Aarons also notes that there are different sorts of nonmanual markers associated with different topics. She identifies three nonmanual markers, described

Figure 11.2 *Topic-comment tm2 (left) and tm3 (right) nonmanual markers.*

in (17). The marker commonly considered to be the typical topic nonmanual marker is what Aarons calls the tm1 marker, illustrated in Figure 11.1, and what she calls tm2 and tm3 are given in Figure 11.2.

(17)   (i)   tm1: raised eyebrows and chin, with a slight pause between the signing of the topic–marked item and the rest of the sentence
       (ii) tm2: movement of the head back and to the side then forward, eyes very wide
       (iii) tm3: head forward, widening of the eyes, rapid head nods

The moved cases include subject, objects and adjuncts (locatives) associated with the typical nonmanual marker: raised brows, head tilted slightly back and to the side (17i). The base-generated topics analyzed by Aarons include the one pointed out by Padden (1988) and Petronio (1993), and others using the two kinds of nonmanual markers listed in (17ii) and (17iii).

Lillo-Martin and Quadros (2008) noted that the different types of topics described by Aarons includes some focus constructions. Although Aarons (1994) claimed that tm1 topics are used for emphasis or contrastive focus, we have found two different means for expressing these information types. We discuss this further in section 3.2.4.

Lillo-Martin and Quadros also proposed that the base-generated topics and the moved topics occupy different positions in the hierarchical structure. In particular, since the base-generated topics are always highest in the structure (Aarons also notes this ordering restriction), this would follow if there is a higher position for base-generated topics (called "topic-comment topics" because they are associated with clauses without a gap).

(18) _____t-c_____ _____top_____   (ASL; also LSB)
FRUIT,   BANANA,   JOHN LIKE MORE
'As for fruit, bananas John likes t best.'

Neidle (2002) also proposed that base-generated topics and moved topics occupy different structural positions; see Lillo-Martin and Quadros (2008) for discussion. An example showing this interaction was given in (18), and the structure proposed by Lillo-Martin and Quadros is given in (19).

(19)   T-CP
       /\
          TopP
         /\

3.2.2   *Object shift*

In addition to basic sentences and sentences with topics, both ASL and LSB permit other types of word-order variation. We focus here on various cases in which the object occurs before the verb (but not as a topic), which we group together as cases of "object shift."[6] The general idea is that some feature of the verb, such as its agreement marking, aspectual marking or use of a classifier, allows the object to move to a position between the subject and the verb, resulting in SOV order, or to a position above the subject, resulting in OSV order.

We start with cases having verbs with aspect marking. Liddell (1980) observed that OSV order is possible in examples such as (20).

(20)   TOMATO GIRL EAT[durative aspect].   (ASL; also LSB)
'The girl eats tomatoes for a long time.'

(modified from Liddell 1980:103)

Liddell analyzed this kind of structure as derived from SVO, having the object moved to initial position. Liddell speculates that this movement is related to the "heaviness of the verb." As he observed, the verb is inflected for durative aspect and takes longer to sign. However, Liddell does not provide an explicit analysis.[7]

Matsuoka (1997) and Braze (2004) proposed that in examples such as (20), the verb moves to a projection headed by Aspect. On both of their accounts, this projection is right-headed in ASL, leaving the verb in the sentence-final position. This movement licenses the movement of the object to a position above the subject. This position is the specifier of the Object Agreement phrase on Matsuoka's account, but higher, to within the CP-domain, on Braze's.

Some authors find that SOV is also permitted with aspectually marked verbs (e.g., Matsuoka 1997, but not Braze 2004). On Matsuoka's analysis, this is derived when the object optionally fails to raise after the verb moves to the Aspect projection.

Examples similar to those discussed here can be found when the verb is marked not for aspect, but for one of two other characteristics, a classifier or agreement (person or location). For instance, Liddell (1980:89–91) shows that SOV sentences include structures that have some iconicity, such as WOMAN PIE PUT-IN-OVEN. He says that the information about the relation between the activity and the object involved is clearly expressed in some spatial, pictorial sense. Another SOV case mentioned by Liddell (1980:88) is the grammatical sentence MAN BOOK READ,[8] in contrast to the ungrammatical *MAN MOVIE SEE, *MAN NUMBER FORGET and *BOY CANDY NOT LIKE.

