The Prosody of Topic and Focus: Explained away in phases*

October 24, 2007

Abstract

This paper proposes a phase-based analysis for prosody on the interface at which prosodic cues are incurred. Evidence from American Sign Language provides a platform for understanding prosody, in that the syntactic "non-manual markings," which are articulated overtly with syntactic constituents, correspond systematically with prosodic boundaries. The proposed analysis approaches the prosody of topic and focus in ASL via Agree, to show that a phase-based derivation yields independently motivated evidence for an account of prosodic cues.

Introduction

American Sign Language (ASL) employs non-manually marked expressions as overt articulations of prosodic domains, naturally occurring with their corresponding syntactic constituents. These 'spreads' are annotated as labeled lines above their respectively marked domains, as shown in (1) below, an example for a non-manually marked preposed topic, 'bagel'.

(1) tp1
BAGELS, ME LIKE BLUEBERRY.
'As for bagels, I like blueberry bagels.'

Desiderata in the literature motivate us to capture mechanisms by which the computation enters into the interface for prosody (Selkirk 1986). This paper introduces a phase-based account of focus and topic in ASL, as realized by syntactic non-manual prosodic markings, to give rise to word order constraints. The proposed analysis delivers an independently motivated method within the computational system that captures the triggers for focus and topic prosody, crosslinguistically.

Since ASL has overtly marked prosodic domains via syntactic non-manual markings, a phase-based analysis of ASL can tell us 1) How non-manual markings—and, ultimately, prosodic markings in general—interact structurally, 2) How non-manual markings derive the domain boundaries of their corresponding constituents, and 3) How to model a crosslinguistic account for deriving the prosodic structures that drive the Spell-Out of larger phrasal structures.

*Thanks to my consultants: Catherine Kettrick, Patty Liang, Tobias Cullins.

1 Overview

Non-manual markings (NMMs) in ASL[1] are closely related to the introduction of specific lexical items (Liddell 1980). Topic and Focus in language serve to drive sentence word order variation by moving certain material—marked by prosodic boundaries—to focus positions. This section overviews the various options available in ASL for applying prosodic topic and focus using NMMs.

1.1 Topic

Topicalization, across languages, functions crucially in the semantic marking of a displaced phrase. While interpretations vary, the uniform judgment is that sentences such as (2a) are grammatical only via linking, but are impossible otherwise without the existential quantificational scope obtained by topicalization, as in (2b).

(2) a. * DOG CHASE CAT
'The dog chased the cat'

b. tp tp
CAT_j DOG_i $_iCHASE_j$
'The dog chased the cat'

That is, while the literature extensively discusses SVO word order sentences of the type in (2a) as grammatical structures, a few sessions with native speakers provide deeper insight into the distinction between (2a) and (2b). ASL is a spatial language which establishes points of reference for its arguments via non-arbitrarily marked loci. These loci become the relevant points of contact for subsequent d-linking to their respective arguments. As such, without prior establishment of their loci, the arguments in (2a) are impossible to articulate. Topic NMMs function in ASL to create this effect.

All consultants flatly rejected sentences of SVO type as in (2a)–initially. Only when coaxed into a semantic universe in which the arguments *DOG* and *CAT* already existed within ASL's spatial loci of reference did (2a) become possible. Sentences such as (2b) were always grammatical. Their arguments are introduced by the combination of manual locus establishment and non-manual topicalization.

The requirement for spatial allocation of arguments accompanied by topic NMM is critical indication for word order in ASL. Word order is not, as previously believed, free (Frishberg 1980). It is constrained by syntactic non-manual markings and the constituencies they render. Prior to linking, it is restricted to introduce its arguments before its verb.

1.2 Focus

The syntactic preposing of constituents assumes a meaning component described as 'exhaustive listing' (Szabolcsi 1981), or as 'identification by exclusion' (Kenesei 1964). By assuming the primary stress of the sentence, these preposed focuesed material eradicate the stress of the subsequent V.

Focused wh-elements in ASL are established in two ways. The first, referred to here as Focus Type I is the canonical application of a wh-focus, which appears in Spell-Out on the right periphery under the prosodic domain of the non-manual wh-marking:

(3) Focus Type I (focus-wh): *any wh-item* on the right periphery as focused phrase

[1]Denoted as labeled lines above their simultaneously articulated constituents in these examples.

a. foc
JOHN SEE YESTERDAY [WHO]?

b. ? JOHN SEE YESTERDAY [WHO]?
'*Who* did John see yesterday?'

c. foc
JOHN SEE YESTERDAY [WHICH STUDENT]?

d. ? JOHN SEE YESTERDAY [WHICH STUDENT]?
'*Which student* did John see yesterday?'

The second, referred to here as Focus Type II, is established by the reduplication of a "morphologically simple" item in the right periphery. Note that the non-manual markings for the wh-phrase at the left edge and that of the reduplicated emphasis-focused wh-element at the right are not the same marking.

(4) Focus Type II (emphasis-focus): *single wh-item* reduplicated on the right

a. wh e-foc
[WHICH STUDENT] JOHN SEE YESTERDAY [WHICH]?

b. ? [WHICH STUDENT] JOHN SEE YESTERDAY [WHICH]?
'WHICH student did John see yesterday?'

c. wh e-foc
* [WHICH STUDENT] JOHN SEE YESTERDAY [WHICH STUDENT]?

d. * [WHICH STUDENT] JOHN SEE YESTERDAY [WHICH STUDENT]?
'WHICH STUDENT did John see yesterday?'

