Negation in American Sign Language: The view from the Interface*

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This paper provides an analysis for a phenomenon known as negative incorporation in American Sign Language. Negative incorporation is defined as a twisting outward or downward movement of the hand(s) at the end of a sign. We provided an analysis accounting for both the syntactic and phonological behaviour of negative incorporation in ASL which makes coherent the link between syntax and phonology mediated by a distinct morphological component argued for in the Distributed Morphology framework.

1 Introduction

Similar to other minority language contexts, the field of American Sign Language (ASL) linguistics is relatively young. This fact notwithstanding, in recent years ASL linguistics has benefited from various methods of analysis from a number of theoretical domains since its humble beginnings at Gallaudet, a university for the Deaf in Washington, D.C. However, much of the work on ASL to date has been to establish that ASL is indeed a natural language, sharing many of the properties of spoken languages that do not arise from a difference in modality. The issue that this paper focuses on is negation in ASL, and while there have been a few analyses of negation in ASL (Neidle et al., 1999; Pfau & Quer, 2002; Lidell, 1980), these analyses only account for some of the empirical facts. Consequently, this paper addresses this deficiency by providing an analysis for a phenomenon known as negative incorporation in ASL, which has only been briefly examined by Sandler (1999) who addresses the issue from a phonological perspective.

This paper is organized as follows. Section 2 gives a very brief general overview of ASL and explains the notational conventions to be used throughout the paper. Section 3 provides a detailed description of negation in ASL specifically looking at non-manual negation, manual negation and negation by reversal of orientation or negative incorporation. Next, Section 4 reviews the few analyses of negation that exist with the syntactic literature pertaining to ASL. Following this, Section 5 reviews the sole generative analysis of negative incorporation. In section 6 we propose an analysis based in Distributed Morphology, which allows us to tightly map the connection between phonology and morphology and the narrow syntax. Finally, Section 7 concludes the paper.

2 ASL, the preliminaries

ASL is a visual–spatial signed language articulated with the hands in addition to (portions of) the face and body, used by Deaf communities in the United States and Canada with approximately 250 000–500 000 speakers. Native signers consider themselves to be a linguistic minority with their own culture, values, customs, and traditions distinct from those of the hearing community. The language is superficially SVO; however other word orders are indeed possible (Aarons, 1994). Strictly speaking, ASL is a topic prominent language (see Kiss, 1995 for a discussion of topic-prominence) and has a topic-comment structure similar to Japanese.
2.1 Notational conventions

ASL being a visual-gestural language means that conventions used for transcribing ASL data are different from those used in oral-aural languages. Consistent with the literature pertaining to ASL linguistics (Valli & Lucas, 1992; Isenhath, 1990; Aarons, 1994; Brentari, 1998; Fischer, 2006, among many others), the following conventions are used throughout the paper.

<table>
<thead>
<tr>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Capital letters are standard for representing signs.</td>
<td>CAT</td>
</tr>
<tr>
<td>(b) The sequence of signs from SIGN1 to SIGN2 is accompanied by the non-manual marker t.</td>
<td>---------------------------</td>
</tr>
<tr>
<td>(c) INDEX = a pronoun (subject or object) where a subscript indicates the grammatical person (e.g. 1st).</td>
<td>SIGN1 INDEX1</td>
</tr>
<tr>
<td>(d) [^] is used for compound that consisting of two signs.</td>
<td>NOW^DAY</td>
</tr>
<tr>
<td>(e) Lowercase letters (e.g. don’t-) indicate affixes.</td>
<td>don’t-LIKE</td>
</tr>
<tr>
<td>(f) [↑REVERSE] indicates a reverse orientation of the sign.</td>
<td>SIGN↑REVERSE</td>
</tr>
</tbody>
</table>

Conventions (a) - (e) are adopted from Lidell (2003: 363). However, item (f) is my own creation to indicate a reverse orientation as such a notation is, to the best of my knowledge, non-existent.

3 ASL negation

Negation in signed languages can be marked in two ways: manually and non-manually. Manual negation is used for explicitly negative manual signs, which are produced using the hands. Non-manual negation, on the other hand, refers to negation using any part of the body other than the hands (i.e. the face and head).

3.1 Non-manual negation

In ASL, non-manual negative markers consist of a side-to-side headshake as the primary negator, coupled with various facial expressions such as furrowed brows, the corners of the mouth down or a wrinkled nose, among others (Aarons, 1994: 72). This is shown in Figure 1.

![Initial head position](image1) ![Final head position](image2)

Figure 1: Non-manual negation

A ‘negative’ headshake is used in two ways in ASL: to (i) negate a positive sentence or (ii) to emphasize the negation of a negative sentence. That is, the headshake can be the only indicator of negation in a sentence, as in (1), or a headshake can be used together with a negative lexical item such as NOT, as in (2). Furthermore, when no lexically negative sign is present, the negative headshake must
spread over the entire verbal domain, as illustrated in the contrast between (3) and (4). The headshake is represented by the marker NEG.