Both of these cases can be analyzed as sentences with classifiers. Chen Pichler (2001) agrees with Matsuoka (1997) in concluding that certain classifiers allow syntactic verb movement of a type similar to that used for aspectually marked verbs. Following Matsuoka's analysis of aspectual cases, verb movement to a higher position[9] can occur, resulting in SOV order or OSV when the object also moves, as in the examples in the next paragraph.

Finally, Liddell also observed another specific case: examples such as BALL JOHN SWING-A-BAT and FENCE CAT SLEEP (1980:91–100) allow OSV order but do not have the topic marker on the object. Liddell argues that the initial noun is related to the locative reference point used in what he calls a "complex predicate." These predicates are considered complex because with only one sign, both a locative and a noun are expressed. This locative point is part of the agreement system found in most sign languages.

ASL sentences with agreement have been discussed as examples of flexible word order since Fischer (1974, 1975). We can see that this is also illustrated in LSB through the examples in (21) and (22), as compared with (1) and (2), presented earlier. In the (a) examples below, OSV or SOV order with an agreeing verb is permitted (ASSISTIR agrees with its object's location but behaves like person agreeing verbs in this way). In the (c) examples, such word order variability with non-agreeing verbs having reversible arguments is not allowed. The (b) examples show that word order variation may be allowed with plain verbs when the arguments are non-reversible.

OSV constructions

(21)   eg:b   eg:a   eg:b   (LSB; also ASL)
     a. TVb IX < det > JOÃOa aASSISTIRb.
     'John watches TV.'

$$\overline{\quad\text{hn}\quad}$$

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

$$\overline{\qquad\text{hn}\qquad}$$

c. * IX < det > MARIA IX < det > JOÃO GOSTAR.
John likes Mary.

SOV constructions

(22)
$$\overline{\quad\text{eg:a}\quad}\qquad\overline{\quad\text{eg:b}\quad}$$
a. IX < det > JOÃOa TVb aASSISTIRb.
'John watches TV.'

$$\overline{\qquad\text{hn}\qquad}$$

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

$$\overline{\qquad\text{hn}\qquad}$$

c. * IX < det > JOÃO IX < det > MARIA GOSTAR.
'John likes Mary.'

Thus, in both LSB and ASL locative or person agreement can sanction OSV and SOV orders. Chen Pichler (2001) collapsed these cases with the cases of classifiers and aspectually marked verbs discussed earlier. It seems that a variety of verb markings may require verb movement to a rightward position in the sentence, resulting in SOV order. Further movement of the object to a position preceding the subject results in OSV.

3.2.3 *Focus*

Both LSB and ASL allow two kinds of constructions analyzed as involving focus. One of these constructions shows "doubling," that is, the focused element appears both in its usual position and again in the sentence-final position. The second shows the focused element in the sentence-final position only. Examples are given in (23) below.[10] These examples show that modals, quantifiers, verbs, negation and *wh*-elements participate in these constructions.

(23)
$$\overline{\quad\text{E-foc}\quad}\qquad\text{(ASL; also LSB)}$$
a. IX < 1 > (CAN) GO PARTY CAN.
  'I really *can* go to the party.'
  (Context: There is some doubt on the part of the hearer as to whether or not the speaker can attend the party.)

$$\overline{\quad\text{E-foc}\quad}$$

b. IX < 1 > HAVE (TWO) CAR TWO.
  'It's *two* cars that I have.'

$$\overline{\text{E-foc}}$$
c. IX < 1 > (LOSE) BOOK LOSE.
'Indeed I *lost* the book.'

$$\overline{\qquad\text{neg}\qquad}\quad\overline{\text{E-foc}}$$
d. IX < 1 > (NO) GO PARTY NO.
'I absolutely did *not* go to the party.'

$$\overline{\qquad\qquad\text{wh}}\ \ \overline{\text{E-foc}}$$
e. WHO BUY CAR WHO.
'Who was it that bought a car?'

