Convergent Evidence for the Structure of Determiner Phrases in American Sign Language

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After 30 years of research on the linguistic structure of American Sign Language (ASL), one might expect that most of the major syntactic phenomena would have been addressed, at least at a descriptive level. It is surprising to note that very little research has yet been done on noun phrases in this language.[1] In this paper, we investigate the basic structure of noun phrases in ASL. The work reported here is part of a larger, ongoing project to elaborate the functional architecture of ASL.

While one might think that a description of the noun phrase in ASL should be straightforward, in reality it turns out to be rather daunting, in part because there is significant dialect variation with respect to noun phrase structure. For this reason, we have focussed on a large corpus of data from a single Deaf native signer of ASL. We consider specifically the identification and distribution of determiners.

In the traditional literature, the general assumption has been that ASL lacks determiners altogether. Although some researchers have claimed that ASL has determiners, there has been little agreement on what semantic distinctions, if any, are conveyed, and where determiners appear relative to the noun. The controversy involves the status of indexes, signs made by pointing with the index finger, as illustrated in Figure 1.
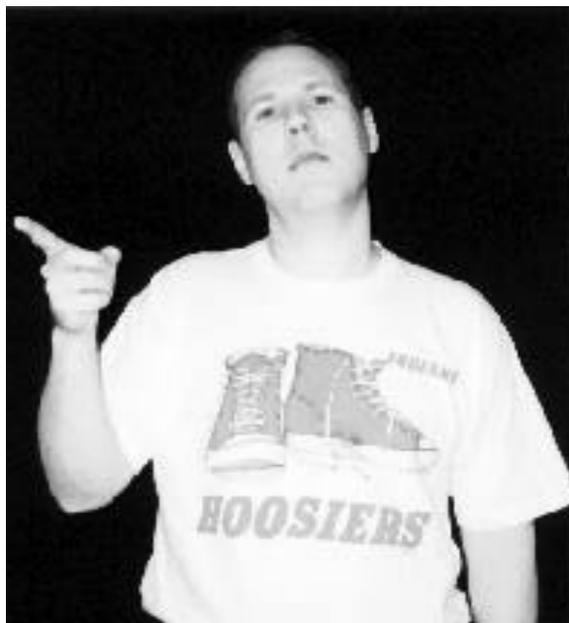
Figure 1. IX

Figure 2.   Some previous claims about the role of determiners in ASL

- **about the existence of determiners**

    1. *There are none.*   (De Vriendt and Rasquinet, 1989)
There does not seem to be any clear marking of the semantic notions associated with determiners, such as definiteness, specificity, mass/count, or genericity.

    "As we all know, sign languages are said to have no articles." (p. 250)

    2. *Pre-nominal and post-nominal indexes might be definite determiners.*
(Wilbur, 1979; Hoffmeister, 1977, 1978)

    "The possibility exists that the definite/indefinite distinctions which are reflected in English by the determiners *the* and *a(n)* are distinguished by whether a noun phrase has an index (definite) or not (indefinite)." (Wilbur, p. 117)

    3. *Pre-nominal and post-nominal indexes are determiners but do not convey definiteness.*
(Zimmer and Patschke, 1990) (It should be noted that Zimmer & Patschke only considered a limited class of indexes with specific articulatory properties.)

    "Since the pointing signs... occur with nouns in noun phrases, they serve to modify nouns. They don't contain a great deal of semantic content nor do they describe nouns. Thus they do not function as adjectives. When asked why these signs were being used, the informants stated that they 'specify' the noun. These observations indicate that these signs function as some type of determiner." (p. 204)

    "As yet, we have identified no process marking the definite/indefinite distinction. Our original hypothesis was that this distinction is marked by whether the determiner occurs before or after the noun, but a thorough investigation proved this hypothesis to be unfounded." (p. 207)

- **about the distribution of indexes in relation to nouns**

    4. *Indexes occur freely before or after the noun, and there is no significant difference between indexes in the two positions.*

    "This pointing gesture may be made before, after, or simultaneously with the noun sign." (Wilbur, 1979, p. 115, attributed to Kegl)

These pointing signs are part of the grammatical system, and serve a variety of different functions that will be discussed below. Claims that have been made about the role of determiners in ASL are summarized in Figure 2.[2]

        In this paper, we first present some background concerning the use of pointing signs generally in ASL. Then we consider their use within noun phrases, showing that the pre-nominal and post-nominal uses differ in their syntactic function, and that failure to distinguish these functions has contributed to the general confusion about the structure of noun phrases. We conclude that the pre-nominal index (as illustrated in Figure 1) occurs in the head determiner position of the Determiner Phrase (DP), and functions as a definite determiner.

