

WH-MOVEMENT
AND THE POSITION OF SPEC-CP:
EVIDENCE FROM AMERICAN SIGN LANGUAGE

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Some researchers have claimed that wh-movement in ASL is rightward, contrary to the apparent universality of leftward wh-movement. In contrast to this claim, we argue that wh-movement in ASL is to a leftward specifier of CP. We account for the occurrence of rightward wh-elements by independently motivated syntactic and discourse factors which lead to the appearance of wh-elements in sentence- or discourse-final positions—not by rightward wh-movement. Our analysis provides an account for a variety of ASL direct and indirect wh-questions and is in accord with cross-linguistic generalizations.*

INTRODUCTION. For many years, it has been observed that wh-movement overwhelmingly brings wh-phrases to a sentence-initial position, now commonly thought of as spec(ifier of) CP. It is quite possible that no language uses rightward wh-movement (although wh-elements may occur on the right edge of a sentence through a different process). This phenomenon remains unexplained, yet its statistical strength is such as to lead an investigator to expect that wh-movement will be leftward in the next language studied. Thus, it may be rather surprising that a claim has been made for rightward wh-movement (to a rightward spec-CP), in American Sign Language, in Aarons, Bahan, Kegl, & Neidle 1992, Aarons 1994, Neidle, Kegl, & Bahan 1994, Neidle, Kegl, Bahan, Aarons & McLaughlin 1994.

American Sign Language (ASL) is the visual-gestural language used by the Deaf community in the United States and parts of Canada. Over the last thirty years, numerous studies of its structure have come to the conclusion that it has the characteristics of a natural human language (for overviews, see Klima & Bellugi 1979, Padden 1988b, Wilbur 1987); it is acquired like spoken languages (see Newport & Meier 1985, Lillo-Martin 1996a); it even breaks down like spoken languages (see Poizner, Klima, & Bellugi 1987). Some effects of the visual modality have been claimed to influence ASL (e.g. in the role that iconicity plays); yet these effects are in general seen to be surface, linguistically minor consequences of the articulatory apparatus (see Lillo-Martin 1996b). As we will show, ASL has many sentence types that have rightward wh-elements. Is it

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possible that contrary to what has been found in spoken languages, spec-CP and WH-movement are to the right in ASL? Or are spec-CP and WH-movement actually to the left in ASL, with the rightward occurring WH-elements the result of some other factors?

In this article, we will argue that the latter is correct. We will provide additional evidence that WH-movement in ASL is leftward, to a leftward spec-CP (in accord with Lillo-Martin 1990 and Petronio 1993). In order to support this assertion, we will need to provide an alternative account for the data that motivated the rightward movement analysis. In so doing, it will become clear that a variety of processes affect the position of WH-elements in ASL, some of which are strictly grammatical, but others of which are stylistic, subject to individual variation. Our goal in this paper is to examine a broad range of data from a variety of native ASL signers and to present a coherent analysis for these different judgments.

As we develop our analysis, we will expand on previous analyses to account for the wide variety of different WH-sentences that are found in ASL, providing further support for the argument that spec-CP is on the left in ASL. We will show that the most commonly used forms for WH-questions follow from aspects of discourse strategies used in ASL; in particular, its discourse orientation. This discourse structure is supported by specific syntactic structures that are commonly used for focus and presupposed information; these structures enter into the form of questions as well as other sentence types. Finally, we attribute differences between speakers to stylistic and individual differences in discourse strategies and the subcategorization features of lexical items.

1. CROSS-LINGUISTIC GENERALIZATIONS. It has generally been assumed since the earliest cross-linguistic research on the formation of WH-questions that overt WH-movement of interrogative phrases is leftward (e.g. C. L. Baker 1970, Bresnan 1970, Bach 1971, and others, including more recently, Georgopolous 1991).¹ In this section, we will examine the evidence for this generalization and the current theoretical approaches. In addition, we will differentiate true WH-movement from other constructions with WH-elements, such as those involving scrambling or focus movement.

It is commonly assumed that sentences such as 1a illustrate leftward WH-movement.²

- (1) a. **What** did Mary want to see?
 b. *Mary wanted to see **what**?

Although true WH-movement moves a WH-element leftward, there are other options for interrogative WH-constructions across languages. In numerous languages, including Japanese (an SOV language), WH-words can remain in situ in the syntax, as illustrated in 2.

¹ Throughout, we will use terms of MOVEMENT in reference to WH-elements which do not appear in the position in which analogous nonquestion elements would appear.

² Although 1b is acceptable as an echo question, echo questions have been distinguished from true interrogatives and will not be discussed in this article. For further discussion, see Pesetsky 1987.

- (2) John-ga dare-ni sono hon-o age-ta no
 John-NOM who-DAT that book-ACC give-PST Q
 'Who did John give that book to?'

In yet other languages, WH-phrases can remain in situ, or optionally move to a leftward clause-initial position. In French, for example, a WH-phrase may move or remain in situ (only) in matrix clauses. Examples are shown in 3a and 3b respectively.

- (3) a. qui as-tu vu
 b. tu as vu qui
 'Who did you see?'

(Lasnik and Saito 1992:1)

These differences in the surface form of WH-questions can be attributed to parametric differences in the level at which WH-movement applies. Huang (1982) argued that these differences disappear at the level of LOGICAL FORM (LF), because at that level all WH-phrases occupy the clause-initial scope-bearing position. This contrast can be seen most clearly in the difference between direct and indirect questions in English and Chinese, as illustrated in 4 and 5.

- (4) a. Who_i does Mary believe t_i bought books?
 b. I wonder who_i Mary saw t_i.
- (5) a. Zhangsan xiangxin shei mai-le shu?
 Zhangsan believe who bought books
 'Who does Zhangsan believe bought books?'
 b. wo xiang-zhidao Lisi mai-le sheme
 I wonder Lisi bought what
 'I wonder what Lisi bought.'

(Huang 1982:371, 382)

In English, the WH-element overtly moves to the beginning of the clause over which it takes scope. Thus, in the direct question in 4a, the WH-phrase moves to the beginning of the matrix clause, while in the indirect question in 4b, it moves to the beginning of the embedded clause. In Chinese, on the other hand, although the WH-phrase does not move overtly, the scope of the WH-element is reflected in the different interpretations of the direct and indirect questions. Thus in 5a, the WH-element has scope over the matrix clause, while in 5b it has scope only over the embedded clause, like the English counterparts. Huang argued that this follows straightforwardly from the proposal that the WH-phrase in Chinese does move to the beginning of the clause over which it takes scope, but only at LF. Thus, the parametric variation between languages like English, Japanese or Chinese, and French, is in the level at which WH-movement applies, not whether it applies at all.³

³ In recent work within the minimalist program, the scope interpretation is sometimes attributed to movement of an abstract operator or features, rather than a parameterization of the level at which WH-movement applies (see Watanabe 1992). For ease of exposition, we will use the terms of levels of movement, although we believe it would be possible to restate our analysis in the more current terms without changing the essence of our proposal.

We have seen that languages may differ in the level at which WH-movement applies. It is generally assumed, however, that there are no differences in the direction of overt movement: it has repeatedly been argued that when overt WH-movement applies, it universally brings a WH-element leftward. For instance, a major thrust of C. L. Baker 1970, Bresnan 1970, Bach 1971, and Langacker 1974, was to account for the cross-linguistic occurrence of leftward WH-movement and rule out rightward WH-movement. C. L. Baker (1970) and Bresnan (1970) did this through universal rules. For instance, Baker's 'Question Universal' stipulated that the only possible rule for overt question movement moved the WH-element to the sentence-initial position, while Bresnan's 'Complementizer Substitution Universal' stated, 'only languages with a clause-initial COMP permit a COMP substitution transformation' (e.g. WH-movement). Bach (1971) and Langacker (1974) in part prohibited rightward WH-movement by involving Ross's (1967) observation that rightward movement rules are (universally) bounded.

In the twenty-five years since this early work, research on the properties of WH-movement has expanded, yet still the basic observation seems universal: true WH-movement is leftward. In current theoretical terms, this generalization is captured by postulating that the landing site for WH-movement is the specifier of CP (Chomsky 1986). Furthermore, it must be stated that the specifier of CP is universally on the left, even in languages that have been argued to have other specifier positions to the right (see Georgopoulos 1991). The source of this generalization remains a mystery, but its strength is striking.⁴

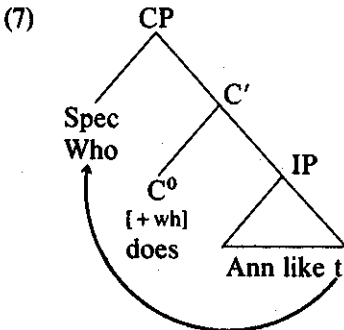
Movement to spec-CP (at whatever level) is accounted for by the WH-CRITERION (May 1985, Rizzi 1991), as in 6.

(6) The WH-criterion

- A. A WH-operator must be in a Spec-head configuration with an X⁰ [+WH].
- B. An X⁰ [+WH] must be in a Spec-head configuration with a WH-operator.

(Rizzi 1991)

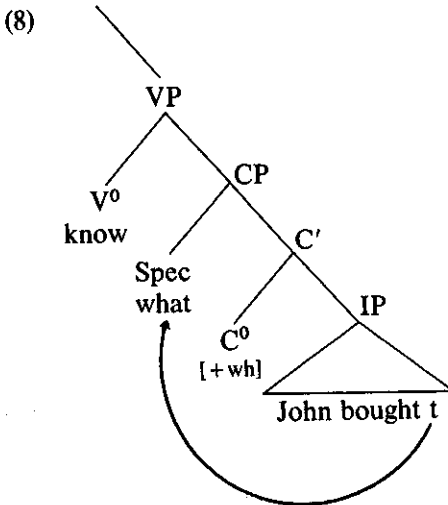
The effects of this criterion can be illustrated with the diagram in 7.