Petronio (1993) analyzed such constructions in ASL as involving focus; and Quadros (1999) also analyzed them as focus in LSB, although the details of their analyses are different. Petronio noted that focus constructions in ASL display the following five properties (1993:135):

(24) (i) the double occurs at the end of the sentence;
  (ii) the double is an X^0, not an XP;
  (iii) there is only one double per sentence;
  (iv) the twin cannot be within a syntactic island; and
  (v) only a wh-double can occur in direct wh-questions (not a modal or verb double).

Petronio proposes that the final double element is base-generated in the sentence-final head position of a CP specified for [+Focus]. This explains why double elements are always X^0 and always occur at the end of the sentence, and why there is always only one double element per sentence. Furthermore, she proposes that a null focus operator moves to Spec of CP to check its [+Focus] feature, accounting for the inability of focused elements to occur with islands. Finally, because *wh*-elements are associated with the CP projection as well, Petronio proposed a filter which states that if CP contains a [+WH] element, only that element may be focused.

Petronio and Lillo-Martin (1997:30) restrict the "double construction" "to sentences in which a significant pause does not precede the final 'double'. When there is a significant pause, the construction has different syntactic properties." This note makes a distinction between focus constructions on the one hand, and constructions such as tag questions and use of the discourse strategies to confirm some part of the sentence on the other hand.

The analysis of focus position in LSB by Quadros (1999) starts with the research mentioned here. As Kim (1997) proposed for Korean and Kato and Raposo (1994) for Portuguese, Quadros proposes an independent projection for focus, Focus Phrase (FocP), to account for aspects similar to those analyzed by Petronio. However, her

analysis makes theoretical improvements over Petronio's, including uniformity of branching and use of a phrasal position for movement of *wh*-elements.
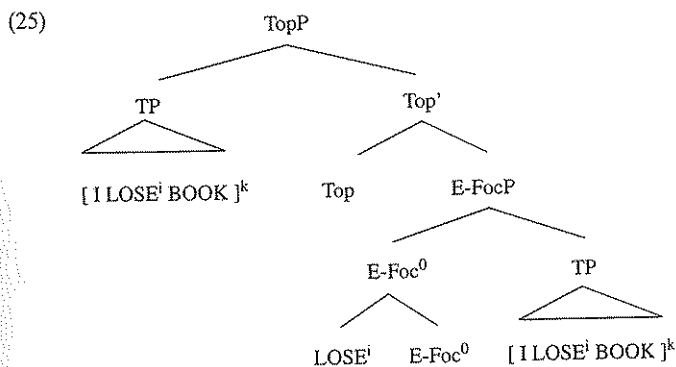
Note that all double elements present a nonmanual marker associated with them. This nonmanual marker seems to be related to the element in final position. In LSB, this nonmanual marker is intensified after the double element is pronounced. The nonmanual marker gives a hint of the presence of a feature associated with FocP that must be checked.

Like ASL, LSB shows double constructions with modals, quantifiers, verbs, *wh*-elements, negation and adverbs.

Alongside double constructions, it is also possible to find constructions in which the emphasized element appears sentence-finally without the sentence-internal "twin." It seems that the position occupied by the double element in final position licenses the omission of the sentence-internal element. This raises some questions: What is the position occupied by double elements? Why does this position license null elements? What kind of feature is related to double constructions?

Nunes and Quadros (2006, 2008) propose an account of this using the theory by Nunes (2004) of how the string of words in an utterance is linearized. According to the Copy theory of movement, when a constituent moves from one syntactic position to another, it leaves a copy which is deleted before the sentence is pronounced. Principles of linearization determine which copy is pronounced and which is deleted. However, in certain cases the conditions determining which copy should be pronounced result in an output where both are pronounced. This gives rise to doubling constructions, which occur in certain environments in spoken languages as well as sign languages.

Putting this idea together with Quadros's previous analysis, the derivation of doubling constructions goes as follows. The doubled element moves to the head of the Focus projection (which we call here E-Foc, for emphatic focus, to distinguish it from information focus). Then, the "remnant" – the rest of the sentence including the "twin" of the focused element – moves up to the specifier of Topic Phrase (TopP), because the part of the sentence that is not focused is considered a topic. This process is illustrated in (25).