2 Previous Analyses

This section overviews several treatments in previous literature for the puzzles involving focused word order and reduplication in American Sign Language described above.

2.1 Previous Accounts or Topicalization in ASL

Not much has been said as to the effects of ASL topic NMMs on phrase structuring. Neidle (2000) has analyzed topicalized phrases in ASL to carry a Force feature, which drives movement of the topic to a position that satisfies raising above a C head.

Her analysis also remarks upon a slight but crucial difference in the articulation of the NMM topic, `tp1` in (2a) and that of `tp` in (2b). The difference reflects the slight but critical distinction between the two ASL types of topic. The first is generally used with displaced arguments and their ensuing 'displaced semantics.' It must apply to arguments with pre-established spatial loci, should they require them. The second is employed in conjunction with the establishment of spatial loci prior to linking. This paper will discuss the second phenomena.

2.2 Focus Accounts

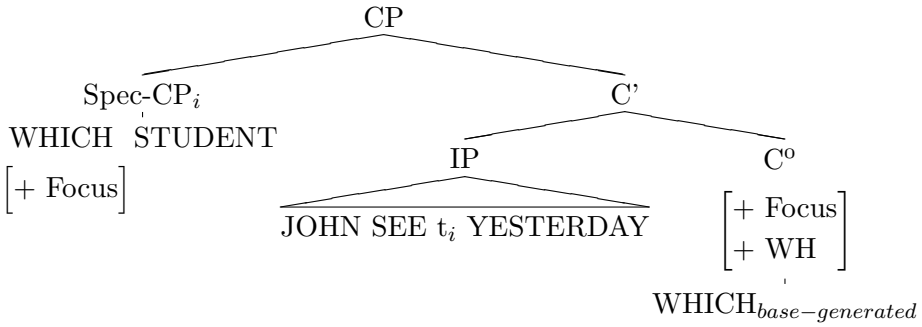
While the conditions for focus in ASL in (19-4) appear at first to be substantially more complex than those seen for topic in (2), section 3 will show that an Agree-based, phase analysis of these events actually simplifies derivation for all the relevant phenomena.

Non-echo questions can be be derived only if the wh-operator is associated with a FOCUS feature (Horvath 1985). Zubizarreta (1998) defines focus as the "non-presupposed" part of a sentence—that is, the part of a statement that substitutes for the wh-phrase in the corresponding context question. The following three analyses have aimed to cover these generalizations for the above phenomena.

2.2.1 Leftward Movement Analysis: Petronio and Lillo-Martin

Petronio and Lillo-Martin (1997) posit a construction that houses reduplicated wh-items, such as in (4) for Focus Type II, within a right-edge projection as a base-generated head carrying `[+FOCUS]`. Note that this analysis is favorable also for (19) of Focus Type I structures, for which the base-generated wh-element simply stays in place.

(5)

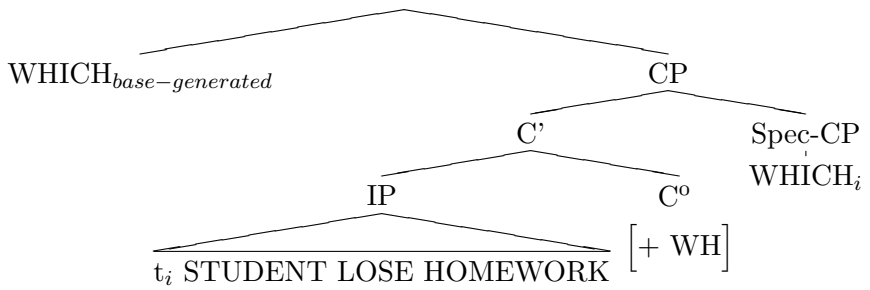


In (5), the `[+FOCUS]` feature of the embedded wh-element licenses the final double. For Type I focusing as in (19a), this wh-item simply does not vary. For Type II, the phonetic content of the embedded twin of (4a) is simply copied higher, as in (19). However, this construction fails to predict focus I type questions in which an *entire wh-phrase* appears at the right-edge, as in (3b) (Neidle et al. 2001), since a phrase is banned from moving into a head position.

2.2.2 Rightward Movement Analysis: Neidle et al.

Neidle et al. (2001) propose a construction for double constructions in which a higher wh-element is *moved rightward* to a right-branching Spec-CP. This resolves the case for Focus Type I structures in which complex DP wh-phrases, not just their heads, appear in the right periphery.

(6)