⁴ Kayne (1994) derives the uniform leftward WH-movement facts from his theory of phrase structure, which posits that specifiers are uniformly on the left.

In 7, the head of CP (C^0) has a [+WH] feature. Thus, to satisfy the WH-criterion, the [+WH] object (the wh-operator) must move to spec-CP in order to be in a spec-head configuration with the [+WH] head. This spec-head agreement of [+WH] features is an example of the more general process of spec-head feature agreement.

The WH-criterion also accounts for the movement of a WH-element to spec-CP of an embedded clause in indirect questions (e.g. 4b), illustrated in 8. Verbs such as *wonder*, *ask* and *know* may select a [+WH] complement. In this case, the WH-operator will move to the specifier of the embedded clause where the WH-criterion is satisfied.



In English, which has overt WH-movement, the WH-criterion must be satisfied at S-structure.⁵ Thus, the example in 9 is ungrammatical, since the [+WH] C^0 and the WH-operator are not in a spec-head configuration within the embedded CP.

(9) *I know John bought what.

If we make the standard assumption that movement to spec-CP in satisfaction of the WH-criterion is true 'WH-movement', this allows us to distinguish 'WH-movement' from other constructions involving the movement of WH-elements. For example, in Japanese, scrambling can move various constituents, including WH-elements, leftward. Takahashi (1993) presents evidence that some instances of scrambled WH-elements do count as WH-movement, whereas others behave like movement to an argument position, not like true WH-movement. Only the cases of true WH-movement involve movement to spec-CP.

Although, as discussed above, WH-elements can be fronted through a process distinct from WH-movement, it has also been argued that WH-elements cannot be topicalized (Bresnan & Mchombo 1987, Epstein 1992). According to Bresnan

⁵ To be more precise, part B of the WH-criterion must be satisfied at s-structure in English. Since only one WH-element moves in English multiple questions, part A may be violated at s-structure just in such cases.

and Mchombo, this is so because a topicalized element must be presupposed, but an interrogative element, since it does not refer to a specific entity, cannot be presupposed.⁶ Rather, Bresnan and Mchombo claim that a WH-element is inherently a focus (cf. Dik 1978, cited by Bresnan and Mchombo). This position, that WH-elements are inherently foci, is also advocated by Horvath (1986), Rochemont (1978, 1986), and others. Alternatively, Epstein (1992) argues that WH-phrases cannot be topicalized because of the syntactic principle of economy. According to this analysis, syntactic topicalization, plus LF movement to the spec of the [+WH] CP, is a two-step process, which is less economical than a single movement to spec-CP.

Apparent exceptions to the generalization that true WH-movement is leftward are found in languages with WH-elements on the right (excluding WH- in situ). In every case that we are aware of, however, there is evidence that these rightward WH-elements are not the result of true WH-movement to a rightward spec-CP. Furthermore, such languages also show WH-elements in other positions.

For example, Bergvall (1987) shows that WH-elements in Kikuyu (an SVO Bantu language) can occur sentence-initially, in situ, or sentence-finally. Her examples are given in 10.

- (10) a. *Noo* Wamboi aheire ____ *ɣekɔbe?* (sentence initial)
 b. Wamboi aheire *o* *ɣekɔmbɛ?* (in situ)
 c. Wamboi aheire ____ *ɣekɔmbɛ o* (right moved)
 Wamboi gave ____ cup WHO
 'WHO did Wamboi give a cup (to)?'

(Bergvall 1987:37)

Bergvall shows that some rightward WH-elements can be attributed to sluicing, in the sense of Ross 1969: the constituents that would have followed the WH-elements are left unexpressed. Another way for WH-elements to appear on the right is through movement, but Bergvall shows that this rightward movement is subject to locality conditions more severe than the usual restrictions on (leftward) WH-movement. For example, she shows that a WH-object cannot occur to the right of a manner adverbial, as illustrated in 11a, and a WH-adjunct cannot occur to the right of a time adverbial, as illustrated in 11b.

- (11) a. *Wamboi *ayɛithirie* ____ *narua itora o?*
 Wamboi greeted ____ quickly village who
 'Who did Wamboi greet quickly in the village?'
 b. *Wamboi *aiyire ɣekɔmbɛ kaɓati* ____ *rošiine atea?*
 Wamboi put cup cupboard ____ this-morning how
 'How did Wamboi put the cup in the cupboard this morning?'

(Bergvall 1987:42,43)

⁶ A potential counterproposal to this claim is presented by Xu and Langendoen (1985). They state that WH-words in Chinese "may be topicalized, and thus appear to undergo such [WH-] movement." Xu and Langendoen give only one example, using a 'whose' phrase, which is independently known to have some properties different from those of other WH-phrases (cf. Pesetsky 1987). More data are needed with other WH-phrases to determine whether Chinese presents a real counterexample to the claim that WH-elements cannot be topicalized.

The precise conditions under which *WH*-elements can appear rightward will not be explicated here, but Bergvall argues convincingly that 'there is no righthand analog to the lefthand COMP [our spec-CP] position (a uniform landing site for left-moved question words)' (p. 47). In fact, Clements et al. (1983) claim that the leftward *WH*-elements in Kikuyu obey the island constraints that typically constrain true *WH*-movement. This is exactly what would be expected if the leftward *WH*-elements have undergone true *WH*-movement to a leftward spec-CP in Kikuyu.

Tangale, an SVO Chadic language, is another language that has rightward-occurring *WH*-elements. Kidda (1985) notes differences in the possible positions of *WH*-subjects and *WH*-objects, as illustrated in 12 and 13.

- (12) a. padu-g landa non tom tijo
 buy-PERF dress who from Tijo
 b. padu-g landa tom tijo non
 buy-PERF dress from Tijo who
 'Who bought a dress from Tijo?'
- (13) a. lak pad-go nan tom tijo
 Laku buy-PERF what from Tijo
 b. *lak pad-go tom tijo nan
 Laku buy-PERF from Tijo what
 'What did Laku buy from Tijo?'

(Kidda 1985)

In 12a, the *WH*-subject occurs after the direct object, but before the PP, while in 12b, it occurs sentence finally, after the direct object and PP. In 13a, the *WH*-object occurs between the verb and the PP, but as shown in 13b, the *WH*-object cannot occur sentence finally, following the PP.

Kenstowicz (1985), using phonological effects of sandhi rules, argues that Tangale has a postverbal focus position, in which focused NPs and *WH*-elements can appear. Under his analysis, the *WH*-elements in 12a and 13a occupy this focus position. Kenstowicz does not discuss the appearance of the *WH*-subject in final position, nor the ungrammaticality of the *WH*-object appearing in the sentence-final position.

Tuller (1992), in agreement with Kenstowicz 1985, argues that there is a focus position following the verb and direct object in Tangale. Furthermore, she does discuss the sentence-final *WH*-elements found in sentences such as 12b and 13b. She argues that Tangale has a second focus position, which she claims is a rightward spec-CP, on analogy with the use of the leftward spec-CP for focus in certain other languages. But she cites differences between the characteristics of the sentence-final focus position and the usual characteristics of a leftward spec-CP. Although some *WH*-phrases and focused non-*WH*-constituents can appear in the final focus position in Tangale, direct objects and locative goals of motion verbs cannot occur in the final focus position, whether focused non-*WH* or *WH*-constituents, as illustrated in the ungrammatical 13b. In comparison, Tuller considers Kanakura, a related Chadic language, with similar properties to Tangale, including two focus positions. Tuller argues that in Kanakura, in

contrast to Tangale, spec-CP is on the left, and she shows that any constituent can be focused by movement to this sentence-initial focus position. Thus, rightward movement in Tangale is restricted in a way that leftward movement in Kanakura (and in general) is not.⁷

The restrictions on movement to the sentence-final focus position in Tangale lead us to suspect that this position is not spec-CP. One alternative, in accord with recent work on focus by Brody (1990) and others, is that this position might be the specifier of a separate focus phrase, not the specifier of CP. An analysis along these lines would maintain the hypothesis that crucial characteristics of WH-movement and the specifier of CP position are upheld cross-linguistically.

In sum, there has been significant evidence that the syntactic process of WH-movement only brings WH-elements to a leftward, clause-initial position. The scope-bearing position, spec-CP, is a position in which the WH-element's [+WH] feature agrees with the [+WH] C⁰. Languages may vary in whether or not they apply WH-movement overtly, but when it applies overtly, it is leftward. If WH-elements are found in a rightward, clause-final position, this is evidently for reasons other than WH-movement, such as a more general focusing operation, sluicing, or because the WH-element remains in situ. True rightward WH-movement appears to be unattested.

Recent works (Aarons, Bahan, Kegl, & Neidle 1992; Aarons 1994; Neidle, Kegl, & Bahan 1994; and Neidle, Kegl, Bahan, Aarons, & McLaughlin 1994) challenge this generalization. (Henceforth, when discussing claims that are common to all these works, we will use the acronym ABKN.) ABKN claim that in American Sign Language, WH-movement is to a rightward spec-CP. In the remainder of this paper, we will present data from ASL which dispute this claim, and show that the data which prompted ABKN to make the claim that WH-movement in ASL is rightward can be accounted for by independently motivated syntactic processes and properties of ASL. Thus, we will argue that the generalization that spec-CP is universally leftward is supported, rather than undermined by the data from ASL, and furthermore that a leftward spec-CP is necessary in order to account for the full range of ASL data.