(25)

$$
\begin{array}{c}
\text{TopP} \\
\diagdown \\
\text{TP} \qquad \text{Top'} \\
\text{[I LOSE}^i \text{ BOOK]}^k \qquad \text{Top} \qquad \text{E-FocP} \\
\text{E-Foc}^0 \qquad \text{TP} \\
\text{LOSE}^i \quad \text{E-Foc}^0 \quad \text{[I LOSE}^i \text{ BOOK]}^k
\end{array}
$$

When linearization applies, the copy of the topic is completely deleted. However, it is possible for the copy of the focused element in the higher structural position not to be deleted, giving the double construction, or to be deleted, giving the final construction. See Nunes and Quadros (2006, 2008) for detailed explanation of the derivation and why this deletion is optional.

As noted by Arrotéia (2003) (for LSB), focus-final constructions also lead to the possibility of final subjects (i.e., VOS order). An example from her study is given in (26).

(26)   _____wh_____   (LSB; also ASL)

Q. QUEM COMPRAR CARRO?

   'Who bought the car?'

A.   E-foc
                             ‾‾‾‾‾

(JOÃO) COMPRAR CARRO JOÃO

   '*John* bought the car.'

In addition to the focus constructions discussed here (doubling and final constructions for emphasis), LSB and ASL employ a different mechanism for information focus and contrastive focus, as discussed by Lillo-Martin and Quadros (2008). Information focus (I-focus) and contrastive focus (C-focus) are unlike emphatic focus (E-focus) because (a) they do not involve doubling and (b) they do not involve the sentence-final position. Furthermore, they employ different nonmanual marking, as illustrated in Figure 11.3 (the model is a signer of LSB; the ASL nonmanuals are the same). As discussed in Lillo-Martin and Quadros (2008), the nonmanual marker we call I-focus is essentially the same as that called tm1 by Aarons (1994); the main elements include raised brows and a

Figure 11.3 *Information focus (left) and contrastive focus (right) nonmanual marking.*

prosodic break before the rest of the utterance. The different label is used to point out the function of the signs which co-occur with this marker, based on discourse context. The main elements of the nonmanual indicating contrastive focus include brow raise and a sharp downward head movement. Examples are given in (27) and (28).

(27)   _____ y/nq   ASL (also LSB)
        S1: YOU READ CHOMSKY BOOK?
        'Did you read Chomsky's book?'
                    _____ C-foc
        S2: NO, BOOK STOKOE I READ
        'No, I read Stokoe's book.'

(28)   _____ wh
        S1: WHAT YOU READ?   (ASL; also LSB)
        'What did you read?'
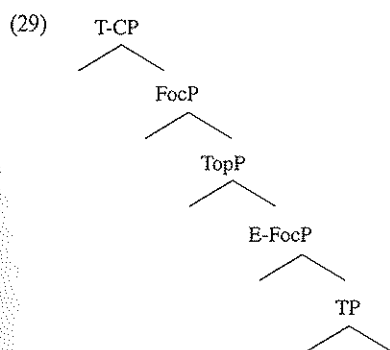   _____ I-foc
        S2: BOOK STOKOE I READ.
        S2: I READ BOOK STOKOE.
        'I read *Stokoe's book.*'

Combining these observations with the two positions for topic as discussed in section 3.2.2, Lillo-Martin & Quadros (2008) propose the structure in (29). I-focus and C-focus constituents occupy the FocP projection, while E-focus uses the lower projection.[11]

(29)   T-CP
          /\
         FocP
          /\
         TopP
          /\
         E-FocP
          /\
         TP
        /\

To summarize, considering focus allows us to explain a variety of structures found in LSB and ASL. These structures include double and final constructions using E-focus, where the focused material shows up in the sentence-final position, as well as information and contrastive focus, where the focused material is sentence-initial (or following a T-C topic).

3.3   Clause structure with different verb types

The structure of sentences with plain and agreeing verbs is recognizably differ-ent. One hint to the difference in structure associated with plain and agreeing verbs comes from an examination of nonmanual marking associated with agreement, as described by Bahan (1996). The asymmetry concerns the behav-ior of the nonmanual markers: when there is an agreeing verb in the sentence, the nonmanual marker is salient, but not with a plain verb. This is confirmed for ASL by the work of Thompson, Emmorey and Kluender (2006), who found that signers rarely produced eye gaze with plain verbs but frequently with agreeing verbs.