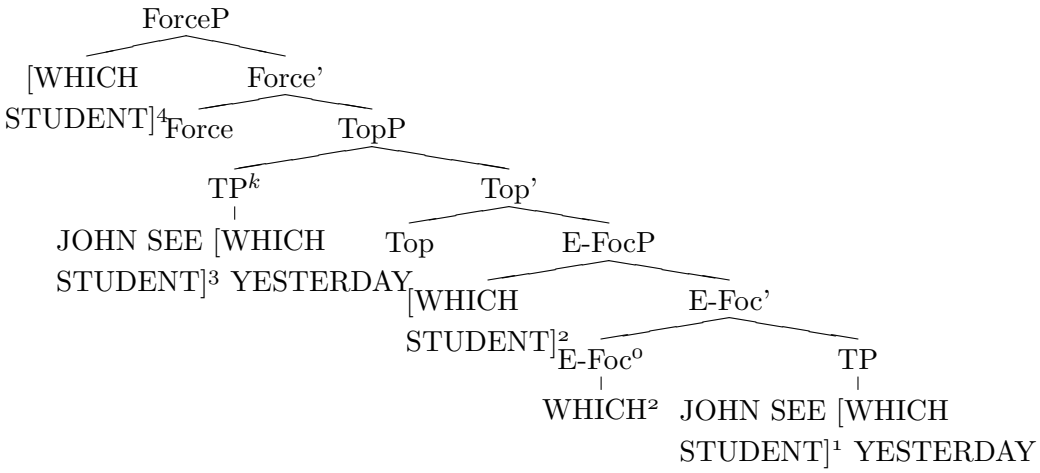
As shown in (6), the leftmost double is a base-generated element within the Spec of a higher projection (of an unspecified label). Its embedded twin is simply moved rightward to a right-branching Spec-CP. Conceptually, however, this analysis requires

a special provision for rightward movement with a rightward Spec-CP for handling doubles. As a violation of Kayne's (1994) ban on rightward movement, it argues for an extra operation unaccounted for by Universal Grammar. In fact we do not require the ancillary device to systematically derive our results.

2.2.3 The Copy and Merge Treatment of Doubles: Nunes and Quadros

Nunes and Quadros (2004) introduce a Copy-Merge analysis of the Type II Emphasis-Focus sentences. Their proposed account treats the deletion of copies as triggered by linearization considerations, and shipped to Spell-Out via morphological fusion of the relevant material.

(7)



(8) [ForceP [WHICH STUDENT]4 [Force' Force [TopP [TP JOHN SEE ~~[WHICH STUDENT]~~3 YESTERDAY] [Top' Top[prs] [E-FocP ~~[WHICH STUDENT]~~2 [E-Foc' #**WHICH+E-Foc**# ~~[TP JOHN SEE [WHICH STUDENT]~~1 YESTERDAY]]]]]]

The structure in (7) yields (8). The wh-element is doubled via adjunction to a higher E-Focus head and realized as another link in the wh-chain. Enumerated links of a chain are realized as *nondistinct copies* of the same element. A conceptual issue arises with this analysis, however, as it seeks to delete the appropriate elements of the wh-chain out of a kind of morphological Fusion with which to coerce the desired output. Morphological Fusion yields output that is morphologically distinct from the syntactic derivation since elements prior to fusion are irrecoverable. Fusion is therefore a special treatment in chain formation specific to only these doubled constructions.

As conceived originally by Petronio and Lillo-Martin (1997), the wh-focus questions of Type I exhibit strong similarities to the double constructions of TYPE II. We therefore desire a return to their original conception for a single analysis that handles both wh-constructions. It should also be tasked to follow Kayne's (1994) Antisymmetry laws, without resorting to tacit assumptions or ancillary devices. The next section details such an analysis, via an Agree-based, phase approach.

3 Proposal: an Agree-based, phase analysis of prosody

NMMs operate in ASL as prosodic cues in close relationship with lexical entries and the syntactic structures of their domains. Movement in ASL is driven by features of

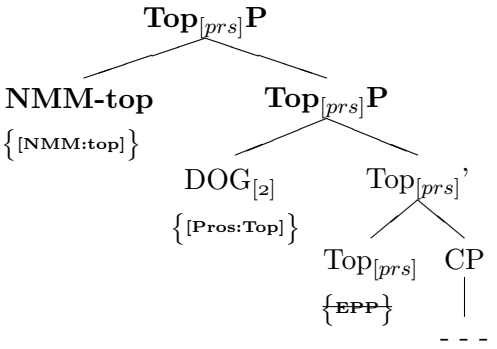
movement in some way triggered by NMMs (Neidle et al. 2000, Sandler and Lillo-Martin 2006, Nunes and Quadro 2004). To capture this strong featural tie, the proposed analysis introduces a C complementizer head type, carrying a strong feature which operates to drive the evaluation and movement of prosodically featured NMM elements.

The proposed head is realized in the derivation as the head of a relevant layer of an exploded CP. For example, in topicalization, it will be Top_{prs}; for emphasized focus, $E\text{-}Foc_{prs}$, and for wh-questions, $C\text{-}wh_{prs}$. This 'prosody head' carries a strong EPP feature awaiting licensed displacement of topicalized, e-focused, and wh-phrase arguments and elements driven by their unvalued features, evaluated in the derivation as [pros:Top], [pros:E-foc], and [pros:wh].

We can posit that since NMM features are closely, and prosodically, related to their co-occuring constituents, 1) NMMs are features of their functional heads and bear valued prosodic feature cues, and 2) they land at an extended Spec of their relevant CP layer. I will call these features *NMM-top*, *NMM-E-foc*, and *NMM-wh* for topicalized, emphasis-focus, and wh-question prosody, respectively. The unvalued non-manual features of prosodically rich constituents trigger their corresponding NMM features into their Spec positions.

An example of the proposed exploded C containing such a NMM expansion is provided in (9). Movement of $DOG_{[2]}$ into its argument-first position in Spec-$Top_{[prs]}$'s is licensed by the EPP feature in $Top_{[prs]}$. An unvalued feature [nmm:?] at Spec-$Top_{[prs]}$P would then be filled, barring Inclusiveness violations, by the valued feature [nmm:top] of a NMM-top node.