Indexes in ASL

Indexes have a variety of uses in ASL (see, for example, Friedman (1975)). They can function adverbially, to identify locations in the signing space. Indexes also have special functions with respect to the system of nominal reference. A nominal referent can be set up at a particular location in the signing space. Thereafter, pointing to that location constitutes a reference to the entity that was established there. Thus, another use of indexes is for pronominal reference. Finally, indexes may occur within noun phrases, with a head noun and other material. Such occurrences are the focus of this paper.

It has been observed that indexes can occur either before or after the noun.[3] However, previous descriptions have failed to differentiate the pre-nominal and post-nominal indexes. Furthermore, there has not been discussion of the case in which both a pre-nominal and post-nominal index co-occur within a single noun phrase. The possibility of finding an index both before and after the noun shows conclusively that we are not simply dealing with a situation in which there is free word order variation between the index and the noun. This double index construction is illustrated in sentence (1).

<div style="text-align:center">_____ top</div>

1. [IX WOMAN IX] ARRIVE EARLY
     'That woman (there), (she) arrived early.'

The conventional gloss notation is used in this paper for presentation of examples. Each sign is represented by an English word, written in capital letters, that is the closest English equivalent. This simplified notation, however, does not reflect the morphological richness of the ASL signs. In American Sign Language, facial expressions serve a grammatical function. Non-manual information conveyed on the face, which may occur simultaneously with manual signing, is represented by a line extending over the signs with which it is coextensive. So, the example in (1) has raised eyebrows over the first constituent, which serves to mark that as a topic. The brackets are intended to indicate a single syntactic constituent.[4]

We believe that the construction illustrated in (1) is parallel to constructions found in other languages, such as Norwegian and French, as shown in (2).

2. a. den mannen der   [Norwegian]
     b. cet homme-là   [French]
          'that man (there)'

To our knowledge, these constructions have not been discussed at all in the theoretical literature. References to such constructions have been limited to the occasional footnote, in which the general assumption has been that the final element is adverbial in nature. This final element is, incidentally, morphologically identical with other adverbials found in those languages. Note that this is true for ASL as well, since, as mentioned before, the index also has a pure adverbial usage.

Our claim is that, in a sentence such as (1), only the first index functions as a determiner. We analyze the determiner as the head of the syntactic phrase, in keeping with recent syntactic analyses of noun phrase structure generally (Hellan, 1986; Abney, 1987; and others). Evidence for distinguishing the pre-nominal and post-nominal indexes in this kind of construction comes from semantic, distributional and articulatory differences. Our analysis also makes the correct predictions concerning the spread of facial grammatical markers within the Determiner Phrase.

Semantic evidence

We claim that the pre-nominal index invariably expresses definiteness,[5] a feature associated with the determiner function crosslinguistically. When a pre-nominal index is present (regardless of whether there is a post-nominal index), the noun phrase is necessarily definite. This is shown in the sentences in (3).

3.   a.
<div style="text-align:left">   <u>   top</u></div>

3.   a. [IX WOMAN], ARRIVE EARLY
              'That woman, (she) arrived early.'

      b. JOHN LOVE IX WOMAN
             'John loves that woman.'

In a context where only an indefinite reading is appropriate, the pre-nominal index is not grammatical. This is illustrated in (4) on the intended reading: 'John is looking for *a* man to fix the garage.'

4. *   JOHN LOOK-FOR [IX MAN] FIX GARAGE
          'John is looking for a man to fix the garage.'

It is important to note, however, that a pre-nominal index is not obligatory with definite noun phrases. Some noun phrases with no manual index can yield a definite reading. The noun phrase, BOOK, without any overt determiner, can have a definite or indefinite interpretation in an appropriate context, as shown in (5).

5.   JOHN LOOK-FOR [BOOK]
         'John is looking for a/the book.'

In other words, while the presence of a pre-nominal index necessarily implies a definite reading, a definite reading does not necessarily imply the obligatory occurrence of a pre-nominal index.

In contrast to the pre-nominal index, the post-nominal index can occur in both definite and indefinite contexts. Sentence (1) already showed that the post-nominal index can be used with a definite noun phrase. The sentences in (6) illustrate the use of a post-nominal index in the context where the noun phrase is not definite.

6.   a. JOHN SEE [MAN IX]
              'John saw a man (there).'

      b. JOHN LOOK-FOR [MAN IX] FIX GARAGE
             'John is looking for a man (there) to fix the garage.'