This asymmetry can be seen in LSB and ASL, as shown in (30) and (31).

Plain verbs:

(30)   eg (LSB; also ASL)

a. IX < det > JOÃO GOSTAR IX < det > MARIA.
   'John likes Mary.'
b. IX < det > JOÃO GOSTAR IX < det > MARIA.

                        eg

c. * JOÃO MARIA GOSTAR.

Agreeing verbs:

(31)   eg:b (LSB; also ASL)

a. IX < det > JOÃO aAJUDARb IX < det > MARIA.
   'John helps Mary.'
b. ? IX < det > JOÃO aAJUDARb IX < det > MARIA.
c.   eg:b
   JOÃO MARIA aAJUDARb.

Considering the strong evidence for a nonmanual marker with sentences that contain agreeing verbs (at least when the word order is not the basic one), in opposition to what happens with sentences with plain verbs, we assume that there is a true asymmetry between these two classes of verbs that must be explained.

In ASL and LSB, sentences with agreeing verbs seem to allow more freedom in word order than those with plain verbs. This fact was first observed by Fischer (1975). Fischer and Gough (1978) observed that when arguments are reversible the word order can be OSV, in addition to SOV (as illustrated in (31c)), with agreeing verbs, but not with plain verbs. This is true for LSB as well. The following examples illustrate this fact.

(32)   _____eg:b_____   eg:a   eg:b (ASL; also LSB)

    a. IX < det > MARYb IX < det > JOHNa aLOOKb.
    'John looks at Mary.'

                               hn
    b. * IX < det > MARY IX < det > JOHN LIKE.
    'John likes Mary.'

Lillo-Martin (1986, 1991) noticed another important asymmetry, the behavior of null arguments with plain and agreeing verbs. Null arguments are quite prevalent with agreeing verbs, and according to Lillo-Martin, they behave like true pronouns (*pro*). On the other hand, null arguments are more limited with plain verbs. Lillo-Martin analyzed these as similar to the null arguments of discourse-oriented languages, which require a discourse context to retrieve their reference. The same distinction is found in LSB, as argued by Quadros (1995).[12]

The examples in (33) and (34) show that the distribution of null arguments with agreeing verbs is different from the distribution of null arguments with plain verbs.

(33)   _____eg:b_____   (ASL; also LSB)

    a. TOMORROW aGIVEb BOOK.
    '(You) give (her) the book tomorrow.'
    b. TOMORROW aGIVEb BOOK.

(34) a. * TOMORROW TALK.   (ASL; also LSB)
    a'. TOMORROW IX < you > TALK IX < a >.
    '(You) talk with (her) tomorrow.'
                   eg:a
    b. * TOMORROW TALK.

The sentence in (34a) with a null subject and object and a plain verb is impossible without the appropriate context, while in (33a) with an agreeing verb the null argument is allowed. The cases in ASL in which it is possible to have null arguments with plain verbs mentioned by Lillo-Martin are similar to the example illustrated in (35).

(35) *Speaker A*:   _____y/n_____   (LSB; also ASL)
               BEBÊ COMER JÁ?
               'Did the baby eat already?'
    Speaker B: _____hn_____
               COMER JÁ.
               'Yes, he did eat already.'

The distribution of null arguments observed in (33) and (34) is the one relevant for our purposes here. These examples confirm the asymmetric distribution of the nonmanual markers. It is clear that nonmanual markers are not related to the licensing of null arguments when plain verbs are inserted in the derivation, since if this were the case, the sentence in (34b) would be grammatical. On the other hand, agreeing verbs, with or without nonmanual marking, allow null arguments as shown in (33a) and (33b).

Another difference between plain and agreeing verbs observed in LSB but not in ASL concerns the distribution of negation. Examples (36) and (37) show the contrast between agreeing and plain verbs, respectively, with respect to the surface occurrence of negation in the preverbal position.

(36) $\overline{\qquad\qquad\text{neg}\qquad}$ (LSB)
IX < det > JOÃO NÃO aDARb LIVRO.
'John does not give the book to (her).'

(37) $\overline{\qquad\qquad\text{neg}\qquad}$ (LSB)
* JOÃO NÃO APRECIAR CARRO.
'John does not like the car.'