(9)



NMMs thereby extend the domain of a phase while containing its available contents, according to the Phase Impenetrability Condition discussed by Chomsky (2001), by which only the Spec/edge of a phase is accessible to its selector.

The proposed analysis shows that the abstract syntactic features intimated at by Neidle et al. (2001) find their formal relevance in the Agree-based computation introduced by Chomsky (2000). NMM features are introduced in this account as carrying [+interpretable], or valued, features, much in the vein of Chomsky's agreement features, at the starting point, S_0, of the Numeration. As a given NMM's associated functional head is assembled by the computation, a trigger operation deposits the NMM feature within its corresponding edge position. The NMM's valued features are then evaluated by unvalued counterparts residing in the posited Spec-positions.

3.1 An Agree system derivation for prosodically-cued topicalization

Recall that the desired order for introducing new arguments in ASL discourse is object-first. The manner by which this order is maintained is via topicalization. The example for topicalization from (2) are repeated here:

(10) a. * DOG CHASE CAT
? 'The dog chased the cat'

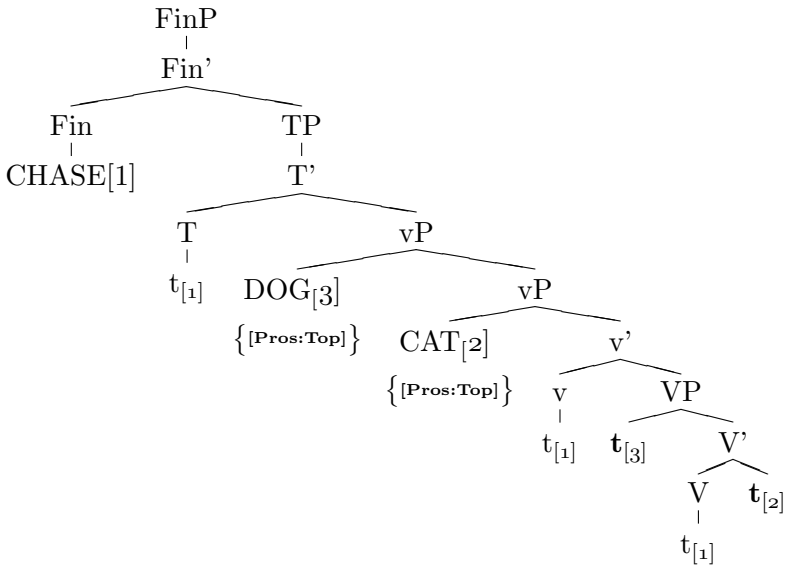
b. $\underline{\text{tp}}_{\text{CAT}_j}\ \underline{\text{tp}}_{\text{DOG}_i}\ {}_i\text{CHASE}_j$
'The dog chased the cat'

The numeration N_1 begins in this derivation with FinP of an exploded CP fully evaluated. (11)-(16) detail the derivational steps for topicalizing the two arguments of (10), to obtain the desired object-first word order.

(11) a. $N_1 = \{\text{Top}_{[prs]2}, \text{Fin}_0, \text{T}_0, \text{v}_0, \text{DOG}_0, \text{CHASE}_0, \text{CAT}_0\}$

b. $[_{\text{FinP}}\ \text{Fin CHASE}_{[1]}\ [_{\text{TP}}\ \text{T}\ \text{t}_{[1]}\ [_{v\text{P}}\ \text{DOG}_{[\text{pros:Top}][3]}\ [_{v\text{P}}\ \text{CAT}_{[\text{pros:Top}][3]}\ [_{v'}\ v\ \text{t}_{[1]}[_{\text{VP}}\ \text{t}_{[3]}[\ \text{t}_{[1]}\text{t}_{[2]}]]]]]]$

c.



This is followed by the merge of the head $\text{Top}_{[prs]}$ with its strong EPP feature, for licensing movement for the goal CAT into Spec-$\text{Top}_{[prs]}$P. The [+interpretable] feature [pros:Top] of the goal CAT is evaluated with its matching [-interpretable] feature [pros:] at the Spec-position of its $\text{Top}_{[prs]}$P probe, thereby checking the EPP feature of $\text{Top}_{[prs]}$.

(12) a. $N_2 = \{\text{Top}_{[prs]1}, \text{Fin}_0, \text{T}_0, \text{v}_0, \text{DOG}_0, \text{CHASE}_0, \text{CAT}_0\}$

b. $[_{\text{Top}_{[prs]}\text{P}}$ **[pros:?]** $\textbf{Top}_{[prs]}$ **{EPP}** $[_{\text{CP}}\ \text{C}\ [_{\text{FinP}}\ \text{Fin CHASE}_{[1]}\ [_{\text{TP}}\ \text{T}\ \text{t}_{[1]}\ [_{v\text{P}}\ \text{DOG}_{[\text{pros:Top}][3]}\ [_{v\text{P}}\ \text{CAT}_{[\text{pros:Top}][2]}\ [_{v'}\ v\ \text{t}_{[1]}[_{\text{VP}}\ \text{t}_{[3]}[\ \text{t}_{[1]}\text{t}_{[2]}]]]]]]]]$

(13) a. $N_2 = \{\text{Top}_{[prs]1}, \text{Fin}_0, \text{T}_0, \text{v}_0, \text{DOG}_0, \text{CHASE}_0, \text{CAT}_0\}$