---NEG

1. (INDEX$_1$) UNDERSTAND
   ‘I don’t understand.’
   (Fischer, 2006: 186)

2. JOHN MAYBE NOT SHOW-UP
   ‘John may not show up.’
   (Aarons, 1994: 79)

---NEG

3. *JOHN Ø BUY HOUSE
   It is not the case the John is buying a house

---NEG

4. JOHN BUY HOUSE
   It is not the case the John is buying a house
   (Neidle et al., 2000: 44-5)

Observe that in (2), the negative headshake does not negate the negative lexical sign (e.g. it does not make a negative sentence positive), but rather the headshake supports the negation signaled by the negative lexical item.

3.1.1 Non-manual negation is linguistic

A critical breakthrough in ASL research was the discovery that manual signs in ASL are often accompanied by facial expressions which are not affective but rather have a grammatical function. Specifically, evidence from neurolinguistics shows a difference in the processing of linguistic and non-linguistic facial expressions. Neurolinguistic research on languages posits that there is usually a left hemisphere specialization in the brain for language, irrespective of language modality. Corina (1989) ascertained that affective facial expressions are processed by the right hemisphere of the brain, while linguistic facial expressions are processed by the left. Further evidence for the grammatical status of certain facial expressions comes from Anderson & Reilly’s (1997) study on the acquisition of L1 signers. The authors note that affective use of facial expressions are acquired relatively early, at year one, while the grammatical uses of facial expressions come much later, at nearly two years. Stemming from the fact that there is no uniform presence of a headshake in children’s performance throughout the different stages of development, the researchers conclude that, “communicative and grammatical headshakes are mediated by two separate systems” (p. 425). Consequently, the negative headshake is properly linguistic.

3.2 Manual negation

In addition to non-manual negation, ASL has a number of lexically negative manual signs (e.g. NEVER, DON’T), though we focus on NOT (= the thumb extended from a closed fist makes under the chin and the hand moves quickly outward a few inches) for illustration. We do, however, give a brief discussion on DON’T and NEVER in future sections of the paper. NOT is illustrated in Figure 2.
Clausal negation can be indicated manually with a negative particle NOT. In (5a), NOT occurs with non-manual negation and notably, the non-manual negator can be local to the manual sign. In (5b), the non-manual negation can optionally spread over the entire VP domain (e.g. the verb and its object, if there is an object). Lastly, in (5c) we can observe that manual negation without non-manual negation results in ungrammaticality.

\[ \text{---- Neg} \]

(5) a. JOHN NOT BUY HOUSE

\[ \text{-------------------- Neg} \]

b. JOHN NOT BUY HOUSE

c. *JOHN NOT BUY HOUSE

‘John is not buying a house.’

(Neidle et al., 2000: 44-5)

3.3 Negation by negative incorporation or reverse of orientation

Lastly, in addition to using a separate negative sign to negate a clause, ASL has another manual negation strategy used for a small group of predicates. The predicates KNOW, WANT, LIKE, HAVE, and GOOD differ from other predicates in ASL in that they are customarily negated through a reverse in the orientation of hand or hands (e.g. a twisting outward or downward movement). This phenomenon has been termed negative incorporation (Woodward & Desantis, 1977). Consider (6) and (7).

\[ \text{------------------- Neg} \]

(6) (INDEX) WANT \rightarrow \text{REVERSE}

‘I don’t want it.’

\[ \text{------------------- Neg} \]

(7) (INDEX) LIKE \rightarrow \text{REVERSE}

‘I don’t like it.’

Since the discussion here is rather abstract, the sign LIKE is given in Figure 3. LIKE’s negated form is given in Figure 4, which corresponds to (7), to provide a clearer illustration of negation by reverse orientation or negative incorporation.
4 ASL: the syntax of negation

It is often noted in the literature that certain non-manual markings are associated with particular types of clauses. That is, there are distinct non-manual markings that accompany relative clauses, conditional clauses, wh-questions, yes/no questions, rhetorical questions, negative clauses, etc. (Stokoe, 1960; Liddell, 1980, 2003; Aarons, 1994; Padden, 1988 inter alia). The realization of negation in particular, both manual and non-manual, has been characterized descriptively for quite a number of sign languages, including ASL. However, this fact notwithstanding, there is a scarcity of work that deals with syntactic analyses of ASL negation, with some notable exceptions being Pfau & Quer (2002), Liddell (1980), and Neidle et al. (1999). We outline the contents of each analysis in what is to follow.