With plain verbs, lexical negation is allowed only in final position. Example (38) illustrates this case.[13]

(38) $\overline{\qquad\qquad\text{neg}\qquad}$
JOÃO APRECIAR CARRO NÃO.
'John does not like the car.'

It is assumed that the underlying position of negation is preverbal for both plain and agreeing verbs in LSB, as it is for ASL. Note that although the negative item is not pronounced in the position preceding the plain verb in (38), the scope of negation is marked from the NegP position on, and it spreads over its domain including VP, through the nonmanual marker. We assume therefore that negation is associated with a negative nonmanual marker in a position between IP and VP. However, there is a clear difference between plain and agreeing verbs concerning the surface distribution of the negative sign.

Note that with agreeing verbs as with plain verbs, negation can occur in the final position, as shown in (39).

(39) $\overline{\qquad\qquad\text{neg}\qquad}$ (LSB)
IX < 1 > 1AJUDAR2 NÃO

For both plain verbs and agreeing verbs, the appearance of the negative element in the sentence-final position can be accounted for by using the focus/double construction discussed in section 3.2.3.

In this section, we have seen that agreeing verbs and plain verbs behave differently with respect to many phenomena in sign languages such as ASL and LSB. We summarize the relevant facts below.

(40) (i) In ASL and LSB, sentences with agreeing verbs seem to have more freedom in word order (e.g., OSV, SOV) than those with plain verbs;

(ii) In ASL and LSB, null arguments with agreeing verbs differ in distribution from null arguments with plain verbs;

(iii) In LSB, though not in ASL, plain verbs disallow preverbal negation, while agreeing verbs allow it.

The issue, then, is to explain the differences between plain and agreeing verbs in LSB and in ASL.

Quadros (1999, 2003) proposed that the differences between plain and agreeing verbs in LSB can be accounted for by using two different phrase structures. Linguists have proposed that for some languages, the "inflection" of a sentence might be represented in separate functional projections for subject agreement, object agreement and tense (Pollock 1989, Chomsky & Lasnik 1993, Bobaljik 1995 and many others), as illustrated in Figure 11.4a. In contrast, other languages use a simple single projection for inflection, as in Figure 11.4b.
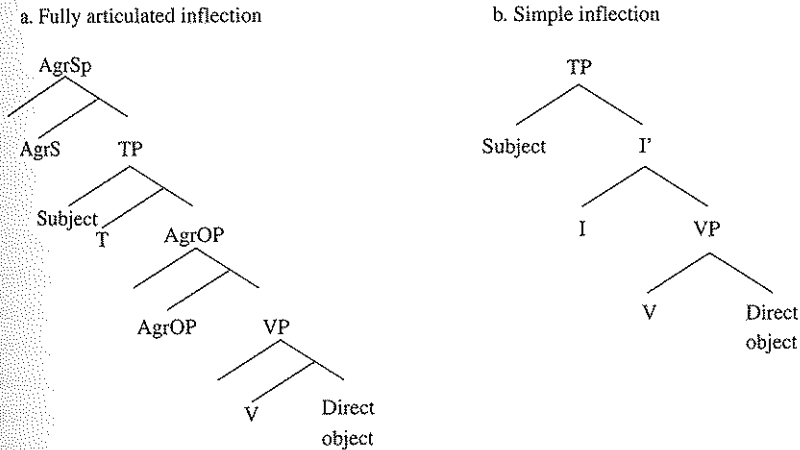