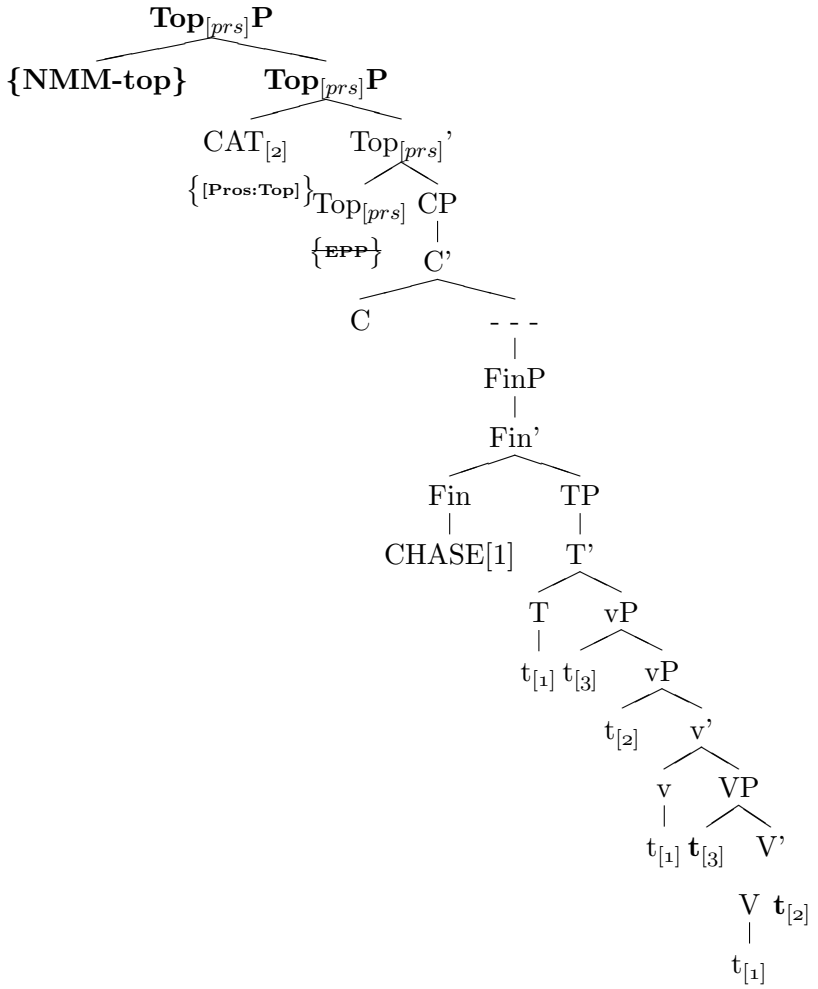
b. $[_{\text{Top}_{[prs]}\text{P}}$ $\textbf{CAT}_{\textbf{[pros:Top]}[2]}$ **[pros:NMM]** $\text{Top}_{[prs]}$ ~~**{EPP}**~~ $[_{\text{CP}}\ \text{C}\ [_{\text{FinP}}\ \text{Fin CHASE}_{[1]}\ [_{\text{TP}}\ \text{T}\ \text{t}_{[1]}\ [_{v\text{P}}\ \text{DOG}_{[\text{pros:Top}][3]}\ [_{v\text{P}}\ \textbf{t}_{[2]}\ [_{v'}\ v\ \text{t}_{[1]}[_{\text{VP}}\ \text{t}_{[3]}[\ \text{t}_{[1]}\text{t}_{[2]}]]]]]]]]$

The NMM-top head is now available as a featural projection of the merged topic, CAT, for further expansion of the edge of $\text{Top}_{[prs]}$P.

(14) a. $N_2 = \{Top_{[prs]_1}, Fin_o, T_o, v_o, DOG_o, CHASE_o, CAT_o\}$

b. $[_{Top_{[prs]}P}$ **[NMM-top]** $[_{Top_{[prs]}P}$ $CAT_{[pros:Top]_{[2]}}$ **[pros:NMM]** $Top_{[prs]}$ ~~{EPP}~~ $[_{CP}$ C $[_{FinP}$ Fin $CHASE_{[1]}$ $[_{TP}$ T $t_{[1]}$ $[_{vP}$ $DOG_{[pros:Top]_{[3]}}$ $[_{vP}$ $\mathbf{t}_{[2]}$ $[_{v'}$ *v* $t_{[1]}[_{VP}$ $t_{[3]}[$ $t_{[1]}t_{[2]}]]]]]]]]]]

c.



The derivations in (12-14) are repeated for topicalization of the Subject, DOG.

(15) a. $N_2 = \{Top_{[prs]_o}, Fin_o, T_o, v_o, DOG_o, CHASE_o, CAT_o\}$

b. $[_{Top_{[prs]}P}$ **[pros:?]** **Top**$_{[prs]}$ **{EPP}** $[_{CP}$ C $[_{Top_{[prs]}P}$ **[NMM-top]** $[_{Top_{[prs]}P}$ $CAT_{[pros:Top]_{[2]}}$ **[pros:NMM]** $Top_{[prs]}$ ~~{EPP}~~ $[_{CP}$ C $[_{FinP}$ Fin $CHASE_{[1]}$ $[_{TP}$ T $t_{[1]}$ $[_{vP}$ $DOG_{[pros:Top]_{[3]}}$ $[_{vP}$ $\mathbf{t}_{[2]}$ $[_{v'}$ *v* $t_{[1]}[_{VP}$ $t_{[3]}[$ $t_{[1]}t_{[2]}]]]]]]]]]]