To summarize, the pre-nominal index is necessarily associated with definiteness, while the post-nominal index can also occur in indefinite contexts. The semantic generalization that the pre-nominal index is associated with definiteness does not become apparent unless the pre-nominal and post-nominal occurrences of the index are evaluated separately.

Distributional and articulatory evidence

The similar appearance of pre-nominal and post-nominal indexes has obscured the linguistic distinction between the two, and has contributed to the difficulty in recognizing that the pre-nominal index functions as the determiner. This confusion is eliminated when we consider other forms that we claim are used exclusively as determiners. These determiners only occur pre-nominally within DP. Consider the occurrence of the indefinite determiner glossed as 'SOMETHING/ONE'in sentence (7).[6]

7.   SOMETHING/ONE WOMAN   ARRIVE EARLY
         'Awoman arrived early.'

When the determiner SOMETHING/ONE is present, the noun phrase receives an indefinite interpretation. Neither the definite determiner (the pre-nominal index), nor this indefinite determiner (SOMETHING/ONE) is obligatory. Recall example (5), where, in the absence of any pre-nominal determiner, either a definite or indefinite reading is possible.

        The indefinite determiner SOMETHING/ONE is particularly useful for our investigation, because unlike the pre-nominal index, this determiner does not have a distinct adverbial use in addition to its function as a determiner. However, the data are subtle with regard to the position of SOMETHING/ONE. It is important to note that SOMETHING/ONE *can,* in fact, occur after a noun. However, when it does, it is occurring appositively, not as part of the noun phrase. In the appositive construction in (8), there is a different prosody, involving a slightly longer hold between the noun and SOMETHING/ONE, and SOMETHING/ONE also receives a more stressed articulation.

8.   WOMAN,   SOMETHING/ONE,   ARRIVE EARLY
         'Awoman, some (woman), arrived early.'

        That there is a distinction between the pre-nominal and post-nominal occurrence of SOMETHING/ONE becomes even more apparent in the contrast between (9) and (10).

9. ??   IX WOMAN, SOMETHING/ONE   KNOW   PRESIDENT

10.   [SOMETHING/ONE WOMAN IX] KNOW   PRESIDENT
         'Some woman (there) knows the president.'

Given our analysis, the first phrase in example (9) could only be interpreted as definite, with 'someone' being used appositively. This situation is rather odd semantically, since an indefinite phrase, SOMETHING/ONE, is used to refer back to a definite phrase, IX WOMAN. However, example (10) is grammatical and perfectly normal, having the meaning of essentially 'some woman there'. In this case, SOMETHING/ONE serves as an indefinite determiner, which does not conflict with the non-determiner use of the post-nominal index.

        Thus far we have shown that the pre-nominal position is available for determiners generally. We now turn to what can occur post-nominally within DP. While other determiners do not occur in the post-nominal position within DP, other adverbials do. For example, the adverbial that means 'somewhere around there' can occur post-nominally, as shown in (11)[7] and (12).

11.   IX WOMAN   IX"around there"   BORROW   VIDEOTAPE
        'That woman around there borrowed the videotape.'

12.   SOMETHING/ONE WOMAN   IX"around there" BORROW VIDEOTAPE
        'A woman around there borrowed the videotape.'

We claim that the post-nominal index can occur in the same hierarchical position as these other adverbials. Interestingly, in this adverbial position, the index can undergo the same kind of modulation that is characteristic of other kinds of adverbials. For example, in (13) and (14), the post-nominal index can be articulated with a variable pathlength, which conveys information about distance in space. Figure 3 illustrates an IX marking a referent as very far away.
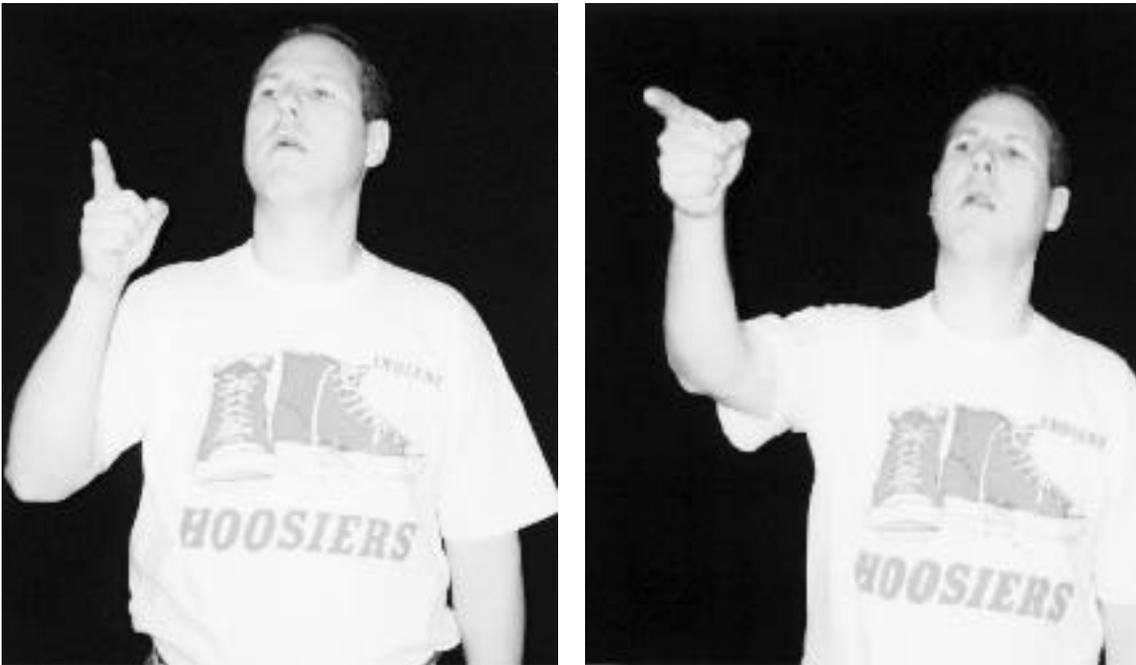