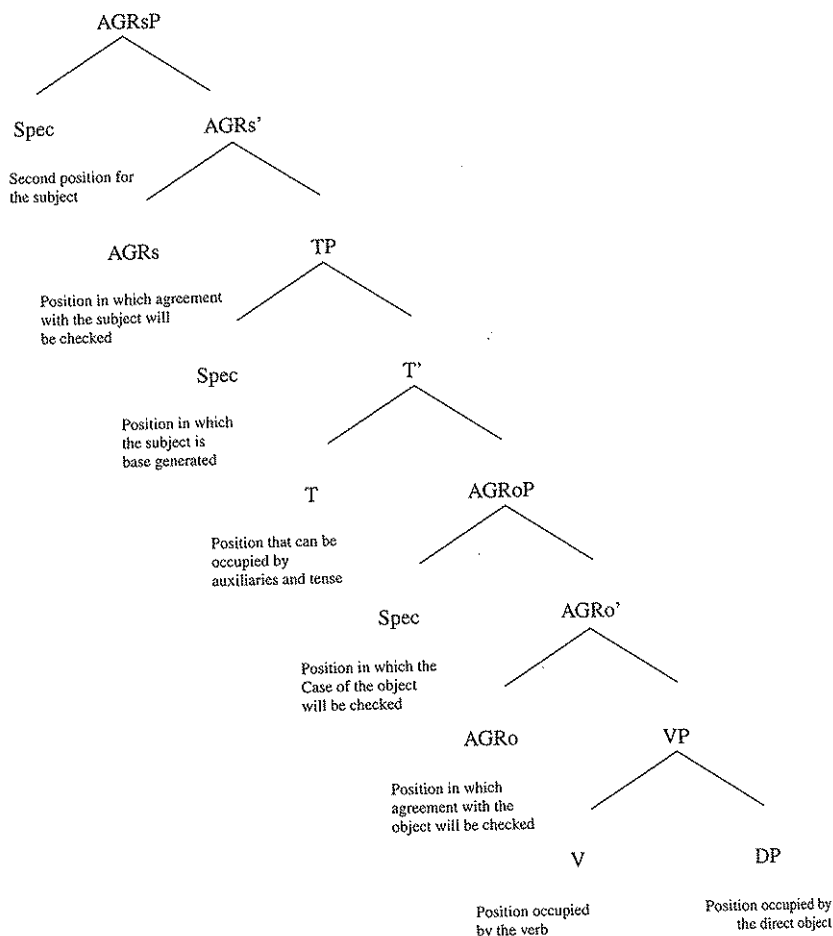Figure 11.4 *Phrase markers with fully articulated (a) and simple (b) inflection.*

AGRsP

Spec

Second position for
the subject

AGRs'

AGRs

Position in which agreement
with the subject will
be checked

TP

Spec

Position in which
the subject is
base generated

T'

T

Position that can be
occupied by
auxiliaries and tense

AGRoP

Spec

Position in which the
Case of the object
will be checked

AGRo'

AGRo

Position in which
agreement with the
object will be checked

VP

V

Position occupied
by the verb

DP

Position occupied by
the direct object

Figure 11.5 *Phrase structure projected with agreeing verbs.*

Quadros proposed that the difference between Figure 11.4a and Figure 11.4b exists not only across languages, but also within one language (LSB). On her proposal, agreeing verbs make use of the full structure, as explicated for LSB in Figure 11.5, while plain verbs use the simple structure, shown for LSB in Figure 11.6.

Verbs in either structure must check their features by moving to the inflectional projections, either overtly (thus changing their order on the surface) or covertly (thus keeping the order as it is base-generated). Quadros proposes that agreeing verbs in LSB are inserted "fully inflected" and so need to move only covertly. However, plain
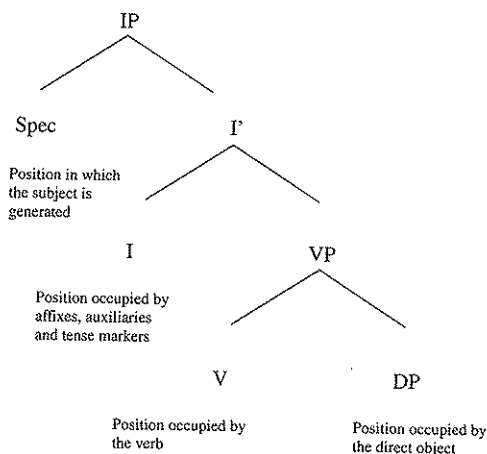
Figure 11.6 *Phrase structure projected with plain verbs.*

verbs must combine with inflection in the overt syntax. This set of assumptions explains the behavior of plain and agreeing verbs summarized in (40), as we will now discuss.

The first characteristic, greater freedom of word order with agreeing verbs, can be explained by the observation that the fully articulated structure has available slots for the movement of the object, which the simple structure does not have. In particular, when the verb is marked for agreement, the object can move to the specifier of AgrOP (this is akin to the discussion of object shift in section 3.2.3). However, there is no location for such movement in the IP structure.