Liddell’s (1980) analysis concerning negation is as follows. Primarily, the author wants to account for the pattern of non-manual negative making with respect to the data in (8). (8a) is a SVO sentence without topic marking on the subject and (8b) is the same sequence with topic marking on the subject; topic marking in ASL is also achieved non-manually.

\[\text{NEG} \]
\[\text{TOP(IC)} \quad \text{NEG} \]
\[\text{DOG} \quad \text{CHASE CAT} \]
\[\text{‘It is not the case that the dog chased the cat.’} \]
\[\text{‘As for the dog, it didn’t chase the cat.’} \quad (\text{Liddell, 1980: 81})\]

Liddell suggests that one analysis of the negative headshake is to represent it as the surface realization of an underlying single predicate of negation, which he represents with the simplified structure in (9); the topicalized structure receives the analysis in (10). The analyses in (9) and (10) correspond to (8a) and (8b), respectively. The structure in (10) is based on the traditional analysis of topicalization whereby the topicalized constituent is adjoined to the main clause.
Importantly, Liddell (1980: 83) makes the argument that non-manual marking of negation in a sentence is accounted for in terms of command, which is established by the following criteria:

**Command:** Trace up the tree structure until an S node is reached. If it is possible to trace down from that S node to the other element, the first element commands the second.

In (9), which is not topicalized, all elements in the lower clause fall within the scope of ‘n’, because ‘n’ commands all the signs in S₂. However in (10), which is topicalized, the sign DOG is an adjunct to S₁ is no longer commanded by ‘n’.

This analysis of non-manual negation notwithstanding, Liddell (1980:40) notes:

> A proper analysis of this [negative] headshake would require a full analysis of lexical negation, since the two do interact. That is, negative lexical items such as NOT, NOT-YET, NEVER, etc., are often accompanied by a side-to-side headshake. To the best of my knowledge, the interaction between these has never been seriously studied.

This interaction of manual negation and non-manual negation is addressed in the analysis of Neidle et al. (1999). Keeping Liddell’s preliminary analysis in mind and the fact that it does not touch on the interaction between manual negation and non-manual negation, Neidle et al.’s (1999) analysis integrates both manual and non-manual negation. This analysis follows Liddell’s (1980) work as it accounts for the spread of non-manual negation through c-command, which is the modern analogue of command.

Accordingly, Neidle et al. (1999) begin by making the following generalizations with respect to non-manual marking:

i. Non manual markings may spread over the c-command domain of the node with which it is associated (reflecting relations at Spell-Out).

ii. Spread of the non-manual marking is optional if manual material is available locally. However, in the absence of such material, the marking spreads obligatorily so that it may be co-articulated with manual material.

The authors assume that non-manual markings are frequently (though not exclusively) associated with syntactic features located in the heads of functional projections (also see Aarons, 1994 for a similar view); a negative head shake is the non-manual correlate of [+neg]. Furthermore, in ASL the manual sign NOT and the [+neg] feature both occupy the head of NegP, Neg'. The clause structure for ASL as proposed by Neidle et al. (1999) is represented in (11).
This analysis can account for the data in (12) and addresses both manual negation as well as non-manual negation.

(12) a. JOHN [NegP [Neg NOT] [vp BUY HOUSE]]

b. JOHN [NegP [neg NOT] [vp BUY HOUSE]]

c. *JOHN [negP [NOT] [vp BUY HOUSE]]

d. *JOHN [NegP [neg] [vp BUY HOUSE]]

e. JOHN [NegP [Neg +neg] [vp BUY HOUSE]] (Neidle et al., 1999: 44-5)

‘John is not buying a house.’

In ASL, when NOT is present, the headshake (e.g. the realization of [+neg]) can associate with NOT and therefore headshake on NOT only is grammatical in (12a), though this necessarily yields an emphatic reading. Option ally, the headshake can spread over the c-command domain as in (12b) with no emphatic reading. The manual sign NOT without the headshake is ungrammatical, as in (12c). When NOT is absent, [+neg] has no manual material to be articulated with and is therefore forced to spread over its entire c-command domain, as the contrast between (12d) and (12e) makes clear.

Notably, Pfau & Quer (2002) follows Neidle et al. (1999). However, they do point out and subsequently offer a solution to a relatively minor technical problem with that proposal. Specifically, Pfau & Quer argue that in compliance with the NEG-criterion (Haegeman & Zanuttini, 1991; Haegeman, 1995), the head Negº hosting [+neg] must be in a Spec-head configuration with a negative operator and consequently, they assume the presence of a null negative Op in Spec, NegP.

The issue is that the analysis presented in this section does not, in fact, say anything about negative incorporation or reverse orientation negation. As it stands the negative incorporation data is not straightforwardly captured by the present analysis as these verbs require a twisting motion of the hands in the presence of negation. However, it is not apparent what morpho-syntactic feature from this analysis is capable of licensing the necessary twisting motion need for these verbs. Thus, an analysis of these facts will be the subject of Section 6.
5 ASL negative Incorporation: a previous account

Before reviewing the previous analysis of negative incorporation in ASL, it is necessary to briefly outline some of the theoretical background necessary to understand that analysis. Moreover, this background will also be necessary to understand parts of the analysis we present in Section 6.