Figure 3. Start and end points of [IX]~~very-far-away~~

13.   IX WOMAN [IX]~~variable pathlength~~   BORROW VIDEOTAPE
        'That woman (more or less far away) over there borrowed the videotape.'

14.   SOMETHING/ONE WOMAN [IX]~~variable pathlength~~   BORROW   VIDEOTAPE
        'A woman (more or less far away) over there borrowed the videotape.'

This modulation is similar to a phenomenon that we have discussed with respect to time adverbials (Aarons, Bahan, Kegl and Neidle, 1995). Time adverbials also allow pathlength modulation, to convey varying degrees of distance in time. However, tense markers that are morphologically related to time adverbials have a frozen, invariant articulation. Sentences (15) and (16) illustrate this contrast. In (15), the adverbial's pathlength can show a greater or lesser distance in the future, while this is impossible with the tense marker in (16).

15.   [FUTURE-ADV]$_{\text{variable pathlength}}$ JOHN   BUY   HOUSE
        'In the (more or less) distant future, John (will) buy a house.'

16.   JOHN   [FUTURE-TNS]$_{(\text{*variable pathlength})}$ BUY   HOUSE
        'John will buy a house.'

The generalization is that the adverbials in examples (13-15) exhibit a variation in articulation that conveys distance in time or space, while the functional elements in Determiner and Tense positions require an invariant articulation.

Pronominals

Our basic claim, then, is that the pre-nominal index, when it occurs, necessarily occupies the head Determiner position within the DP. It is interesting to note that the rest of the Determiner Phrase need not be overtly realized, in which case, the index functions pronominally. This pronominal use was discussed in an earlier theoretical framework by Kegl (1987), and it also supports proposals, by Postal (1969), Abney (1987), and others, that pronouns are essentially determiners. In ASL, as contrasted with English, the determiner actually has the same morphological form in both usages.

17.   IX   ARRIVE   EARLY
        'He arrived early.'

Non-manual marking within the DP

Our analysis of the pre-nominal index as the determiner makes the correct predictions regarding the distribution of non-manual marking within the DP. In this section we will discuss the distribution of eyegaze within the DP, although similar evidence is available from headtilt. Eyegaze serves a variety of functions in ASL (see Bahan, forthcoming). Here we focus specifically on its use in association with the pre-nominal index. Evidence from the distribution and spreading possibilities for eyegaze in the DP demonstrates that the index in determiner position c-commands other elements within DP, including the post-nominal index.

In ASL, facial expressions are used to express various types of syntactic information.[8] We have argued in previous work[9] that such non-manual grammatical markers are associated with grammatical information contained in the heads of functional projections. For example, there are particular non-manual markers associated with syntactic features such as +negative, +wh, and so on. These markers optionally spread over the c-command domain of the node with which they are associated, and are thereby articulated concurrently with manual material.

Just as there are non-manual grammatical markers associated with functional heads in the verbal projection, we believe that there are non-manual markings associated with the head Determiner of the DP as well. Eyegaze to a specific location in space can occur simultaneously with pointing to that position, to identify the location in space that is associated with nominal reference. Our proposal that the pre-nominal index is the head of the entire DP phrase makes the correct predictions for the domains over which eyegaze may extend. The eyegaze associated with the pre-nominal index may occur only over that index, as in (19), or it may spread over the entire phrase, as in (20), but it may not spread over any subportion of the phrase, as in (21).