2. TWO ANALYSES OF WH-SENTENCES IN ASL. We begin this section by presenting some common examples of undisputed grammatical WH-sentences in ASL. We will then show that these examples can be accounted for by either of two hypotheses: the hypothesis that we are advocating, that spec-CP and WH-movement is leftward universally (cf. Lillo-Martin 1990, Petronio 1993); or the alternative hypothesis that spec-CP and WH-movement is rightward in ASL (ABKN). We will argue that even in accounting for these undisputed examples, the leftward movement hypothesis is theoretically superior.

⁷ Another possible difference between movement to the sentence-final focus position in Tangale and true WH-movement to a sentence-initial spec-CP concerns boundedness. Although movement to spec-CP is usually 'unbounded', and Tuller shows that long-distance movement is allowed to the postverbal focus position after the direct object, she says 'we have no conclusive examples of (rightward) unbounded movement to SPEC, CP' (p. 324). Such unbounded movement would be expected if the position for sentence-final focus is indeed spec-CP.

We begin with some simple ASL WH-questions and move into details of the two analyses. Both analyses agree that WH-phrases in interrogative ASL sentences can remain in situ or move. The following common WH-questions in 14–16 can be analyzed as having the WH-word in situ under either analysis. (See Appendix A for an explanation of the notation/gloss system.)

(14) $\frac{\text{JOHN BUY WHAT YESTERDAY}}{\text{whq}}$ (in situ)
 'What did John buy yesterday?'

(15) $\frac{\text{WHO LIKE NANCY}}{\text{whq}}$
 'Who likes Nancy?'

(16) $\frac{\text{JOHN BUY WHAT}}{\text{whq}}$
 'What did John buy?'

In 14, the WH-object appears between the verb and an adverb. Under the now common assumption that ASL is underlyingly SVO (Fischer 1974, Liddell 1980, Padden 1988a), both the rightward and leftward analyses use 14 as evidence that WH-words can remain in situ (whether the adverb is adjoined to either VP or IP). Consistent with the hypothesis that WH-phrases can remain in situ, 15 shows a WH-subject at the beginning of the sentence, and 16 shows a WH-object at the end of the sentence.

The leftward and rightward analyses both assume that a nonmanual WH-question marker is associated with interrogative WH-questions (see Baker-Shenk 1983). The nonmanual characteristics of the WH-question marker include squinted eyebrows, a head tilt, possible slightly forward body position, and possible raised shoulders (Valli & Lucas 1992:283). In 14–16, the WH-question marker occurs simultaneously with all of the manual signs in the questions, as indicated in the glosses by the horizontal line over all of the signs.⁸

Both the leftward and rightward analyses also argue that WH-questions in ASL can be produced with WH-movement. These contradictory analyses are based in part on identical surface strings. One is a very commonly found type of ASL WH-question, in which a WH-element is found both sentence initially and sentence finally. It will be most straightforward to explicate the differences between the two accounts using this type of question, illustrated in 17–19.

(17) $\frac{\text{WHO LIKE NANCY WHO}}{\text{whq}}$
 'Who likes Nancy?'

(18) $\frac{\text{WHAT NANCY BUY WHAT}}{\text{whq}}$
 'What did Nancy buy?'

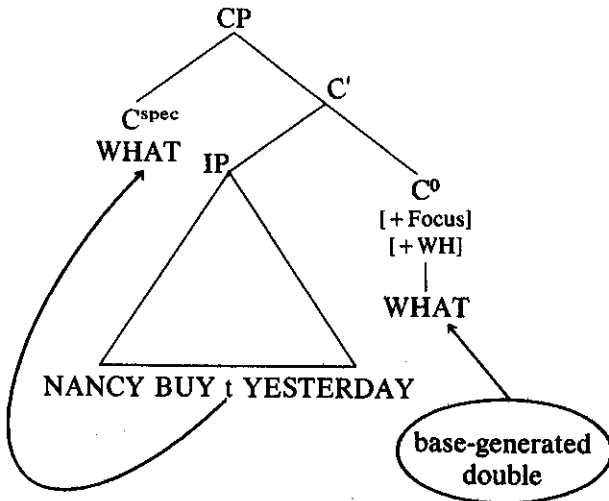
⁸ There are important differences in how the two analyses account for the distribution of the nonmanual wh-question markers. These differences, which will be relevant to the discussion of examples in §5, are further discussed there.

(19) whq
WHAT NANCY BUY YESTERDAY WHAT
 'What did Nancy buy yesterday?'

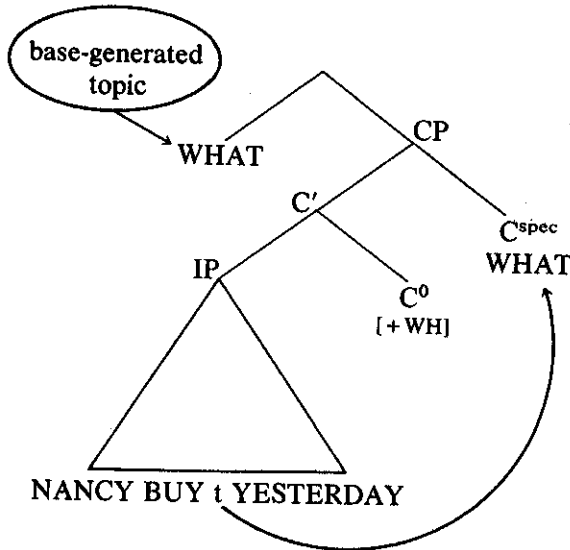
In 17 a WH-subject appears at both the beginning and the end of the sentence; in 18 and 19, a WH-object appears at both the beginning and the end. Note that in 19, there is no WH-word in the position between the verb and adjunct, i.e. the WH-object is not in situ.

In 20a, b we give the structures for 19 under the leftward and rightward analyses (respectively) to illustrate the main differences between them.

(20) a. LEFTWARD ANALYSIS



b. RIGHTWARD ANALYSIS⁹



⁹ The node above the CP is not labeled in ABKN's articles.

The structure in 20a illustrates the leftward analysis from Petronio 1993, in which spec-CP is on the left and WH-movement is leftward. As discussed in §1, the movement of a WH-phrase to spec-CP checks its [+WH] feature by agreement with the [+WH] feature in C⁰. The final WH-word in 20a occupies the head of CP. This type of sentence-final double also occurs with other focused/emphasized constituents, such as modals, verbs, and quantifiers. These elements are licensed by a [+F(ocus)] feature, which is checked through spec-head agreement with a [+F] Operator in spec-CP at LF. More extensive argumentation for the final double, and discussion of its licensing, are presented in §3.1.

We summarize the main characteristics of the leftward hypothesis as discussed so far in 21.

- (21) • spec-CP is on the left
 • WH-movement is leftward
 • the final WH-word in 19 is a base-generated double

The structure in 20b illustrates the rightward analysis first presented in Aarons, Bahan, Kegl, & Neidle 1992. Spec-CP is on the right and WH-movement is rightward, motivated by the need for the [+WH] C⁰ to agree with a [+WH] spec-CP. According to these authors, the sentence-initial WH-word in 20b is a base-generated topic, similar to other base-generated topics commonly found in ASL.¹⁰ The basic characteristics of ABKN's original analysis, as well as their later work, are listed in 22.¹¹

- (22) • spec-CP is on the right
 • WH-movement is rightward
 • the initial WH-word in 19 is a base-generated topic

Both analyses can account for the data in 14–19, however, the rightward movement analysis makes ASL typologically unusual in at least three ways. First, it makes ASL an exception to the cross-linguistic generalization that WH-movement is leftward. Second, Bresnan & Mchombo 1987 and Epstein 1992 have noted restrictions on WH-phrases occurring as topics (see also Bach 1971). Under the rightward analysis, having a WH-topic makes ASL an exception to such restrictions. Third, topics in ASL typically occur with a topic marker and are followed by a slight prosodic break (Fischer 1974, Liddell 1980). The initial WH-word in 19 does not have a topic marker, nor is it followed by a prosodic break. Thus, under the rightward analysis, WH-topics differ from other ASL topics.

¹⁰ ABKN put a comma in the gloss following the initial WH-word, which they consider to be a topic. Since in sentences like 19, there is no pause following the sentence-initial WH-word, we take their use of a comma to reflect their analysis, rather than the intonation of the signed utterance. This assumption is further supported by one of the authors of the rightward proposal signing sentences with sentence-initial and sentence-final WH-elements without a pause on commercially available videotapes.

¹¹ ABKN's framework also includes a rightward tag position right-adjoined to CP which can host a variety of elements including modals and WH-elements. Since we will not be discussing any of their examples that require this tag position, we will not address it in this article.

Sentences such as 23 illustrate another important difference between the leftward and rightward analyses.

- (23) $\frac{\text{I KNOW WHO JOHN LIKE}}{\text{hn}}$
'I know who John likes.'

In 23, the WH-element appears at the beginning of the embedded clause selected by KNOW. The leftward analysis has a straightforward account for this sentence; KNOW takes a [+WH] complement, and the embedded WH-word moves leftward to the embedded [+WH] spec-CP. Under the rightward analysis, Neidle, Kegl, & Bahan (1994) claim that in 23 KNOW does not subcategorize for a [+WH] complement. Instead, although the WH-phrase does not have a topic marker, they argue that the leftward WH-object in 23 is due to embedded topicalization of the WH-phrase. (We will discuss indirect questions in greater detail in §3.3).