5.1 ASL phonology: a theoretical background

It was thought that the major articulatory difference between signs and words is that sounds are organized sequentially and signs are simultaneous in formation (Kilma & Bellugi, 1979). However, it is now generally assumed that, in at least some cases, signs are made up of phonological segments divided into movements and holds (Bentari, 1998; Liddell, 1984; Sandler, 1999), known as the Hand-Tier Model or Hold-Movement Model. Dividing signs into H(old) and M(ovement) segments is roughly the equivalent of dividing the speech stream in to vowels and consonants (e.g. a timing or skeletal tier).

A benefit of this type of analysis is that it makes it possible to describe morphological processes that previously could not be described using only a simultaneous representation such as the Cheremic model. Take For instance FALSE in (13).

(13) HM models of FALASE in a string (Adapted from Brentari, 1998: 84)

\[
\begin{align*}
\text{M} & \quad \text{H} & \quad \text{H} & \quad \text{M} & \quad \text{H} \\
\text{a} & \quad \text{b} & \quad \text{c} & \quad \text{d} \\
\text{FALSE STATEMENT} & \quad \text{FALSE STATEMENT}
\end{align*}
\]

When this sign is articulated in isolation it clearly has an H segment; however when it is part of a string it loses its H segment and, due to a stray erasure convention, unassociated Hs will be deleted. Unfortunately, while this model is able to account for signs that require reference to movement, it does not explicitly make reference to hand configuration, palm direction, hand position or hand movement and so the phonemic contrasts of the Cheremic model are lost and subsequently the ability the distinguish between minimal pairs (Brentari, 1998). An ASL minimal pair is established by two signs which share three out of four production parameters: handshape, movement, palm orientation and location. For instance, take the minimal pair established by THINK and KNOW. The two signs have different hand configuration THINK uses the index finger and KNOW uses a ‘B’ hand with the fingers bent at a roughly 45 degree angle from the knuckle joint. The movement (toward the head), location (at the temple) and palm orientation (palm facing the head), however, are all the same for both signs.

The prosodic model is an innovative attempt by Brentari (1998) at unifying aspects of competing models into a comprehensive whole. The prosodic framework the author develops makes use of the method established for finding minimal pairs and phonemic contrasts of the Cheremic framework, and it also takes advantage of the sequential nature of some signs and the application to various morphological process noted by Liddell (1984). Minimally, it adds feature geometry to the equation, as features are hierarchically organized. Brentari (1998) proposes a model of feature geometry which is presented in is basic form in (14).
(14) Feature tree for ASL (Brentari 1998; 94):

```
Root
  | IF
  |   POA
  |   setting
A   non-manual
  | manual
H2  H1
```

For Brentari (1998) there are both Inherent Features (IF) and Prosodic Features (PF) and both features are needed to achieve all lexical contrasts in ASL. In the interest of brevity, we offer only a general description of each of the nodes of this feature geometry. The IF node branches into two nodes: the A( rticulator) node and the Place of Articulation (POA) node whose functions are self-evident. The A node branches into non-manual (e.g. affective facial expression) and manual, with the features of the dominant hand H1 (and non-dominant hand, H2, in the case of two handed signs) dominated by the manual node. Lastly, the prosodic features are the features that spell out the inventory of all underlying types of movement.

5.2 Sandler’s (1999) analysis

Sandler (1999) notes that the majority of morphological processes in ASL are non-concatenative. However, there are a few processes in which morphemes are added linearly. Concerning negative incorporation, Sandler notes that the base signs are truncated, resulting in a monosyllabic, albeit bimorphemic, form on the surface. Sandler’s derivation is outlined in (15).

```
(15) \( H \ M \ H + H \rightarrow H + H \rightarrow H \ M \ H \)
```

Generally speaking, the negative marker is added after the last location of the base form of the sign, WANT in this case. Given this fact, if the negative marker is taken to be added linearly to the base, the result would be a disyllabic word. That is, the last location in the base and the location of the negative marker are distinct as the marker is lower in the signing space, resulting in an epenthetic movement between the two locations. However, Sandler assumes that rather than parsing the input in a more straightforward way, the attested form involves truncation of the first location, and then a straight default movement to the second location. After the location of the negative marker is added, the result is the epenthesis of a single movement, which yields a monosyllabic output. Sandler notes that the behaviour described is typical given a constraint based theory, such as Optimality Theory. That is, when the output differs from the input due to a higher ranked constraint on surface forms. Accordingly, a Mono-syllabicity constraint is crucially ranked above any constraint requiring faithfulness to the input (e.g. MAX-IO).
The issue with this analysis of negative incorporation in ASL is that it is unnecessarily complex and therefore marked as “a marked derivation is associated with computational complexity” (Reinhart 2006: 161). The structural complexity in this case is the epenthesis of a single movement, which yields a monosyllabic output and is only necessary because of the truncation process which feeds it. The process that Sandler (1999) describes can be captured without an appeal to truncation and epenthesis and crucially without losing the generalization on mono-syllabicity. Given minimalist thought on parsimony (e.g. Chomsky, 1995 et seq.), if these facts can be derived in a more simple way, then a more simple derivation is to be preferred and considered a better motivated analysis to negative incorporation in ASL on theoretical grounds. This will be the subject of Section 6 where we outline a simpler proposal for the negative incorporation data in ASL.

