The distribution of functional projections in ASL: Evidence from overt expressions of syntactic features

Carol Neidle and Dawn MacLaughlin, Boston University
Workshop on the mapping of functional projections. Venice International University.

Plan for this talk:

I. Introduction

II. Background about ASL
   • Phonology
   • Morphology
   • Syntax: the state of the art
     - Particular challenges for linguistic research
     - Sociolinguistic considerations

III. Mapping the functional architecture
   • Basic sentence structure
   • Non-manual syntactic markings as expressions of syntactic features
   • Functional structure
     - Tense
       - Agreement
         ♦ Spatial representation of φ-features
         ♦ Non-manual expression of φ-features
           ◊ within DP
           ◊ within the clause
     - Aspect

IV. Conclusions

*We are grateful for funding from the National Science Foundation, grants #SBR-9410562, #SBR-9729010, #IIS-9528985.
II. Background about ASL

   Phonology and Morphology

   Equivalents of phonemes:
   particular hand shapes, hand orientations, places of articulation relative to the body, and movement characteristics.

   Minimal pair:

   Figure 3: FATHER vs. FINE

Syntax: the state of the art

Disagreements about data with respect to the most basic syntactic constructions

Particular challenges for linguistic research:

   Lack of written representation
   Reliance on English glosses (deficient in many respects; difficult to reconstruct signed sentence)
   Lack of access to video data
   Lack of tools for analysis of video data
   Difficulties in data collection related to sociolinguistic factors

Sociolinguistic context

   - ~10% of deaf children are born to Deaf signing parents (→ native signers)
   - education: oral approach, English-based artificial sign systems
   - stigmatization of ASL

Challenges for data collection

   - to isolate language used by Deaf signers among themselves
   - to minimize influence from English
III. Mapping the functional architecture

Basic sentence structure

SVO; other surface word orders attributable to prevalence of topicalizations, left dislocations, null arguments, right dislocations, and sentence-final tags.

Non-manual markings

Linguistic vs. non-linguistic functions of non-manual expressions

Neurolinguistic research:

Acquisition research:
linguistic and affective expressions acquired differentially (McIntire & Reilly 1988, Reilly & Bellugi 1996, Reilly, McIntire, & Bellugi 1990)

Non-manual syntactic markings

• Non-manual syntactic markings are frequently associated with syntactic features residing in the heads of functional projections (e.g., +neg, +y/n, +wh, \( \phi \)-features).

• The non-manual marking may spread over the c-command domain of the node with which it is associated (reflecting relations at Spell-Out).

This spread is optional if manual material is available locally (e.g., in head or specifier position).

However, if no manual material is available locally, then the marking spreads obligatorily so that it may be coarticulated with manual material.

• The intensity of the non-manual marking is greatest at the node of origin, and decreases as distance from the source increases.

Negative constructions

Optional spread over c-command domain:

\[ \text{neg} \]

(1) JOHN NOT BUY HOUSE

‘John is not buying a house.’

Obligatory spread (no manual material available locally):

\[ \text{neg} \]

(3) JOHN BUY HOUSE

‘John is not buying a house.’

Intensity: greatest at Neg node.

Figure 5: Intensity of negative headshake
### Wh-constructions

<table>
<thead>
<tr>
<th>Wh-phrases in Spec, CP</th>
<th>Wh-phrases in situ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spread of non-manual material over IP</td>
<td>Spread of non-manual material over IP</td>
</tr>
<tr>
<td>is <em>optional</em></td>
<td>is <em>obligatory</em></td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>[ t₁ HATE JOHN ]&lt;sub&gt;IP&lt;/sub&gt; WHO&lt;sub&gt;i&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>[ t₁ HATE JOHN ]&lt;sub&gt;IP&lt;/sub&gt; WHO&lt;sub&gt;i&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>[ WHO HATE JOHN ]&lt;sub&gt;IP&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7a</td>
<td>* [ WHO HATE JOHN ]&lt;sub&gt;IP&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7b</td>
<td>* [ WHO HATE JOHN ]&lt;sub&gt;IP&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>[ JOHN SEE t₁ YESTERDAY ]&lt;sub&gt;IP&lt;/sub&gt; WHO&lt;sub&gt;i&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>[ JOHN SEE t₁ YESTERDAY ]&lt;sub&gt;IP&lt;/sub&gt; WHO&lt;sub&gt;i&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>[ JOHN SEE WHO YESTERDAY ]&lt;sub&gt;IP&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11a</td>
<td>* [ JOHN SEE WHO YESTERDAY ]&lt;sub&gt;IP&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11b</td>
<td>* [ JOHN SEE WHO YESTERDAY ]&lt;sub&gt;IP&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**‘Who hates John?’**