(16) a. $N_2 = \{Top_{[prs]_o}, Fin_o, T_o, v_o, DOG_o, CHASE_o, CAT_o\}$

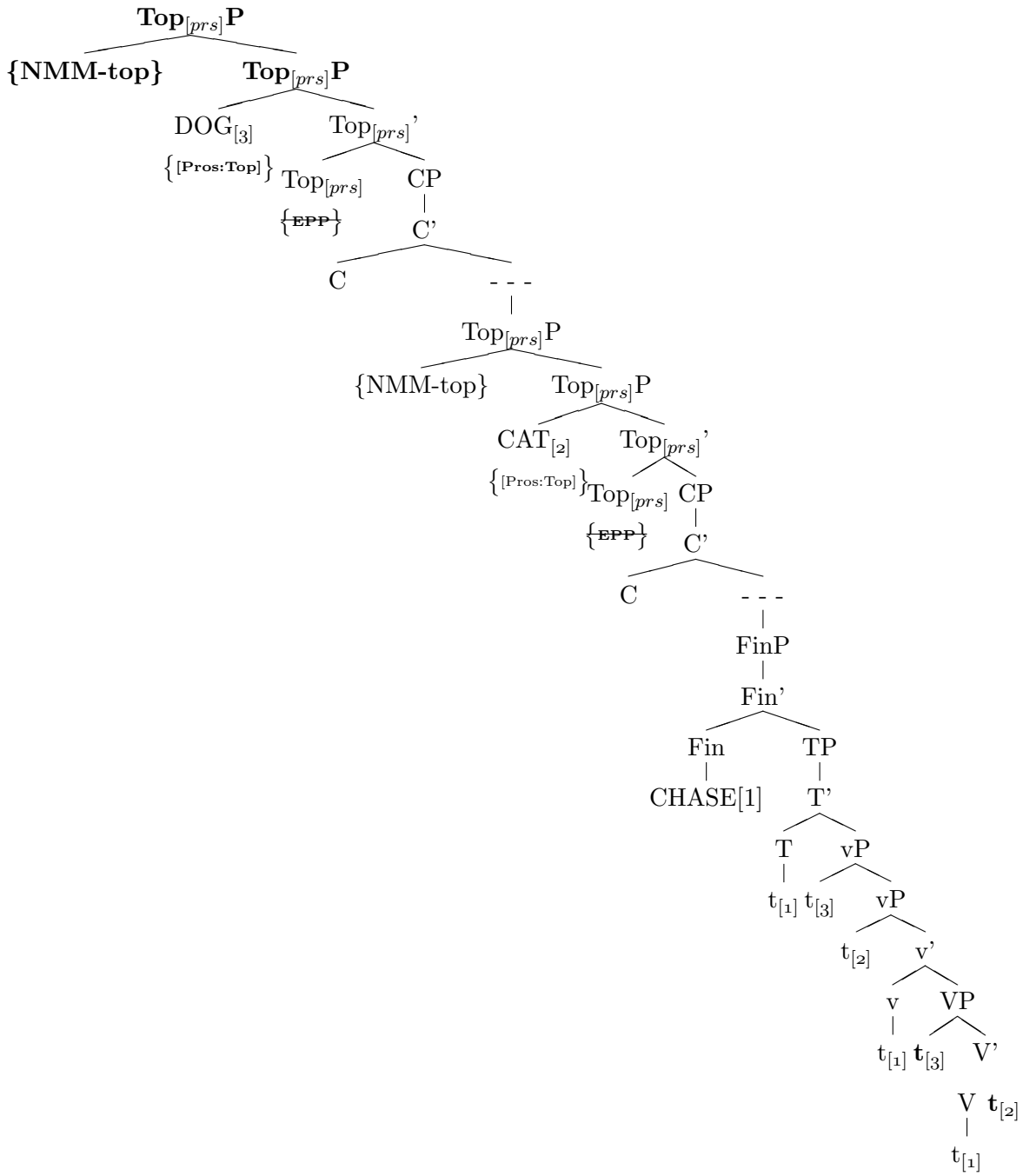
b. $[_{Top_{[prs]}P}$ $\mathbf{DOG}_{[pros:Top]_{[3]}}$ **[pros:NMM]** $Top_{[prs]}$ ~~{EPP}~~ $[_{CP}$ C $[_{Top_{[prs]}P}$ **[NMM-top]** $[_{Top_{[prs]}P}$ $CAT_{[pros:Top]_{[2]}}$ **[pros:NMM]** $Top_{[prs]}$ ~~{EPP}~~ $[_{CP}$ C $[_{FinP}$ Fin $CHASE_{[1]}$ $[_{TP}$ T $t_{[1]}$ $[_{vP}$ $t_{[3]}$ $[_{vP}$ $\mathbf{t}_{[2]}$ $[_{v'}$ *v* $t_{[1]}[_{VP}$ $t_{[3]}[$ $t_{[1]}t_{[2]}]]]]]]]]]]