6 Distributed Morphology and the phonology-morphology-syntax connection

Harley and Noyer (1999) note that DM rejects the lexicalist hypothesis and therefore there is no lexicon in the sense familiar from generative grammar of the 1970s and 1980s. The tasks which would have previously been within the purview of the Lexical component are taken to be distributed through various other components, hence the name Distributed Morphology. The architecture of the Distributed morphology framework is given in (16):

(16) Distributed Morphology Architecture

In a DM framework, narrow syntax does not have access to anything similar to traditional lexical items, but rather, builds syntactic structures by putting together syntactic-semantic features, via the operations Move and Merge from the set made available by Universal Grammar (Halle & Marantz, 1993; Embick & Noyer, 2007). The term morpheme refers to a syntactic terminal node and its content (e.g. a bundle of syntactic-semantic features), not to the phonological expression of that terminal. In other words, syntactic categories are wholly abstract and lack any phonological content. Crucially, after syntax has built a morpho-syntactic representation, phonological expressions known as Vocabulary Items are inserted at Spell-Out. This process is termed Late Insertion. Another notion central to DM is the idea of syntax-all-the-way-down. That is, the idea that the primary mode of meaningful composition in the grammar, both above and below the word-level is the syntax. Consequently, since syntax acts on sub-word units, at least some word-formation processes are syntactic.

6.1 DM and morphological operations

In DM there are a number of operations that operate on syntactic structures before Spell-Out. That is, after narrow syntax but before vocabulary insertion. We will briefly discuss the two that will be used in this analysis.

6.1.1 Merger
The first of these operations is known as ‘Morphological Merger’. Essentially, morphological Merger ‘switches’ a structural relation between two elements at one level of representation for a different structural relation at a following level.

(17) Morphological Merger (Bobaljik, 2011: 3):

A syntactic complementation relation: \([ X' \ YP ]\) may be realized in the morphology as an affixation relation: \(X\) affixed to \(Y\), the head of \(YP\): \([[ Y ] \ X ]\) or \([[ X [ Y ] ]\)

For illustration we show how Morphological Merger can explain do-support in English. Consider (18).

(18) a.  
\[
\begin{array}{c}
\text{IP} \\
\text{INFL}^0 \\
\text{VP} \\
\text{V}^0 \\
\end{array}
\]

b.  
\[
\begin{array}{c}
\text{X}^0 \\
\text{V}^0 \\
\text{INFL}^0 \\
\end{array}
\]

(Bobaljik, 2011: 3)

Bobaljik (2011) explains that contrasts between French and English have led researchers (e.g. Pollock 1989) to conclude that English lacks a head movement operation deriving (18b) from (18a). In French, main verbs precede certain adverbs and negation (this order derived via head movement) and English main verbs follow them. Since English lacks a syntactic operation deriving (18b) from (18a), then there is a mismatch. That is, \(\text{INFL}^0\) and \(\text{V}^0\) do not form a constituent in the syntax (hence do-support in negative contexts), but they do form such a unit in the morphology (regular inflection in positive contexts) and this process is assumed to be the result of Morphological Merger, which derives (18b).

6.1.2 Fusion

The last operation that we need to discuss is Fusion. Simply put, Fusion occurs when two nodes that have undergone Morphological Merger or that have been adjoined by head movement yield a single node for Vocabulary Insertion. That is, Fusion creates a many-to-one relationship where two syntactic terminal nodes are realized as a single exponent (e.g. portmanteaus). Consider (19).

(19)  
\([[ X [ Y ] ]] \rightarrow [X Y]\)

In (19), items that have undergone Morphological Merger or that have been adjoined by head movement are represented to the left of the arrow and would be considered two terminal nodes for vocabulary insertion. Fusion which results in a single node for vocabulary insertion, is represented to the right.

6.2 Analysis of negative incorporation

In our analysis of negative incorporation in ASL we adopt Neidle et al.’s (1999) structure of the clause for ASL as in (20).
Furthermore, our analysis is situated in the DM framework, and makes use of (i) the notion of Morphological Merger, (ii) Fusion and (iii) the notion of Late Insertion of Vocabulary Items (VIs). That is, the idea that after syntax has built a morpho-syntactic representation, phonological expressions known as Vocabulary Items are inserted. A VI is a relation between a phonological string or ‘piece’ and information about where that piece may be inserted. Vocabulary Items provide the set of phonological signals available in a language for the expression of abstract morphemes and typically are given in the format in (21).