The analysis developed below is based on data previously collected from native signers for work presented in Lillo-Martin 1990 and in Petronio 1993. These data are supplemented with interview data obtained from eighteen native ASL users. The interviews included watching a videotape of a native ASL model signing different WH-sentences. The consultants judged the grammaticality of the utterances and discussed reasons for their judgments. They also specified situations in which the sentences might be used and possible corrections for sentences judged ungrammatical. Some of the data came from commercially made videotapes.

From the interviews, it became clear that subtle factors often influenced consultants' judgments of the sentences presented. Sentences with similar word order, for instance, could be judged differently on the basis of nonmanual markers, positions and movement of the head, pausing and rhythmic patterns, the context of the utterance, and even the direct of eye gaze. These factors have each been noted as important to ASL utterances, but we found that their interaction had an even greater impact than we had anticipated. As one example, we found that the degree to which the eyelids were opened during a brow-raise nonmanual marker could affect the interpretation and judgment of the sentence. Such details are typically missing in the rough glossing systems usually used to transcribe ASL. We believe that this missing information may account for some of the conflicting judgments found in different works on ASL syntax, although true judgment differences undoubtedly exist as well. Our discussion of the data that follow will often mention the importance of context and the nonmanual configurations accompanying the signs, both of which are crucial factors that affected judgments and led to our analyses of different WH-sentence types.

3. FINAL DOUBLES IN ASL

3.1. NON-WH DOUBLES. We have proposed that the final WH-element in sentences such as 24 is an instance of a more general DOUBLE CONSTRUCTION that is used for focus or emphasis in ASL.

- (24) _____ whq
 WHAT JOHN BUY YESTERDAY WHAT
 'What did John buy yesterday?'

In this section we will justify this analysis.

The following data are typical examples of the double construction, which can occur with elements such as modals, quantifiers, and verbs. We will consider a sentence a double construction only when the final double is not preceded by a significant pause or break in the prosody of the sentence.¹² Sentences 25-37 are taken from discourses on commercially made ASL videotapes; since they are excerpted from longer discourses they have many null subjects and objects. (See Appendix B for the sources of ex. 25-37.)

MODALS

- (25) _____ cond
 . . . KNOW PROBLEM SITUATION, CANNOT J-U-R-Y CANNOT
 ' . . . If [you] are aware of the problem, the situation, then [you] CANNOT be on the jury.'
- (26) . . . ILLEGAL SLEEP THERE, MUST COMMUTE MUST
 ' . . . (The students) are not permitted to sleep there, (they) MUST commute.'
- (27) _____ hn
 TOMORROW #WILL I GO #WILL
 'Tomorrow I WILL go.'

QUANTIFIERS

- (28) NONE DEAF IN FAMILY BEFORE NONE
 'There have not been ANY deaf people in (my) family.'
- (29) MY HIGH SCHOOL FIVE DEAF KID FIVE
 'My high school had [only] FIVE deaf kids.'
- (30) #ALL MY M-E-N-T-O-R-S MY SUPPORTER #ALL
 'ALL [the people at the club] were my mentors, my supporters.'

VERBS

- (31) _____ t
 HE HATE LIGHTS-FLASHING-ON HATE
 'He HATES the lights flashing on and off.'
- (32) WISH ME GO WISH
 '[I] WISH I could go.'
- (33) SEEM #ALL PEOPLE DEAF SEEM
 'It seems that all the people [on the program] are deaf.'
- (34) _____ g
 WANT FRIDAY AFTERNOON US-2 GO-OUT SEE MOVIE WANT
 'Do you want to go see a movie on Friday afternoon?'

¹² It is important to stress that the DOUBLE CONSTRUCTION refers only 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. See footnotes 14 and 17.

- (47) _____ whq
 WHICH COMPUTER YOU WANT WHICH
 'Which computer do you want?'

As demonstrated in §3.1, the final non-wh double cannot be a phrase. We find the same restriction on final wh-doubles, note the ungrammatical b sentences in 48–50.¹⁷

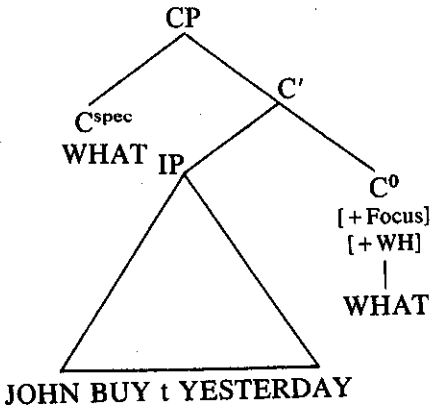
- (48) a. _____ whq
 WHO CAR BREAK-DOWN WHO
 'Whose car broke down?'
 b. _____ whq
 *WHO CAR BREAK-DOWN WHO CAR
- (49) a. _____ whq
 WHICH COMPUTER JOHN BUY WHICH
 'Which computer did John buy?'
 b. _____ whq
 *WHICH COMPUTER JOHN BUY WHICH COMPUTER
- (50) a. _____ whq
 HOW-MANY BROTHER SISTER YOU HAVE HOW-MANY
 'How many brothers and sisters do you have?'
 b. _____
 *HOW-MANY BROTHER SISTER YOU HAVE
 _____ whq
 HOW-MANY BROTHER SISTER

The surface similarities between wh-doubles and other doubles support a unified analysis. Analyzing wh-doubles as part of a more general focusing structure is reminiscent of the earlier discussion (§2), where it was shown that in some languages wh-elements appear in the same structures as do focused elements. This analysis is consistent with the argument that interrogative wh-elements are inherently foci (e.g. Horvath 1986, Rochemont 1978, 1986). To account for these similarities, we propose that the final wh-double is base-generated in the [+Focus]C⁰. Consistent with our previous analysis we assume that the raising of the [+F] wh-twin allows the [+F] feature of the double to be checked. The proposed structure of a wh-double sentence such as 51 is shown in 52 (similar to 20a).

- (51) _____ whq
 WHAT JOHN BUY YESTERDAY WHAT
 'What did John buy yesterday?'

¹⁷ Examples 48b–50b are grammatical with a pause before the final wh-phrase. As emphasized earlier, we are only concerned with sentences without the pause—those with the double construction. (See also footnotes 12 and 14.)

(52)



One difference between the *wh*-doubles and the non-*wh*-doubles is that while the latter have only a [+F] feature, the former have both [+F, +WH]. We have observed independently that [+WH] elements can move to spec-CP either at the surface level or at LF. Hence, while non-*wh*-double operators do not move until LF, *wh*-doubles can move at the surface.

3.3. COMPARISON OF MOVEMENT ANALYSES. Under the rightward analysis, sentences with a sentence-initial and sentence-final *wh*-element can be generated in the following way: the sentence-initial *wh*-element is a topic, and the final *wh*-element is either in situ or moved to the rightward spec-CP. This analysis cannot account for the ungrammaticality of sentences with full *wh*-phrases in the sentence-initial and sentence-final positions, as in 53.

- (53) a. _____ whq
 *WHICH COMPUTER JOHN BUY WHICH COMPUTER
- b. _____ whq
 *WHO CAR BREAK-DOWN WHO CAR

In 53, a full *wh*-phrase, i.e. a maximal projection (not a head), is in both sentence-initial and sentence-final position. The rightward movement account predicts this type of sentence to be grammatical, with a sentence-initial *wh*-phrase as topic and a sentence-final *wh*-phrase moved rightward to spec-CP, on a par with the grammatical 54.

- (54) _____ whq
 WHAT JOHN BUY YESTERDAY WHAT

If the sentence-final *wh*-element in these examples were in spec-CP (or in situ), it would be predicted that a full phrase would be possible. However, under our analysis their ungrammaticality is predicted.

In the grammatical examples in 55, a full *wh*-phrase is sentence initial, and only the *wh*-element of the *wh*-phrase is sentence final.

- (55) a. _____ whq
 WHICH COMPUTER JOHN BUY WHICH
 'Which computer did John buy?'
- b. _____ whq
 WHO CAR BREAK-DOWN WHO
 'Whose car broke down?'

The appearance of the rightward WH-element is puzzling and presents difficulties for the rightward movement analysis. Whether the rightward WH-element is in situ or moved to a rightward spec-CP, why should part of the phrase be missing or only a head allowed? Alternatively, under our analysis, the same mechanism that accounts for the restriction on non-WH-doubles predicts the pattern shown in 53–55.

4. NULL ARGUMENTS AND COVERT WH-WORDS IN ASL. In this section, we will show how the interaction of null arguments and the double construction can result in another type of ASL sentence that has a WH-element on the right. ASL has a class of verbs that can be inflected for agreement with subject and/or object (Fischer & Gough 1978, Padden 1988a). Within this class of verbs, an argument with which a verb agrees can be null, like the null subject arguments found in richly inflected null subject languages such as Italian. ASL also displays the characteristics of a DISCOURSE-ORIENTED LANGUAGE (cf. Huang 1984). Even when the verb does not agree with a certain argument (because of properties of the verbal class, irrelevant here) the argument may be null, as long as it is identifiable from the context. Due to these two properties, ASL allows null arguments (subjects and/or objects) in many circumstances. (See Lillo-Martin 1986 for more discussion of null arguments in ASL.)

Lillo-Martin and Fischer (1992) have argued that in the appropriate context, ASL allows null WH-words. The following WH-questions are commonly found in ASL.

(56) $\frac{\text{whq}}{\text{NAME}}$
 'What's your name?'

(57) $\frac{\text{whq}}{\text{TIME}}$
 'What time is it?'