**‘Who did John see yesterday?’**

### Distribution

Spread is obligatory when there is no manual material available locally with which the non-manual wh-marking associated with the +wh feature in C can be expressed.

### Intensity

Intensity is greatest near the source of the +wh feature, i.e., at the end of the sentence.
Many tense markers are related to adverbial forms. Nonetheless there are differences in articulation and distribution. Adverbials frequently occur sentence-initially or sentence-finally, while tense markers occur between the subject and negation (if present, and with which the tense marker may contract), in complementary distribution with modals.

(12) **JOHN WILL GO**

‘John will go.’

(13) **JOHN #EX LIKE CHOCOLATE**

‘John used to like chocolate.’

(14) **JOHN SHOULD GO**

‘John should go.’

(15) **JOHN SHOULD NOT GO**

‘John should not go.’

(16) **JOHN SHOULD^NOT GO**

‘John shouldn’t go.’

(17) **JOHN WILL^NOT GO**

‘John won’t go.’

(18) **JOHN EAT**

‘John eats/is eating.’

(19) Tomorrow John goes to Venice. (English)

(20) Demain, je pars pour Paris. (French)

‘Tomorrow, I leave for Paris.’
Agreement

- Spatial representation of φ-features

Figure 7: Determiner / pronominal

Figure 10: Manual expression of verb agreement: beginning and end point of GIVE

Phi-features expressed spatially
Person features
primary distinction: 1st vs. non-1st
multiple distinct non-1st persons

Figure 8: Possessive

Figure 11: Non-manual expressions of subject agreement (head tilt) and object agreement (eye gaze) with the verb GIVE

Figure 9: Reflexive/emphatic

Manual agreement inflections
Verbs: different morphological classes
Agreeing verbs: GIVE, SHOOT
Plain verbs: LOVE

(21) John1 _SHOOT_j Frank
'John shoots Frank.'

(22) John love [IX woman]DP
'John loves the woman.'

Nouns show similar distinctions
Agreeing nouns: HOUSE
Plain nouns: BOY

Non-manual expressions of agreement
Like the syntactic features +neg and +wh, φ-features have non-manual expressions:

- head tilt
- eye gaze

These non-manual agreement markings are optional.
Non-manual expression of \( \phi \)-features within DP

**Non-possessive DPs**

**Without spread** | **With spread**
--- | ---
(23) IX\(_1\) OLD MAN | (24) IX\(_1\) OLD MAN
ht\(_1\) | ________ eq\(_1\)
(25) IX\(_1\) OLD MAN | (26) IX\(_1\) OLD MAN
ht\(_1\) | ________ eq\(_1\)
(27) IX\(_1\) OLD MAN | (28) IX\(_1\) OLD MAN
ht\(_1\) | ________ eq\(_1\)

Obligatory spread if no lexical (manual) determiner is present:

(29) IX\(_1\) OLD MAN

---

**Possessive DPs**

(30) JOHN poss\(_1\) FRIEND\(_j\)

Figure 12: example 30 (head tilt does not spread)

(31) JOHN poss\(_1\) FRIEND\(_j\)

Figure 13: example 31 (head tilt spreads)

---

**Intransitive clauses**

Spread obligatory

(32) JOHN\(_i\) BATHE

(33) JOHN\(_i\) BATHE

(34) JOHN\(_i\) BATHE

‘John bathes’

---

**Transitive clauses**

(35) JOHN\(_i\) SHOOT\(_j\) FRANK\(_j\)

‘John shoots Frank.’

(36) JOHN\(_i\) LOVE MARY\(_j\)

‘John loves Mary.’