(17) a. $N_2 = \{Top_{[prs]_o}, Fin_o, T_o, v_o, DOG_o, CHASE_o, CAT_o\}$

b. $[_{Top_{[prs]}P}$ **[NMM-top]** $[_{Top_{[prs]}P}$ $DOG_{[pros:Top]_{[3]}}$ **[pros:NMM]** $Top_{[prs]}$ ~~{EPP}~~ $[_{CP}$ C $[_{Top_{[prs]}P}$ **[NMM-top]** $[_{Top_{[prs]}P}$ $CAT_{[pros:Top]_{[2]}}$ **[pros:NMM]** $Top_{[prs]}$ ~~{EPP}~~ $[_{CP}$ C $[_{FinP}$ Fin $CHASE_{[1]}$ $[_{TP}$ T $t_{[1]}$ $[_{vP}$ $t_{[3]}$ $[_{vP}$ $\mathbf{t}_{[2]}$ $[_{v'}$ *v* $t_{[1]}[_{VP}$ $t_{[3]}[$ $t_{[1]}t_{[2]}]]]]]]]]]]

The structure in (17b) successfully provides the desired readout of (10b), and not (10a). The corresponding X-bar representation is shown below.[2] Crucially, note that the perseveration of the NMMs is closely linked, as desired by the function of our two C-type$_{Pros}$ heads, across the domain of the two CP layers.

(18)



[2]The ellipses, as with the derivations in (11-17), denote material in between the CPs accounted for.

3.2 An Agree system derivation for prosodically-cued focus questions

This subsection shows that the puzzling stories behind wh-focus questions, repeated below with some bracketing, even those involving wh-movement and pied-piping of wh-elements to a higher projection, may be generated via two systematic steps incorporating Remnant Movement (Koopman and Szabolcsi 1994) and Resumptive Stranding (Sportiche 1988, Boeckx 2004).

(19) Focus Type I (focus-wh):

a. foc
JOHN SEE YESTERDAY WHO?
'*Who* did John see yesterday?'

b. foc
JOHN SEE YESTERDAY WHICH STUDENT?
'*Which student* did John see yesterday?'

(20) Focus Type II (emphasis-focus):

a. wh e-foc
[[WHICH STUDENT] JOHN SEE YESTERDAY [WHICH]]?
'WHICH student did John see yesterday?'

b. wh e-foc
*[[WHICH STUDENT] JOHN SEE YESTERDAY [WHICH STUDENT]]?
'WHICH STUDENT did John see yesterday?'

Non-manual markings are closely related to the introduction of specific lexical entries (Liddell 1980). In the example (20a), the lexical entry WHICH necessarily carries a valued feature for prosody, [Pros:E-foc]. The NMM of a wh-focus phrase corresponds to the *non-presupposed portion* of the sentence (Zubizarreta 1998), and the NMM of a wh-question corresponds to the *entire wh-clause*, as represented in (20a). We will see in the following steps that the proposed two C-type heads of this analysis capture the desired prosodic domains for focus-wh and wh-questions just as they did for topicalization.

3.2.1 Step I: Remnant Movement

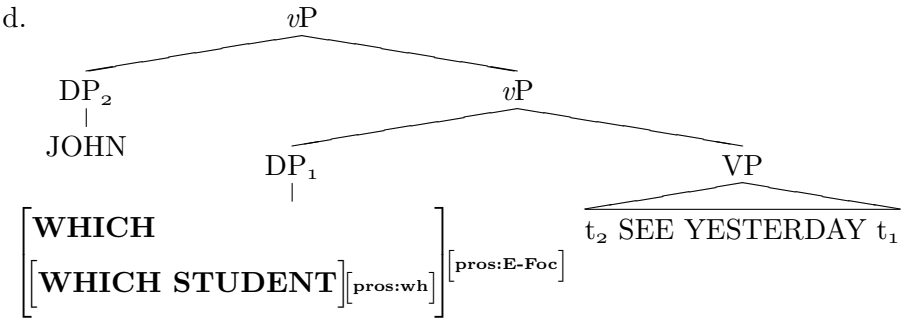
The first of the two steps involves remnant movement of the relevant constituents to their desired positions, as carried out via feature checking of their agreement features and the strong EPP features carried by of the relevant C_{pros}. The first instance of remnant movement operates on the DP [WHICH [WHICH STUDENT]] into Spec-vP, followed by movement of the argument JOHN into an extended Spec-vP. (21) shows *v*P fully evaluated.

(21) a. N_1={C-wh$_{[prs]_1}$, C_1, E-Foc$_{[prs]_1}$, v_0, $JOHN_0$, SEE_0, $YESTERDAY_0$, $WHICH_0$, $WHICH_0$, $STUDENT_0$.

b. [$_{vP}$ $JOHN_2$ [$_{vP}$ [$_{DP}$ WHICH [WHICH STUDENT]$_{\textbf{[pros:wh]}}$]$_{\textbf{[pros:E-Foc]}_1}$ [$_{VP}$ t_2 SEE t_1 YESTERDAY]]]

c. [$_{vP}$ [JOHN [WHICH [WHICH STUDENT]] SEE YESTERDAY]]

d.