According to Lillo-Martin and Fischer, these WH-questions involve a WH-phrase in which the WH-element is null. As expected, this WH-phrase may move to the leftward spec-CP, and it takes scope in the usual way. If a covert WH-element is allowed in short, simple questions such as 56 and 57, why should they not appear in other questions? Lillo-Martin and Fischer argue that they do, although their acceptability is tied to particular contexts. More precisely, what the covert WH-question is asking must be recoverable from the context for it to be used. In this way the covert WH-element is similar to other null arguments. Examples 58–60 show more complex sentences with a covert WH-argument. (We will use 'e' to represent the null WH-element.)

(58) Possible context: Speaker knows that addressee received several gifts from different people and that one gift was a pair of earrings.

$\frac{\text{t} \quad \text{whq}}{\text{EARRINGS}, \text{e GIFT}_2}$
 'Who gave you the earrings?'

- (59) Possible context: Speaker knows addressee isn't feeling well, possibly due to something unhealthy s/he ate.

t whq

 BREAKFAST, EAT e

'As for breakfast, what did you eat?'

- (60) Possible context: Son is talking to mother about father's disappearance.

whq

 FATHER LEAVE e

'Why/how/when did Father leave?'

Thus, in addition to having non-WH null subjects and objects, ASL also permits null WH-elements, under the appropriate context. Aarons (1994) also notes the existence of covert WH-questions in ASL.

Now, let us consider sentences that have a whq marker over the whole sentence and a single WH-word, which is a WH-subject that occurs at the end of the sentence, as in 61.

(61) _____ whq
 BUY CAR WHO

'Who bought the car?'

This type of sentence is always reported as grammatical by ABKN and is a major piece of evidence for their analysis that spec-CP is on the right and WH-movement is rightward. However, we find that when sentences such as 61 are presented in isolation, judgments vary—some signers accept them, but others do not. Given the existence of a null WH-element in ASL, restricted to appropriate contexts, we can account for sentences like 61 under the leftward movement analysis, while also accounting for the variation in judgments. Our analysis is that 61 has the structure of a WH-double (as discussed in section 3.2), and also has a covert WH-subject, as represented by the e in 62.

(62) _____ whq
 e BUY CAR WHO

'Who bought the car?'

This analysis is consistent with other ASL sentences, since other elements that can normally appear in a focus position can also show up, in appropriate contexts, with the twin null. An example with a focused modal, CAN'T, is given in 63.

(63) _____ neg
 ANN e READ CANNOT

'Ann CAN'T read.'

Two other types of evidence favor our analysis over a rightward movement analysis. First, our analysis can account for the variation in judgments for sentences such as 61 when presented in isolation. A signer who will reject a sentence such as 61 when it is presented in isolation will often accept it when it is in the appropriate context, as in 64.

- (64) Possible context: The speaker and addressee are discussing the addressee's car, which was just sold.

whq
BUY CAR WHO
'Who bought the car?'

This requirement is in accord with properties that we find for other null arguments. In particular, null arguments, including null WH-elements, must appear in a context from which the null element is recoverable. Second, under a rightward movement analysis, we would expect that complex WH-subjects such as WHO MOTHER (whose mother), WHO CAR (whose car) or WHICH GIRL could also appear at the end of the sentence. As shown in 65–67, however, complex WH-subjects are not permitted to occur at the end of the sentence.

(65) whq
*DIE WHO MOTHER
'Whose mother died?'

(66) whq
*BREAK-DOWN WHO CAR
'Whose car broke down?'

(67) whq
*BUY CAR WHICH GIRL
'Which girl bought the car?'

While the rightward analysis incorrectly predicts that 65–67 should be grammatical, the leftward analysis with the interaction of covert WH-elements and the final double predicts them to be ungrammatical: a complex phrase cannot occur as a double, since the double occupies a head position.

So far, we have seen examples with a null WH-subject and a sentence-final WH-double. We can use the same analysis to account for sentences like 68. Under our analysis, this example has a null WH-object and a sentence-final WH-double.

(68) whq
JOHN BUY e YESTERDAY WHAT
'What did John buy yesterday?'

As we have seen, examples like 68 are analyzed differently under the rightward movement hypothesis, which takes the sentence-final WH-element to be in spec-CP. In support of their claim that the WH-element in 68 is in spec-CP, Aarons et al. (1992) observe that an NP cannot normally follow a sentence adverbial, as shown in the ungrammatical 69.

(69) *JOHN BUY YESTERDAY COMPUTER

Therefore, since an NP does not normally follow an adverbial, they conclude that the WH-phrase in sentences such as 68 is the result of rightward WH-movement. However, as we have shown, the interaction of a null WH-argument and a final WH-double can account for the same fact.

The rightward and leftward analyses differ crucially with respect to examples such as 70.

(70) _____ whq
 *JOHN BUY YESTERDAY WHICH COMPUTER

We have found that examples with a null WH-object and an overt phrasal double (such as 70) are ungrammatical. This is completely consistent with our observation in section 3 that a head, but not a phrase, can occur in the sentence-final focus position.

Aarons (1994:146) discusses examples like 70, and claims they are grammatical. She uses this judgment to argue that the WH-double analysis cannot be correct, since it cannot account for a full WH-phrase following an adverb, but we have consistently found that consultants reject this sentence without a pause before WHICH COMPUTER.

In other recent work, Neidle, Kegl, Bahan, Aarons and MacLaughlin (1994) have argued for rightward WH-movement and against the leftward hypothesis using the example given in 71, which has a slightly different full WH-phrase following the adverbial.

(71) _____ whq
 JOHN SEE YESTERDAY WHICH TEACHER TWO-OF-THEM
 'Which of those two teachers did John see yesterday?'

We also find that 71 is grammatical, unlike 70. This need not present a counter-argument to the leftward analysis, however. Consider the contrast between the (a) and (b) examples in 72 and 73.¹⁸

(72) Context: Different groups of teachers are present in a room.

- a. _____ hn
 *JOHN SEE YESTERDAY TEACHER
- b. _____ hn
 JOHN SEE YESTERDAY FIVE TEACHERS INDEX-plural¹⁹
 'John saw those five teachers yesterday.'

(73) Context: There is a group of teachers, one with red hair.

- a. _____ hn
 *ME MEET YESTERDAY TEACHER
- b. _____ hn
 ME MEET YESTERDAY TEACHER RED HAIR THAT
 'I met the teacher with red hair yesterday.'

Examples 72a and 73a show that a 'light' NP may not follow a sentence adverbial, as also seen in 70. Examples 72b and 73b, however, show that when the NP becomes more complex, or 'heavy', it can follow the adverb. We take these examples as evidence that ASL has a construction similar to the heavy NP shift construction found in many languages. If so, then 71 is not a counterex-

¹⁸ Examples 72a and 73a are ungrammatical with or without the nonmanual hn cooccurring with the sentence.

¹⁹ In this sentence INDEX-plural references a particular group of 5 teachers out of numerous groups already established in the context. In the same way, the sign glossed TWO-OF-THEM in 71 references two teachers already established in the context.

ample to the leftward analysis, as it can be explained using heavy NP shift rather than rightward WH-movement to a rightward spec-CP.

Our analysis accounts for the various judgments of sentences like 61, by claiming that they involve a covert WH-element, which must be identified in the discourse context. This sentence type is accounted for using structures independently known to exist in ASL. In addition, our analysis accounts for the ungrammaticality of sentences with a full phrasal WH-subject on the right, as in 70 above.

5. INDIRECT QUESTIONS AND THE NONMANUAL MARKER. In this section, we will discuss the structure of indirect questions in ASL. It will first be necessary to explicate some of the differences between the rightward and leftward analyses with respect to the nonmanual WH-question marker. We will then turn to the different predictions regarding indirect questions made by the two proposals.

5.1. THE NONMANUAL WH-QUESTION MARKER. The nonmanual WH-question marker cooccurs with signs in the WH-question in a systematic way. Some examples are given in 74.

- (74) a. $\frac{\quad}{\text{WHO BUY COMPUTER}} \text{ whq}$
 ‘Who bought a computer?’
- b. $\frac{\quad}{*\text{WHO BUY COMPUTER}} \text{ whq}$
- c. $\frac{\text{whq}}{*\text{WHO BUY COMPUTER}}$

With an initial WH-subject, the nonmanual WH-question marker must cooccur with all the manual signs in the sentence. As we will now show, both analyses can account for the data in 74, but they do so in different ways.

Recall that under the leftward analysis, the head of the matrix interrogative CP is marked with [+F, +WH] features. By spec-head agreement, spec-CP also shares these features. We propose that the nonmanual WH-question marker is a realization of the combination of these features, and obligatorily ‘spreads’ over its c-command domain. Thus in 74, the nonmanual marker is associated with the [+F] and [+WH] features of the C⁰, and obligatorily spreads and cooccurs with all signs in the domain of CP.²⁰

Under ABKN’s analysis, the nonmanual WH-question marker is associated with both the WH-element itself and with a [+WH] C⁰. By spec-head agreement, spec-CP also shares this feature. In this analysis, the spreading of the nonmanual marker is only sometimes obligatory. They argue that the nonmanual WH-question marker in C⁰ must be associated with an overt sign. When the WH-element does not raise to spec-CP, there would not be any sign in spec-CP for the nonmanual marker to be associated with (through spec-head agreement). Therefore, in cases when the WH-element does not raise, the nonmanual WH-

²⁰ We should note that not all nonmanual markers employ the same spreading strategies. The topicalization marker, for example, spreads only over the topic constituent.

question marker obligatorily spreads and is thus associated (cooccurs) with the lexical signs in the c-command domain of spec-CP. However, if the WH-element does move to spec-CP, the nonmanual marker can either be realized on the WH-element only, or it may spread over its c-command domain. Under the ABKN analysis, since the WH-subject in 74a has not raised to the rightward spec-CP, the nonmanual WH-question marker obligatorily spreads.²¹

The analysis presented by Aarons et al. (1992) incorrectly predicted sentences such as 75 to be grammatical.