(21)  
Vocabulary Item schema  
context of insertion $\Leftrightarrow$ Signal

Embick & Noyer (2001: 573) explain that there is little utility to any distinction between clitic and affix that is not beholden to the modular distinction of lexical versus syntactic (see for example Zwicky & Pullum 1983), as DM rejects the lexicalist hypothesis. Previously, clitics were thought to be the handled in syntax and inflection within the lexicon. With this thought in mind we can dismiss the perhaps implicit idea that negative incorporation is a lexical process, as both clitics and what has traditionally been understood as affixes or inflection happen in the narrow syntax. Harley & Noyer (1999) note that the difference between ‘clitics’ and ‘affixes’ is now understood as a dependency relation of one element on another, “depending on what the element is and where its dependency relation must be satisfied” (p. 6). Given the fact that it has been shown that negative incorporation is an inflectional process (see Deuchar 1987 and Liskova 2012) and there is no lexicon capable of handling this process, we must propose an analysis that is syntactic in nature to account for data such as (22).

(22)  
(INDEX$_1$) WANT-NEG  
‘I don’t want it.’

However, since (22) requires the ‘affixing’ of the negative morpheme, there needs to be a way to account for this dependency relationship.

Embick and Noyer (2001) note in regard to clitic placement that if the narrow syntax does not provide a host for a clitic (e.g. via head movement), then PF can perform movement operations to satisfy a clitic dependency (p. 557). In terms of these dependencies, Selkirk (1996) analyzes prosodically dependent Vocabulary Items as being of one of three types: free clitics, affixal clitics or internal clitics. These clitics are the adjuncts to phonological phrases, adjuncts to phonological words, and incorporated into phonological words, respectively. These three options are shown schematically below (23); $\phi$ indicates a phrase boundary, and $\omega$ indicates a word boundary.
Of critical importance here is that fact that in a number of signed languages, ASL included, prosodic constituents are isomorphic with syntactic constituents (Sandler, 1999; Pfau, 2008). Arguably, then, given this fact, dependencies can be made in direct reference to the syntactic structure and Selkirk’s (2009: 40, 2011: 429) Match Theory does just this by matching various syntactic constituents to phonological constituents. The two cases that will be of import here are ‘Match Phrase’ and ‘Match Word’.

(i) Match Phrase
A phrase in a syntactic constituent structure must be matched by a constituent of a corresponding type in phonological representation, call it φ.

(ii) Match Word
A word in a syntactic constituent structure must be matched by a constituent of a corresponding type in phonological representation, call it w.

I take negative incorporation to be a case of Lowering, which is the result of Morphological Merger (a movement operation to satisfy a clitic dependency, as it has been argued that V does not raise in the syntax in ASL (Pfau & Quer, 2002). Since lowering happens post-syntactically it does not violate any syntactic movement conditions and crucially lowering takes places before the insertion of vocabulary items. This process is schematized in (24a), lowering, indicated by the arrow, establishes the relevant dependency as it targets a word level, taken to be X₀, and not XP given Selkirk’s match theory. Its output is given in (24b).

(24) a. \[ \text{NegP } \phi \]
   \[ \text{[spec]} \text{Neg'} \]
   \[ \text{Neg w } \text{vP } \phi \]
   \[ \text{[neg]} \text{w} \]
   \[ \text{b. } v^0 w \]
   \[ \sqrt{\text{WANT}} v \]
   \[ \text{NEG}^0 w \]

In (24b) we have the root ‘\(\sqrt{\text{WANT}}\)’ with Neg as an affixal clitic. In this case, we get the insertion of an affixed form of DON’T as negative incorporation has been shown to derive from the sign DON’T historically. The vocabulary item for ASL negative incorporation is given in (25) and it states that if the features in the terminal node [NEG] occur after a verbal element then an affixed form of the sign DON’T is spelled-out.

(25) Vocabulary of ASL negation
\[ \text{[NEG]} \Leftrightarrow -(\text{DO})\text{N’T} / V_\_ ; \text{ where } V \in \{\text{like, want, know}\} \]
The phonological realization of DON’T when it is inserted into the position specified by the rule is given in (26).

(26) \[ \text{DON’T}_{\text{NEG}} \]

\[
\begin{align*}
| & \\
\text{IF} & \\
A & \text{POA} \\
\text{Manual} & \{ \text{low location} \} \\
H1 & \\
\text{palm down} & \text{hand open}
\end{align*}
\]

The full form of DON’T (the non-affixed version) would have a PF node assuming the prosodic model, as that particular realization of the sign conventionally involves movement and the PF portion of a sign’s representation handles movement. Heine (1993) notes that "once a lexeme is conventionalized as a grammatical marker, it tends to undergo erosion; that is, the phonological substance is likely to be reduced in some way and to become more dependent on surrounding phonetic material" (p. 106). This process is known as phonetic erosion and includes: (i) loss of autonomy and adaptation to adjacent units and (ii) phonetic simplification. Thus the affixal form of DON’T only contains Inherent Features and has no PF features. Of particular importance are the specification for H1 the dominant hand (though manual can be split into H1 and H2 in the case of two handed signs) and the inherent place of articulation is a default low location.

The prosodic change that accompanies negation of reverse of orientation verbs in ASL can be accounted for in a straightforward way if we think of the Neg element as a free floating root that gets associated with a base form. Crucially, this root is parasitic on a segmental base in order to be prosodically licensed. Consider (27).