The second characteristic concerns the use of null arguments with agreeing versus plain verbs. There are various analyses of null arguments in syntactic theory. Without making a commitment to one of them, we assume that the analysis of agreement-licensed null arguments must refer to the projections AgrSP and AgrOP. Since only agreeing verbs appear in structures with these projections, only agreeing verbs will have such null arguments.

Finally, LSB (though not ASL) also has another type of strong evidence for a difference in the structures used for agreeing and plain verbs, i.e., the ordering of negation with respect to the verb. Quadros accounts for this by proposing that the combination of the verb with Inflection, which is required in the overt syntax for plain verbs, is blocked when a negative sign appears in the NegP position, between the Inflection and the verb. This can be compared with the similar blocking of inflection combining with the verb in English negative sentences, as illustrated below.

Table 11.2 *Similarities and differences between LSB and ASL clause structure*

	Plain	Agreeing	Spatial
• LSB	• Simple IP • Inflection affixal • Verbs bare • No pre-verbal negation • No object shift • AUX	• Split IP • [+ person] agr • Verb raises to check Agr • Verbs fully inflected	• Split IP • [+ loc] agr • Verb raises to check Agr • Verbs fully inflected
• ASL	• Simple IP • Verbs fully inflected • Pre-verbal negation • No object shift • No AUX	• Pre-verbal negation • Object shift • No AUX	• Pre-verbal negation • Object shift • No AUX

Source: From Quadros, Lillo-Martin and Chen Pichler 2004.

(41)   *John not likes Mary.
　　　John does not like Mary.

In ASL, agreeing and plain verbs behave similarly with respect to the placement of negation. Both verb types allow preverbal negation, as illustrated in (42).

(42) 　　　　　　　　　　　　　<u>　　　neg　　　</u>　　　　　　　　(ASL)

　　a. JOHN NOT a HELPb MARY.
　　　'John did not help Mary.'

　　　　　　　　　　　　　　　<u>　　　neg　　　</u>

　　b. JOHN NOT LIKE MARY.
　　　'John does not like Mary.'

This indicates that both agreeing and plain verbs are inserted "fully inflected" in ASL, so both can check agreement covertly, as claimed by Quadros, Lillo-Martin and Chen Pichler (2004). Quadros *et al.* considered the similarities and differences between LSB and ASL with respect to the structure of sentences with plain and agreeing verbs, and summarized them as in Table 11.2.

4   Summary/conclusion

We have shown that SVO is the underlying word order in LSB and ASL, and that other word orders are derived from SVO. In particular, we have seen that these

orders result from syntactic operations motivated by some additional feature, like agreement or nonmanual markers, topic and focus constructions. In both languages, the following operations are found:

- Topicalization – objects, verb phrases and subjects can be topicalized, leading to < O > SV, < VO > S, < S > VO and < S > < O > V orders; also base-generated topic-comment structures with no gap
- Object shift – licensed by the presence of handling verbs, aspectual verbs and agreement, leading to SOV and OSV orders
- Focus – emphatic focus leading to doubling and final constructions; information focus and contrastive focus with the focused information potentially sentence-initial
- Null arguments – subject and/or object can be null with agreeing verbs because ASL and LSB are *pro*-drop languages; discourse-oriented null arguments with plain verbs

We have also shown that there is an asymmetry between sentences with plain verbs and sentences with agreeing verbs. We proposed that different phrase structures are used with agreeing (Figure 11.5) and plain (Figure 11.6) verbs. In particular, agreeing verbs employ a "split IP" structure with projections of AgrSP, TP and AgrOP; while plain verbs employ a "simple IP" structure with IP only. These structures capture the following observations:

- Word order is more flexible with agreeing verbs than with plain verbs.
- Null arguments are licensed freely with agreeing verbs but require a discourse context with plain verbs.
- In LSB, negation can precede an agreeing verb but not a plain verb.

In conclusion, we see that theoretical notions from current linguistic theory can capture facts about sign languages including similarities and differences across sign languages. Such a focus on crosslinguistic comparison is an important component of this book. Further research on these similarities and differences is anticipated.