(see Figure 11 on previous page)
Licensing of null arguments

A null argument is licensed by an overt expression of subject or object agreement.

ASL allows null subjects and objects, with both plain and agreeing verbs. With verbs that have overt agreement morphology, null subjects and objects are licensed regardless of whether the optional non-manual agreement markings are present. However, with plain verbs, null arguments are allowed only in the presence of non-manual expressions of agreement.

(37)  pro\_i \text{SHOOT}\_j FRANK\_j
    ‘(He/she) shoots Frank.’

(38)  FRANK\_i \text{SHOOT}\_j pro\_j
    ‘Frank shoots (him/her).’

(39)  pro\_i [ ]AGR-S\_i [ ]AGR-O\_j LOVE MARY\_j
    ‘(He/she) loves Mary.’

(40)  JOHN\_i [ ]AGR-S\_i [ ]AGR-O\_j LOVE pro\_j
    ‘John loves (him/her).’

(41)  * pro LOVE MARY

(42)  * JOHN LOVE pro

(43)  JOHN LOVE MARY
    ‘John loves Mary.’

Relative ordering of TP and AgrP

We conclude that tense and agreement projections are distinct and that TP dominates the agreement projections.

Note: Difference in obligatory spread of head tilt within transitive clause vs. optional spread of head tilt in DP follows from existence of manual material within the agreement head of DP.

Consistent with similar crosslinguistic findings (see Abney 1987:chapter 2 on Yup’ik, Bergsland & Dirks 1981 on Aleut, Bittner & Hale 1996:60 on Innuit and other ergative languages, e.g.).
**Aspect**

- modulation of the verb
  - examples: predispositional, susceptative, continuative, incessant, frequentative aspect
    (see Klima and Bellugi 1979)
- lexical ‘perfect’ marker: FINISH

(45) \[ \text{JOHN}_i \text{FINISH} \quad [\text{ ]AGR-Si} \quad [\text{ ]AGR-Oj} \text{VISIT}_j \text{MARY}_j \]

‘John has visited Mary.’

(46) \[ \text{JOHN} \text{NOT FINISH READ BOOK} \]

‘John hasn’t read the book.’

We conclude that the (perfect) aspect projection is distinct from and dominates the agreement projections.

---

**IV. Conclusions**

Conclusions based on the distribution and intensity of non-manual expressions of syntactic features (which provide evidence of the boundaries of functional projections and the location of functional heads):

- Status of agreement features
  Agreement features are like other syntactic features in having non-manual correlates that obey the same generalizations about distribution and intensity.

- Dual representation of agreement features
  There is evidence for morphological agreement features associated with lexical items (manifested by manual agreement inflection) as well as agreement features in functional heads.

- Parallels between transitive/intransitive DP and TP
  With respect to the expression and distribution of non-manual agreement markings, possessive DPs pattern with transitive clauses while non-possessive DPs pattern with intransitive clauses. The one difference between DP and TP is that DP may have manual material in its highest agreement head, resulting in optional spread of the associated non-manual agreement marking.

- Relative ordering of functional projections in the clause
  See figure 1.

  \[ \text{TP} > \text{NegP} > \text{AspP} > \text{AgrS} > \text{AgrO} > \text{VP} \]
References

1. Related publications from the American Sign Language Linguistic Research Project, containing greater descriptive detail and more extensive argumentation. (For more information, see http://www.bu.edu/asllrp; many of our publications are available over the Internet, as are video examples.)


   as well as our replies:


3. For a different account of agreement and the licensing of null arguments in ASL, see:


   4. For a different view of word order and the (non-)existence of hierarchical structure in ASL, see:


   as well as our reply:


5. For excellent descriptive work on non-manual markings, see:


   6. Additional references:


**Note about the photographs:** The photos used here are copyrighted, taken from the following sources:

- Figures 3, 4, 6, 8 from Neidle, Kegl, MacLaughlin, Bahan, and Lee (in press, expected 1999).
- Figures 9, 12, 13 are from Neidle, Bahan, MacLaughlin, Lee, and Kegl (1998).
- Figures 5, 10, 11 are taken from Bahan (1996).
- Figure 7 is taken from Bahan, Kegl, MacLaughlin, and Neidle (1995).