(27) 
\[
\begin{align*}
| & \\
\text{Root} & \\
| & \\
H & M & H & (\text{assimilation}) & \rightarrow & H & M & H - - - - - [\text{NEG}] \\
\text{a} & \text{b} & + & [\text{NEG}] & \rightarrow & \text{a} & \text{b}
\end{align*}
\]

In (27) the association process is one of total assimilation whereby [NEG], which constitutes a root, spread into the final hold position concomitant with the delinking of the root specification of the sign that had previously dominated the hold position which is the root of the sign WANT. The benefit of this analysis is that there is no need to posit truncation of any sort, which also bleeds the epenthesis process. Furthermore this process is still in accordance with the mono-syllabicity constraint in ASL. Therefore, this analysis is more economical than Sandler’s (1999) analysis and thus favoured on theoretical grounds given minimalism’s pursuit of parsimony in representation.

6.3 Manual and non-Manual negation

Harley & Noyer (1998) suggest that morphemes come in two flavours: \textit{f-morphemes} and \textit{l-morphemes}, corresponding, more or less, to a division between functional and lexical categories. The
spell-out of an f-morpheme is deterministic and their content (defined by syntactic and semantic features) is sufficient to determine a unique phonological expression. L-morphemes, on the other hand, are ones for which there is a choice in spell-out. That is, an l-morpheme is filled by a Vocabulary Item which potentially denotes a language-specific concept.

Given the difference between functional morphemes and lexical morphemes, sentential negation would be an f-morpheme as it is essentially just a semantic [+neg] feature regardless of language modality. However, this would cause a problem as the context of insertion of vocabulary items for negation in ASL would result in various signals. Consider the vocabulary list in (28) which would be subject to the rules in (29) and (30).

(28) Vocabulary of ASL negation

a. \([-\text{NEG}] \Leftrightarrow \text{-DO}N’T / \text{V__} ; \text{where } V \in \{\text{like, want, know}\}\]

b. \([-\text{NEG}] \Leftrightarrow \text{NOT} \]
c. \([-\text{NEG}] \Leftrightarrow \text{NEVER} \]
d. \([-\text{NEG}] \Leftrightarrow \emptyset \]

(29) Rules Apply:
A rule applies wherever its structural description is met.

(30) Elsewhere Condition:
Where more than one mutually exclusive rule may apply, (only) the most highly specified rule applies.

The issue is as follows. It has been claimed that NOT is a realization of Neg head (Neidle et al., 1999). However, it has also been claimed that NEVER is the realization of the Neg head (Wood, 1999; Pfau & Quer, 2002) in ASL. Given a DM framework, the only relevant feature of the Neg morpheme is the semantic feature [+neg] and the structural description would be met in (28b-d) and consequently the condition in (29) would apply. However, given negation’s status as an f-morpheme this is problematic as the signal does not point to only one phonological expression. Notably, (28a) is taken care of by the elsewhere condition, since as this rule is highly specified it would be inserted under the given condition. For the other cases, the problem could be solved supposing there were other features at play which create the relevant contrasts. The question is: what would these features look like and where would they come from? We answer these questions in the sections to follow.

6.3.1 NEVER

Concerning NEVER, Wood (1999: 24) analyzes this sign as a negative modal due to the fact that it is in complementary distribution with both NOT and modal verbs. Consider (31).

(31) a. JOHN NEVER EAT FISH
   “John has never eaten fish.”

b. *JOHN NEVER NOT EAT FISH

c. *JOHN NEVER CAN/WILL/SHOULD EAT FISH (Pfau & Quer, 2002: 83)

d. In his analysis, Wood proposes that NEVER is base-generated in Neg° and subsequently undergoes Neg-to-T movement to account for the distribution of NEVER. Wood’s analysis recast in our terms is virtually unchanged. In our terms the result of the movement of Neg to T creates the context for insertion of the Vocabulary Item NEVER. Consider (32).
Under this analysis the morpheme for this modal is spelled out as the terminal node T (32b), which has both NEG and T features resulting from the movement indicated in (32a). Accordingly the vocabulary item for NEVER is as follows.

(33) Revised Vocabulary Item for NEVER

\[ [\text{NEG, T}] \Leftrightarrow \text{NEVER} \]

Since Neg and T have been adjoined through syntactic head movement they are said to have undergone Fusion which yields a single node for Vocabulary insertion and, ultimately, this accounts for why you cannot have both NEVER and NOT or NEVER and modals as the fused category uses up these features, and consequently no other negator or tense head can be spelled out.

6.3.2 NOT

Recall that a ‘negative’ headshake is used in two ways in ASL to (i) negate a positive sentence or (ii) to emphasize the negation of a negative sentence. Concerning (ii), the phenomenon is known as double negation or split negation in the literature. Rowlett (1998) explains that in French many factors relating to the usage of *ne* lead to the conclusion that *ne* is not inherently negative in the modern language. Typically, pre-verbal *ne* is not, in and of itself, sufficient to mark negation, as in (34a). This fact notwithstanding there are a limited number of exceptions such as pseudo-modal verbs such as savoir ‘to know’, as in (34b), and ‘frozen’ archaic expressions, as in (34c).