(75) whq
*WHAT JOHN BUY YESTERDAY whq WHAT

Recall that for ABKN, the initial WH-element in 75 is considered a topic, with its own [+WH] feature and nonmanual whq, and the final WH-element has moved to the rightward spec-CP. Therefore, since there is lexical material in spec-CP, spreading of the nonmanual marker should be optional, resulting in the ungrammatical 75.

This problem is recognized and addressed by Neidle, Kegl, Bahan, Aarons, and MacLaughlin (1994:11), who suggest that nonmanual markers are subject to some sort of 'harmony': 'namely that when certain channels within an utterance are engaged once, but will be engaged again, they persevere over intervening material.'²² Under the leftward analysis, since spreading of the nonmanual WH-question marker is obligatory, there is no way to derive the ungrammatical 75.

5.2. INDIRECT QUESTIONS. Based on the properties of ASL sentences containing predicates such as KNOW, DON'T-KNOW, CURIOUS, and WONDER, we assume that these predicates take indirect question complements. Our analysis stipulates that indirect questions are different from direct questions in that indirect questions have the [+WH] feature, but not [+F]. There are at least two desirable consequences of this.

First, recall that under our analysis, the nonmanual WH-question marker is the realization of a [+F, +WH] C⁰. Thus, since indirect questions are only [+WH], not [+F, +WH], they would not be marked with the nonmanual WH-question marker which cooccurs with direct questions. Although there has been debate in the literature over nonmanual markers associated with indirect questions, we believe this is descriptively correct.

We have observed several different types of nonmanual expressions accompanying indirect questions. For example, sentences with predicates such as KNOW, CURIOUS, and WONDER can be accompanied by head nods (hn), while DON'T KNOW can have side-to-side head shakes (hs). Sentences with

²¹ The motivation for ABKN's proposal that the nonmanual whq marker may optionally not spread concerns utterances with a final WH-element and the nonmanual marker only over the WH-element. We will discuss such utterances in detail in §6.

²² The introduction of a harmony process to account for this example is contrary to the general approach that the proponents of the rightward analysis have taken, by which they take the distribution of the nonmanual markers to provide evidence for the hierarchical organization of the language.

of an embedded clause, including lack of subject-auxiliary inversion. This is comparable to the ASL example in 78, which shows a true indirect question. However, in 80b and 80c, *wonder* is followed by a question that shows the characteristics of a root clause, including inversion. In 80b, Joe's thoughts are being quoted. The fact that the first-person pronoun can be used in (b) indicates that a quotation of Joe's thoughts is being made. As in (a), the addressee is not expected to answer. In contrast, in 80c the speaker is asking a true question, which the addressee is expected to answer. The use of the third-person pronoun shows that Joe is not being quoted. Instead, Joe's wondering provides the motive for the speaker to ask the question.

In the ASL analogs of the 80b and 80c examples, the nonmanual WH-question marker accompanies the signs following WONDER, as in 79. The two readings can be distinguished in part by the other nonmanuals appearing with the sentence, in particular the direction of eye gaze: when expecting a response, the signer's eye gaze is directed at the addressee.

When WONDER in ASL is followed by a clause marked with the WH-question marker, we argue that it is similar to the English sentences 80b and 80c: WONDER takes a root clause rather than a true indirect question. This means that in these cases the 'complement' of WONDER has the characteristics of a matrix question, including the nonmanual WH-question marker.²³

We claim that indirect questions in ASL are not marked with the nonmanual WH-question marker, contrary to Neidle, Kegl, Bahan, Aarons & McLaughlin 1994 and Lillo-Martin 1990. For this reason we stipulate that indirect questions in ASL are not marked [+F].

The second desirable consequence of our stipulation that indirect questions are not [+F] involves the double construction. Recall that the double construction must be licensed by [+F] spec-head agreement in CP. If indirect question-taking matrix predicates subcategorize for [+WH], but not [+F] complements, then the WH-element in indirect questions should not be able to double. This prediction is correct, as illustrated in 81.²⁴

(81) $\frac{\quad}{\text{*I KNOW WHO WIN WHO}} \text{hn}$

Let us now consider the position of the WH-element in indirect questions. Our consultants in general strongly prefer the WH-element in embedded clause-initial position, as illustrated in 82.

(82) a. $\frac{\text{MOTHER CURIOUS WHO YOU LIKE}}{\text{'My mother is curious who you like.}} \text{hn}$
 b. $\frac{\text{I DON'T-KNOW WHAT HE BUY}}{\text{'I don't know what he bought.}} \text{hs/ponder}$

²³ In such examples, the question following WONDER can also have a rightward WH-element, i.e. a double. We will soon show that this is not a characteristic of indirect questions in general.

²⁴ Note that the matrix C⁰ can have a [+F] feature, but only elements in the matrix clause (e.g. KNOW) can occur in the final position. The doubling of any element in the embedded island is prohibited. This can be considered an effect of Relativized Minimality (Rizzi 1990).

(85) whq
 JOHN WONDER MY MOTHER BUY WHAT

Under their analysis, 85 is an indirect question with WONDER taking a [+WH] complement and the WH-object having undergone rightward WH-movement to the rightward spec-CP. As explicated above, however, we have found that different nonmanuals can accompany sentences with WONDER. When the WH-question marker accompanies the clause following WONDER, we interpret this to be a direct root question, not an indirect complement to the verb WONDER.²⁵ So the fact that 85 shows the nonmanual WH-question marker with the clause following WONDER does not necessarily indicate that indirect questions have this marker.

ABKN's proposal that the nonmanual WH-question marker is associated with both a [+WH] C⁰ and with an individual WH-element leads to an incorrect prediction about the occurrence of the nonmanual WH-question marker in sentences with the matrix verb KNOW, as in 86 (from Neidle, Kegl, & Bahan 1994).

(86) I KNOW WHO JOHN LIKE

As mentioned in §2, Neidle, Kegl, & Bahan 1994 claims that 86 is not an indirect question. They argue that the WH-element at the beginning of the embedded sentence is a topic. Even if this WH-element is topicalized, under their analysis it should be marked with the nonmanual WH-question marker, since this marker is associated with individual WH-elements as well as with a [+WH] C⁰. However, this WH-element does not cooccur with the WH-question marker, and it is not marked even in their transcription.

Another difference between the leftward and rightward analyses is the ungrammaticality of sentences such as 87 (repeated from 81).

(87) hn
 *I KNOW WHO WIN WHO

Under our leftward analysis, 87 is an example of a WH-double in an indirect question, which is not generable given the absence of the [+F] feature in the head of CP to license the final double. Under the rightward analysis, it is unclear how to account for the ungrammaticality of this example; since the rightward analysis allows a base-generated WH-topic to cooccur with a WH-element elsewhere in the sentence, 87 is predicted to be grammatical. Furthermore, ABKN need to allow the embedded topicalization of a WH-element in the clause following KNOW in order to account for 86. Given this, their analysis has no obvious way to prevent the cooccurrence of the WH-topic and the final WH-element in (87).

Finally, we consider the position of the WH-element in sentences such as 88 (82a, b repeated).

²⁵ Neidle, Kegl, Bahan, Aarons, & MacLaughlin 1994 explicitly points out that the pronoun in 85 refers to the signer (not JOHN). We interpret this to indicate that the signer is asking a question which is prompted by John's wondering, as in example 80c.

structures: this strategy forms topic-comment structures by placing old or pre-supposed information before new information at both the sentence and discourse level.²⁷

Early work on ASL claimed that the notions of subject and object did not play any role in determining the overt word orders (Friedman 1976, Edge & Herrmann 1977, Ingram 1978). Most early researchers claimed instead that notions such as topic-comment, rheme-theme, and old information-new information determined the word order. Since that time research has shown that the notions of subject and object are relevant for the word order and grammatical structure at the sentential level (e.g. Liddell 1980, Padden 1988a). Taking a broader view we can see the strong effects of discourse strategies that result in old information placed before new information, and topic-comment structures commonly used within sentences and discourses.

Within sentences ASL productively uses topicalization to front constituents. Topicalization is so common that when a declarative sentence is presented in isolation, many people will reject the underlying SVO order. For example, when the sentences in 91 are presented in isolation many people prefer 91b-d, which have a topicalized constituent.

- (91) a. NANCY LIKE ICE-CREAM
'Nancy likes ice cream.'
- b. t hn
NANCY, LIKE ICE-CREAM
'As for Nancy, she likes ice cream.'
- c. t hn
ICE-CREAM, NANCY LIKE
'As for ice cream, Nancy likes it.'
- d. t hn
LIKE ICE-CREAM, NANCY
'As for liking ice cream, Nancy [is the one who does].'

Topicalization can also apply in WH-sentences, and can result in a sentence in which the WH-question marker occurs only with a rightward WH-subject, as in 92 and 93. This type has a topic marker over a sentence-initial VP, and a WH-subject that occurs at the end of the sentence.

- (92) t whq
BUY CAR WHO
'As for buying the car, who bought it?'
- (93) t whq
PASS TEST WHICH STUDENT
'As for passing the test, which student was it?'