18.   IX   WOMAN   IX   ARRIVE   EARLY
        'That woman (there) arrived early.'

        <u>eg</u>
19.   IX   WOMAN   IX   ARRIVE   EARLY

        <u>   eg</u>
20.   IX WOMAN   IX   ARRIVE   EARLY

        <u>   eg</u>
21.*   IX   WOMAN   IX   ARRIVE   EARLY

Conclusion

We have examined the DP-internal uses of the index, and distinguished pre-nominal and post-nominal usages. Part of the complexity of the problem of determining the role of indexes internal to DP, namely their determiner and adverbial usages, has been the multiplicity of uses of similarly articulated indexes in the language. Given that the index can also function pronominally, and that this is a pro-drop language, many of the sequences of signs involving indexes are potentially structurally ambiguous. For example, the sentences illustrated in Figure 4 illustrate only some of the possible parses of the 6-sign string glossed as: IX WOMAN IX ARRIVE EARLY WILL. The fact that the glosses are the same does not imply that the articulations are identical. Subtle differences corresponding to the differing prosody and function of these signs do exist, but are not marked in the examples. These differences, when recognized, are important clues for disambiguating such strings. The one thing that should be obvious from this is the challenge posed to sign language researchers in differentiating sequences such as these.

Figure 4. Possible parses of a single 6-sign string

Note that non-manual markings are not indicated here. Subtle articulatory differences are not indicated in glosses.

         <u>   top</u>
22. IX, WOMAN IX, [pro] ARRIVE EARLY WILL
    'Her, (the) woman there, she will arrive early.'

         <u>   top</u>
23. IX WOMAN, IX, [pro] ARRIVE EARLY WILL
    'That woman, right there, she will arrive early.'

         <u>   top</u>
24. IX, WOMAN, IX, [pro] ARRIVE EARLY WILL
    'Over there, (the) woman, over there, she will arrive early.'

         <u>   top</u>
25. IX, WOMAN, IX, [pro] ARRIVE EARLY WILL
    'Her, the woman, over there, she will arrive early.'

         <u>   top</u>
26. IX WOMAN, IX, [pro] ARRIVE EARLY WILL
    'The woman, over there, she will arrive early.'

         <u>   top</u>
27. IX WOMAN, IX, [pro] ARRIVE EARLY WILL
    'The woman, her, she will arrive early.'

         <u>   top</u>
28. IX WOMAN IX, [pro] ARRIVE EARLY WILL
    'The woman there, she will arrive early.'

         <u>   top</u>
29. IX WOMAN,   IX ARRIVE EARLY WILL
    'The woman, she will arrive early.'

         <u>   top</u>
30. IX, WOMAN,   IX ARRIVE EARLY WILL
    'There, (the) woman, she will arrive early.'

Notes

1. For early proposals, see O'Malley (1975), Forman and MacDonald (1978), Chinchor (1978, 1981) and Kegl (1977). See also Boster (in press).

2. In addition, it is worth noting that Engberg-Pedersen (1993) has done some very interesting work on Danish Sign Language, dealing with some of the same structures considered here. Her results are suggestive of some interesting possibilities for future crosslinguistic comparison.

3. Kegl (1977), also reviewed in Wilbur (1979).

4. The sample sentences contained in this paper contain many instances of ambiguity, where the same sequence of signs we illustrate may correspond to different possible syntactic readings. This will be apparent in Figure 4. The English translations and syntactic bracketings are intended to identify the reading under consideration in each case. The English translations should not, however, be construed to express the exact meaning of the ASL examples. (Please pardon the limitations of English.)

5 Further investigation of the syntactic reflections of definiteness and specificity in ASL is needed. For discussion of the notions of definiteness and specificity, see Lambrecht (1994), who defines definiteness as "a formal feature associated with nominal expressions which signals whether or not the referent of a phrase is assumed to be identifiable to the addressee" (p. 79).

6. The sign SOMETHING/ONE is articulated with the index finger pointing upward and with a slight tremoring motion in the wrist.

7. The articulation of the first IX sign in this example is actually slightly different from the IX illustrated in Figure 1. This IX is articulated with the finger pointing at about a 45 degree angle. We suggest that this is the form that is used when the referent does not have, associated with it, a specific location in the signing space. For more details, see Bahan (forthcoming) and MacLaughlin (forthcoming).

8.   See Baker-Shenk (1983) and Baker and Padden (1978).

9. Aarons, Bahan, Kegl and Neidle (1992) and Neidle, Kegl, Bahan, Aarons, and MacLaughlin (in press).

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