(34)  

a. *Je ne fais mon travail.*  
   I ne do my work  
   ‘I don’t do my work.’

b. Pierre ne savait que faire.  
P. ne knew what to do.INF  
‘P. didn’t know what to do.’

c. N’ ayez crainte!  
ne have fear  
‘Fear not!’

(Rowlett, 1998: 27)
In contrast to *ne*, Rowlett (1998) considers the element *pas* to be inherently negative and argues that *pas* licenses *ne* by transmitting its [+NEG] feature to Neg′, the locus of *ne*. Since Pollock (1989: 370) has observed that there is “a significant correlation in French between the placement of negation and that of adverbs”, Rowlett argues that negative *pas* is an adverb as it serves to modify something. Consider (35) where *pas* is used in modification.

(35)  
  a. A: Ça va? How are you?  
      B: Pas mal. Not bad.  
  b. A: Qui est-ce qui veut un café? Who’s for coffee?  
      B: Pas moi. Not me.  

(Rowlett, 1998: 43)

Stemming from these facts, Rowlett (1998) suggests that negative *pas* is adjoined to the lexical projection it modifies, VP, and that this adjunction relation reflects the quintessential relationship between *pas* and the predicate as *pas* is a negative predicate adverb.

What we will note is that the data in ASL lend themselves to a similar structural analysis except that the features that dominate the NEG head are inherently negative while NOT is not inherently negative. Consider (36) and (37).

(36)  
  (INDEX₁) UNDERSTAND  
  ‘I don’t understand.’  

(Fischer, 2006: 186)

(37)  
  *JOHN [negP [NOT] [vp BUY HOUSE] ]  

(Neidle et al., 2000:44)

The negative head shake is needed for grammaticality, while attempting to negate a sentence without it results in ungrammaticality, as seen in the contrast between (36) and (37). Furthermore, NOT is used in modification in much the same way we have already seen in French. Consider (38).

(38)  
  A: HOW YOU  
  B: NOT GOOD

Given these striking similarities with respect to the empirical facts, our analysis follows Rowlett (1988) and is as follows.

(39)  
   a. NegP  
       Neg′  
       Neg  
       VP  
[+neg]  
   b. Neg  
       ADV  
       Neg  
       [+neg]  

In ASL the adverb merges as adjunct to VP. This is desirable as the adverb which licenses NOT is not necessary by convention. That is, it is only necessary to license NOT and this has the benefit of accounting for why only non-manual negation is necessary as it is the only inherently negative element. Given Chomsky (1995), Adv/AdvP is both minimal and maximal and thus should still be able to undergo
head adjunction to NEG. Similar to what happens for NEVER, morphological fusion takes place and yields a single node for Vocabulary Insertion. The vocabulary item for NOT is given in (40).

(40) Revised Vocabulary Item for NOT

\[ \text{[NEG, ADV]} \Leftrightarrow \text{NOT} \]

6.3.3 Summing up

We have defined a solution to the problem of how the different structures and therefore features license the various ways NEG gets spelled out in ASL. These features are summarized as follows in the final vocabulary for ASL negation.

(41) Vocabulary of ASL negation

a. \[ \text{[NEG, ADV]} \Leftrightarrow \text{NOT} \]
b. \[ \text{[T, NEG]} \Leftrightarrow \text{NEVER} \]
c. \[ \text{[NEG]} \Leftrightarrow --\text{DON’T} / V \_\_ ; \text{where } V \in \{\text{like, want, know}\} \]
d. \[ \text{[NEG]} \Leftrightarrow \emptyset \]

The vocabulary items are still subject to the rules in (29) and (30), however, it is the case that NOT and NEVER require a particular relation between NEG and another element and thus are only subject to (29). In (41c) and (41d) the trigger for insertion is the same however, here we have a case of allomorphy based on context. We take (41c) to be the more specific case and thus will be inserted when the relevant condition is met given (30); otherwise (41d) is spelled out.

7 Conclusions

This paper focused on negation in ASL, and while there have been a number of analyses of negation in the literature pertaining to ASL (Neidle et al., 1999; Pfau & Quer, 2002; Lidell, 1980 Sandler, 1999), these analyses only accounted for some of the empirical facts. Specifically these analyses either did not account for negation by negative incorporation or had theoretical drawbacks. Following this, we provided an analysis accounting for both the syntactic and phonological behaviour of negative incorporation in ASL which makes coherent the link between syntax and phonology mediated by a distinct morphological component argued for in the Distributed Morphology framework. Our prosed analysis of negative incorporation contra Sandler (1999) posited no truncation or epenthesis, while adhering to the mono-syllabic constraint in ASL. Therefore, our analysis is more economical than Sandler’s (1999) analysis and thus favoured on theoretical grounds. Lastly, we showed how different negative morphemes get spelled out in ASL.

References