The surface order of these sentences might be interpreted as deriving from rightward movement of a WH-subject. However, taking into consideration the

²⁷ We use the term DISCOURSE in the sense of discourse phenomena; that is, any sequence of more than one sentence.

nonmanual markers, it is clear that these sentences illustrate VP topicalization.²⁸

In addition to discourse strategies (such as the use of topic-comment structures) affecting individual sentences, we see the effects of these strategies on the organization of information within a discourse. A discourse usually starts with a topic (old information) and then presents the comment (new information). This type of discourse organization appears very frequently in ASL, especially as compared to English.

It is relevant to our analysis of WH-questions, to consider how placing old, presupposed information first in a discourse may affect the structure of the WH-questions. Often a presupposition will be given and then a question relating to this presupposition will be asked. For example, when asked for an ASL translation of the English sentence, 'Who does John like?', many native ASL consultants constructed multisentence discourses such as those in 94-95.

- (94) $\frac{\text{hn}}{\text{I HEAR GOSSIP JOHN LIKE } \substack{\text{a} \\ \text{SOMEONE WHO}} \substack{\text{a} \\ \text{INDEX}}} \text{whq}$
 'I heard a rumor that John likes someone. Who is it?'

- (95) $\frac{\text{t}}{\text{WOMAN } \substack{\text{a} \\ \text{INDEX}}, \text{ JOHN LIKE } \substack{\text{a} \\ \text{INDEX}}} \frac{\text{hn}}{\text{WHO}} \text{whq}$
 'There is a woman that John likes. Who is she?'

Notice that in 94, all of the presupposed information is presented in the first, declarative sentence, which is followed by the simple question, 'Who is it?' In 95, the topicalized constituent WOMAN _aINDEX presupposes the existence of a woman. In the second sentence, WHO _aINDEX, the identity of the woman is questioned.

In 94 and 95, the WH-word is followed by an INDEX, which functions as a predicate. Counterparts to these examples, without the INDEX, are given in 96-97.

- (96) $\frac{\text{hn}}{\text{I HEAR GOSSIP JOHN LIKE SOMEONE WHO}} \text{whq}$
 'I heard a rumor that John likes someone. Who?'

- (97) $\frac{\text{t}}{\text{WOMEN } \substack{\text{a} \\ \text{INDEX}}, \text{ JOHN LIKE } \substack{\text{a} \\ \text{INDEX}}} \frac{\text{hn}}{\text{WHO}} \text{whq}$
 'There is a woman that John likes. Who?'

Examples 96 and 97 clearly have the meaning 'Who is it?' We propose that these examples, like 94 and 95, involve a WH-question that is a separate sentence, with the difference that in 96 and 97 the predicate is unexpressed. In ASL, this can result in a single WH-word question on the surface.

English also allows single WH-word questions in context.

- (98) I heard you went somewhere. Where?

- (99) I heard you like someone. Who?

²⁸ We assume, with ABKN, that topics are adjoined to CP, and are therefore outside the spreading domain of the nonmanual WH-question marker.

The final question word in these sentences clearly constitutes its own sentence; the question word is not an argument of the first sentence, but questions something mentioned in the first sentence.

A similar phenomenon of missing constituents was investigated by Ross (1969); he gave it the name SLUICING. According to Ross, in these question examples it is possible to sluice off parts of a sentence which are recoverable from a previous sentence in the discourse. We believe the ASL examples can be explained as a type of sluicing.

We take the sentences in 100 and 101 to be further examples of this phenomenon: one presents the presupposed information, the second the WH-question.

(100) a. hn whq
JOHN BUY SOMETHING WHAT
'John did buy something. What?'

b. whq
JOHN BUY SOMETHING WHAT
'John bought something. What?'

(101) a. hn whq
SOMEONE BUY CAR WHO
'Someone did buy a car. Who?'

b. whq
SOMEONE BUY CAR WHO
'Someone bought a car. Who?'

In 100–101, there is a clear difference in the nonmanual marker between the first and the second sentence. Only the second has a *whq* nonmanual marker. The first sentence may or may not have a head nod, but we claim that it is a separate sentence in all of these cases.²⁹

We are now in a position to discuss a slightly different type of example. In the appropriate contexts, sentences such as 102b and 103b are acceptable. (102a and 103a are repeated from 100a and 101a).

(102) a. hn whq
JOHN BUY SOMETHING WHAT
'John did buy something. What?'

b. hn whq
JOHN BUY WHAT
'John did buy something. What?'

(103) a. hn whq
SOMEONE BUY CAR WHO
'Someone did buy a car. Who?'

b. hn whq
BUY CAR WHO
'Someone did buy a car. Who?'

²⁹ Lillo-Martin 1990 also noted the use of this strategy to break up long WH-questions.

We now claim that 102b and 103b are two-sentence discourses, similar to 102a and 103a.³⁰ The only difference is that in the (b) examples, a null argument is used in the first sentence. It has independently been argued that null arguments are available in ASL (see §4 above, and Lillo-Martin 1986), in the appropriate context. As expected, we find that examples like 102b–103b are accepted only in appropriate contexts. Thus, according to our analysis, 102b–103b consist of multisentence discourses in which the first sentence contains a null argument, and the second is a single WH-word question.

In our analysis, multisentence discourses may also occur with a separate WH-element as the first sentence, as illustrated in 104.

- (104) a. whq _____ ponder whq
 WHO JOHN LIKE SOMEONE WHO
 'Who? John likes someone. Who?'
 b. whq _____ ponder whq
 WHO SOMEONE LIKE JOHN WHO
 'Who? Someone likes John. Who?'

We argue that each of the examples in 104 consists of three separate sentences. The first, the WH-element itself, is a question directed by the signer to the signer. The second sentence gives the presupposition the signer is pondering. The final sentence, the final WH-element itself, can be either a direct question addressed to an addressee, or a continuation of the self-talk.³¹

Evidence that the first WH-element is a separate sentence comes from extraction facts. As illustrated in 105, a topic can cooccur with a WH-question.

- (105) t _____ whq
 COFFEE_i, WHERE BUY t_i?
 'As for the coffee, where did [you] buy it?'

In contrast, it is not possible for an element of what we have analyzed as the second sentence to be topicalized over the initial WH-element in 104, as shown in 106.

- (106) a. t whq _____ ponder whq
 *JOHN_i WHO t_i LIKE SOMEONE WHO
 b. t whq _____ ponder whq
 *JOHN_i WHO SOMEONE LIKE t_i WHO

Thus, we find that multisentence discourses can contain utterances with a nonmanual WH-question marker only over a single WH-element, which we interpret as a single-sign sentence.

³⁰ A similar observation was made by Coppock (1993) who thought that the examples given by ABKN with a nonmanual WH-question marker over only a sentence-final WH-element could be analyzed as two separate sentences.

³¹ In these examples, the pondering nonmanual expression can accompany the second sentence. Because of the similarity of the pondering expression to the WH-question marker, it can appear that the WH-marker had spread over the entire string. However, consultants have pointed out that the nonmanual configuration occurring with the 'second sentence' is different from the true WH-question marker.

ABKN also note examples of strings in which the nonmanual WH-question marker occurs only with a rightward WH-element, as in 107 (from Aarons et al. 1992:108).³²

(107) LIKE CHOCOLATE $\overline{\text{whq}}$ WHO
 'Who likes chocolate?'

According to ABKN's analysis, examples such as 107 are considered single sentences with the WH-element moved rightward, rather than multisentence discourses. Because the rightward spec-CP has lexical material, according to their analysis the nonmanual WH-question marker need not spread. ABKN's analysis predicts that examples such as 107 should be grammatical even without context, since they would be simple examples of WH-elements moved to a rightward spec-CP. As we explained earlier, we find that judgments on these sentences are very dependent on context; without the appropriate context many consultants will usually judge them ungrammatical, while other consultants are able to construct an appropriate context that makes the sentence grammatical. Our analysis predicts such a dependence on context, since the sentences employ null elements that are known to require identification in the context or discourse.

In the next section, we will consider possible sources of judgment differences between individual consultants, particularly in regard to WH-questions with leftward WH-elements.

7. INDIVIDUAL STYLISTIC AND IDIOLECTAL DIFFERENCES. The literature reports differences in judgments reported for sentences that have a single, leftward, sentence-initial WH-object. To maintain a leftward analysis, we must account for the varying judgments for this type of sentence. In §7.1 we look at simple WH-questions with a single sentence-initial WH-object and account for the different judgments by attributing them to individual stylistic preferences that are in accord with the discourse-oriented strategies of ASL discussed above. In §7.2 we examine WH-questions involving long-distance extraction out of an embedded clause and argue that different judgments, in part, indicate idiolectal differences in the subcategorization properties of different verbs, that is, if the matrix verb is a bridge verb or not.

7.1. SENTENCE-INITIAL WH-OBJECTS. Consider sentences such as 108.

- (108) a. $\overline{\text{whq}}$
 WHAT JOHN BUY
 'What did John buy?'
- b. $\overline{\text{whq}}$
 WHO YOU LIKE
 'Who do you like?'

³² Although Aarons et al. 1992 does not note a head nod occurring with LIKE CHOCOLATE, we assume that the analysis we give for 103b (with or without the head nod), will apply in this case.

ABKN report that this type of sentence is ungrammatical; Lillo-Martin 1990 and Lillo-Martin & Fischer 1992 report them as grammatical, and Petronio 1993 reports that they receive mixed judgments. Petronio 1991 notes that signers who rejected the sequence of signs in 108 accepted the same sequences when embedded under a matrix predicate such as *WONDER* or *CURIOUS*, as in 109.

- (109) a. $\frac{\text{ponder}}{\text{I WONDER WHAT JOHN BUY}}$
 'I wonder what John bought?'
- b. $\frac{\text{hn}}{\text{ANN CURIOUS WHO YOU LIKE}}$
 'Ann is curious who you like.'

Those who reject sentences such as 108 accept an initial WH-object if there is also a final double as in 110.

- (110) a. $\frac{\text{whq}}{\text{WHAT JOHN BUY WHAT}}$
 'What did John buy?'
- b. $\frac{\text{whq}}{\text{WHO YOU LIKE WHO}}$
 'Who do you like?'

Recall that under our analysis, one difference between the direct WH-questions in 108 and 110, and the indirect questions in 109, is that the C^0 of the interrogative WH-questions (but not of indirect questions) is marked [+F, +WH]. We might speculate that for stylistic reasons some consultants require a [+F, +WH] C^0 to be associated with overt lexical material, leading to the commonly found double construction, as in 110. Since indirect questions are not [+F], this 'requirement' will not be imposed on them, so a single, leftward WH-element will be accepted, as in 109.

Support for our conjecture comes from the fact that many of those who reject 108 nevertheless accept the initial WH-object if there is a subject pronominal copy at the end of the sentence as in 111.

- (111) a. $\frac{\text{whq}}{\text{WHAT}_a \text{ JOHN BUY}_a \text{ HE}}$
 'What did John buy?'
- b. $\frac{\text{whq}}{\text{WHO YOU LIKE YOU}}$
 'Who do you like?'

Petronio 1993 analyzes the subject pronominal copy as a clitic adjoined to the head of CP. Under this analysis, the stylistic preference for lexical material associated with [+F, +WH] C^0 can be satisfied by the adjoined clitic.

Under the rightward analysis, accounting for these data is not straightforward. ABKN consistently report that sentences with a single initial WH-object such as 108 are ungrammatical, however they do allow for sentence-initial WH-elements as topics. For ABKN, extra stipulation is necessary to account for

why WH-topics in direct questions are allowed only when another WH-element or a subject pronominal copy is present; while no such requirement is found for WH-topics in indirect questions.

7.2. LONG-DISTANCE WH-MOVEMENT. The leftward movement hypothesis we have defended in this paper predicts that the sentences in 112 should be grammatical instances of long-distance WH-movement.

- (112) a. $\frac{\text{WHO JOHN THINK MARY LIKE}}{\text{Who does John think Mary likes?}} \text{whq}$
 b. $\frac{\text{ROSEBOWL, WHO YOU FEEL WILL WIN}}{\text{'As for the Rosebowl, who do you think will win?'}} \text{whq}$

Sentences such as 112 are rarely observed in natural conversation, and judgments by consultants vary. Such sentences were reported to be ungrammatical in Lillo-Martin 1990 and ABKN; similar examples were found grammatical by Boster 1996 and received mixed judgments in Petronio 1993. Some of the variation can be accounted for by the stylistic preference for lexical material to be associated with a [+F, +WH] C⁰, discussed immediately above. In this case, adding a WH-double, as in 113, leads to grammaticality for some consultants.

- (113) a. $\frac{\text{WHO JOHN THINK MARY LIKE WHO}}{\text{'Who does John think Mary likes?'}} \text{whq}$
 b. $\frac{\text{ROSEBOWL, WHO YOU FEEL WILL WIN WHO}}{\text{'As for the Rosebowl, who do you think will win?'}} \text{whq}$

There are still some signers who reject both 112 and 113. One possible explanation is that the grammars of some consultants might count verbs such as THINK as bridge verbs, allowing long-distance extraction, while others do not. This possibility is not unreasonable, given the unusual sociolinguistic environment in which ASL is found and learned.³³ ASL is used by a linguistic minority of whom only five to ten percent were exposed to it from birth. Along with ASL, most deaf people are exposed to English (frequently through an English-based sign system), and commonly must communicate with non-native ASL signers. In light of the complexity of the linguistic milieu around ASL, it would not be surprising to find idiolectal variation in the subcategorization frames of verbs (which may or may not be related to subcategorization frames in English). This is feasible, since even in relatively stable linguistic environments, idiolectal differences can be found. Some English speakers count *whisper* as a bridge verb, allowing long-distance extraction over it, while others do not. Likewise, it appears that some ASL signers accept long-distance extraction over THINK, while others do not.

³³ For more information on the sociolinguistic environment of ASL, see Fischer 1978, Baker-Shenk 1983, Lane 1984, Padden & Humphries 1988, Sacks 1990.

We should note that even consultants who accept long-distance extraction in sentences such as 112 report that they rarely use this type of sentence. Instead, they express a preference for the double construction, or an even stronger preference for discourse strategies that include multisentence discourses with presupposed information before new information. Instead of using a single sentence such as 112 or 113, these consultants prefer a discourse such as 114.

- (114) $\frac{\text{hn}}{\text{JOHN THINK MARY LIKE } \text{aSOMEONE WHO (aINDEX)} \text{ whq}}$
 'John thinks that Mary likes someone. Who [is it]?'

The stylistic and individual differences that may lead to the rejection of sentence-initial WH-objects under certain conditions does not necessarily refute the leftward movement hypothesis.

8. SUMMARY AND CONCLUSION. One of our goals in this article was to evaluate the claim that spec-CP and WH-movement is to the right in ASL. We have considered this claim both with respect to cross-linguistic observations about the nature of WH-movement and with respect to a variety of data from ASL itself. We found a general observation made in studies of spoken languages: in languages with overt WH-movement, spec-CP is clearly on the left. We examined potential counterexamples of rightward WH-elements in the literature on spoken languages, and it appeared that in every case the rightward WH-elements were due to factors other than rightward WH-movement to a rightward spec-CP. The strength of this generalization led us to consider whether the cases of rightward WH-elements in ASL could also be accounted for by factors other than rightward WH-movement to a rightward spec-CP.

We found independently motivated features and constructions in ASL that interact with WH-elements in such a way as to result in the appearance of WH-elements on the right. For example, a general focusing construction was shown to apply to non-WH-elements, resulting in a double of the focused element occurring in sentence-final position. By this same construction, a double of an interrogative WH-element (inherently focused) can appear in the rightward, sentence-final position. We noted that ASL independently allows covert WH-elements and showed that a covert WH-element can also occur in the double construction, which then results in a surface form in which only a single overt WH-element (the rightward, sentence-final double) appears. We discussed discourse strategies commonly employed in ASL, which include placing old, presupposed information before new information in both sentences and discourses, and result in multisentence discourses in which the presupposed information is presented in one sentence, followed by a sluiced WH-question, consisting of a single WH-element, which occurs at the right of the discourse.

Using these independent features, we showed that examples of WH-elements on the right in ASL do not require the postulation of rightward movement to a rightward spec-CP. We showed examples of WH-elements on the left in ASL, which the rightward movement hypothesis is unable to account for. We demonstrated that the rightward WH-movement analysis is problematic both in that it

overgenerates ungrammatical examples and undergenerates grammatical examples. The leftward movement hypothesis, together with independently motivated mechanisms, correctly predicts the grammaticality of rightward and leftward WH-elements in ASL. In addition to this empirical superiority in accounting for the ASL data presented here, the leftward movement hypothesis further supports the cross-linguistic generalization that true WH-movement and spec-CP are to the left. Our conclusion that ASL does not present a counterexample to this cross-linguistic generalization also supports the idea, as would be expected, that true linguistic universals hold across modalities.

APPENDIX A: NOTATION/TRANSCRIPTION SYSTEM FOR ASL

SIGN	An uppercase English word is used as a gloss to represent an ASL sign.
HOW-MANY	A hyphen is used between glosses when two English words are necessary to represent one ASL sign, e.g. HOW-MANY in ASL is one sign.
J-U-R-Y	Capital letters with dashes between them indicate a fingerspelled word.
#WILL	A sign preceded by a # indicates a fingerspelled loan sign (see Battison 1978).
JOHN GO _a HE	A lower case subscript a indicates spatial agreement, e.g. coreference.
_____ whq	A line above the signs represents the cooccurrence of a nonmanual marker and the symbol at the end of the line indicates the type of marker. The marker cooccurs with the signs below the line.
SIGN SIGN SIGN	

NONMANUAL MARKERS

SYMBOL	FUNCTION	BRIEF DESCRIPTION
hn	assertion	head nods
hs	negation	head shakes
whq	WH-question	furrowed brows, head tilt
q	yes-no question	raised brow, head tilt
cond	conditional	brow raise, side tilt on the antecedent clause.
t	topic	brow raise, upward head tilt

SPECIFIC SIGNS

WHAT	ASL has several signs that can be glossed as WHAT. The gloss WHAT will refer to the two-handed sign that is made with the palms orientation upward using the five handshapes.
INDEX	The sign glossed as INDEX is made with the index finger extended. This sign can function as a pronoun, determiner, or clitic. Note that there are some cases where for ease, we have used the gloss HE or SHE or YOU to represent this same sign.

APPENDIX B: SOURCES FOR DATA IN EXX. 30-42

BCASL: Humphries et al. 1985.
 Green Book: Baker & Cokely 1980.
 Vista: Smith et al. 1988.

SENTENCE #	SOURCE
30	Green Book, unit 25
31	BCASL, conversation 1
32	Green Book, unit 23
33	BCASL, conversation 1
34	Seago 1989.
35	Bienvenu 1990.
36	Graybill 1986.
37	Green Book, unit 10.
38	Green Book, unit 17.
39	Vista, unit 6, conversation 1.
40	Green Book, unit 13.

- 41 Green Book, unit 14.
42 Green Book, unit 1.

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