The E-Foc$_{[prs]}$ head is merged in (22b) carrying a strong EPP feature. It is the Minimal Domain of this feature will carry out the coarticulation of the emphasis-focus-marked constituent. The unvalued feature for a prosodic cue, [pros:?] resides in its Spec-head as a probe to be evaluated by the [pros:E-Foc] of the complex DP [WHICH [WHICH STUDENT]]. This Emphasis-focus item, triggered by E-Foc$_{[prs]}$'s strong feature, moves to its licensed position in (22c):

(22) a. N_2={C-wh$_{[prs]1}$, C_1, E-Foc$_{[prs]0}$, v_0, JOHN$_0$, SEE$_0$, YESTERDAY$_0$, WHICH$_0$, WHICH$_0$, STUDENT$_0$.

b. [E-Foc$_{[prs]}$P **[pros:?]** E-Foc$_{[prs]}$**{EPP}** [vP JOHN$_2$ [vP [DP WHICH [WHICH STUDENT]$_{\textbf{[pros:wh]}}$]$_{\textbf{[pros:E-Foc]}_1}$ [VP t_2 SEE t_1 YESTERDAY]]]

c. [E-Foc$_{[prs]}$P **[DP WHICH [WHICH STUDENT]$_{\textbf{[pros:wh]}}$]$_{\textbf{[pros:E-Foc]}_1}$** E-Foc$_{[prs]}$ ~~**{EPP}**~~ [vP JOHN$_2$ [vP t_1 [VP t_2 SEE t_1 YESTERDAY]]]

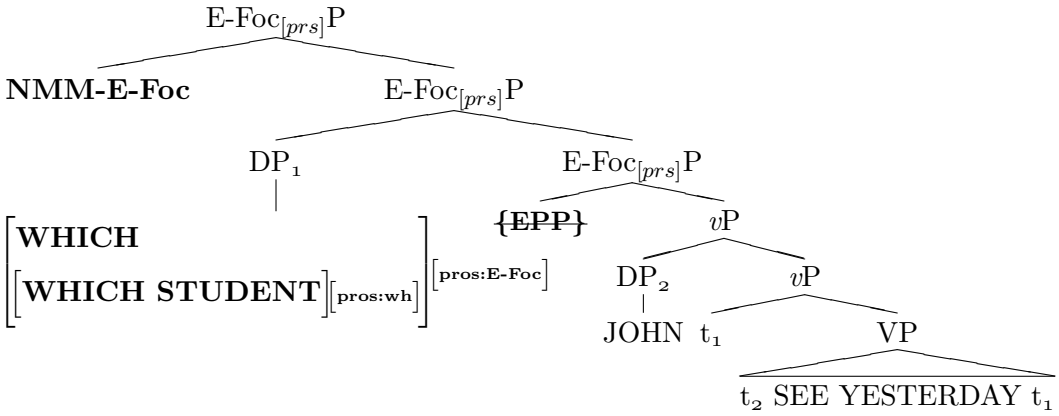
d. [**E-Foc$_{[prs]}$P** [WHICH [WHICH STUDENT]] [SEE [JOHN YESTERDAY]]]

This triggers immediately the feature extension of the E-Foc Projection. The existing edge cues the growth of E-Foc$_{[prs]}$ seen in (22e) for the prosodic feature, NMM-E-Foc.

e. [E-Foc$_{[prs]}$P **NMM-E-Foc** [DP WHICH [WHICH STUDENT]$_{\text{[pros:wh]}}$]$_{\text{[pros:E-Foc]}_1}$ E-Foc$_{[prs]}$ ~~**{EPP}**~~ [vP JOHN$_2$ [vP t_1 [VP t_2 SEE t_1 YESTERDAY]]]]

f. [**E-Foc$_{[prs]}$P** E-Foc [WHICH [WHICH STUDENT]] [SEE JOHN YESTERDAY]]

g.



The second remnant movement applies to move [vP JOHN SEE YESTERDAY] into a higher CP projection.

(23) a. N_3={C-wh$_{[prs]_1}$, C_o, E-Foc$_{[prs]o}$, v_o, JOHN$_o$, SEE$_o$, YESTERDAY$_o$, WHICH$_o$, WHICH$_o$, STUDENT$_o$.

b. [$_{CP}$ [$_{vP}$ **JOHN$_2$** [$_{vP}$ **t$_1$** [$_{VP}$ **t$_2$ SEE t$_1$ YESTERDAY**]]]$_3$ [$_{\text{E-Foc}_{[prs]}P}$ NMM-E-Foc [$_{DP}$ WHICH [WHICH STUDENT]$_{[pros:wh]}$]$_{[pros:E\text{-}Foc]_1}$ E-Foc$_{[prs]}$ ~~{EPP}~~ **t$_3$**]

c. [$_{CP}$ [JOHN SEE YESTERDAY] [$\overline{\text{WHICH [WHICH STUDENT]}}$] E-Foc

Note here that the partial derivation for (23c) resembles the Focus Type I question in (24), repeated here:

(24) JOHN SEE YESTERDAY $\overline{\text{WHICH STUDENT?}}$ foc
'*Which student* did John see yesterday?'

This resemblance is in favor of the desiderata above for deriving both focus question types–those involving sentence-final wh-elements, and the reduplicated constructions seen in this current derivation–as closely related in their semantic intuitions as well as their syntactic hierarchies. The underlying cues for this close relationship are explained away via the syntactic licensing of prosodic non-manual marking features.

3.2.2 Step II: Stranding

This takes us to the point in the derivation where stranded raising is ready to apply to the embedded wh-element of the complex wh-DP. Boeckx (2001) poses compelling reasons to argue that A-bar movement chains are formed in the domain of resumption, toward a unified theory of resumption. In line with Sportiche's (1988) seminal work on stranded quantifers, resumptive phrases are stranded portions of the moved phrases they "associate with" (Boeckx 2001). Resumptive material may appear in various sites along the path of A-bar movement chains, and can in fact take place in more than one position, as with A-movement.

The proposed analysis treats doubled phrases in ASL, such as WHICH in [WHICH [WHICH STUDENT]], as stranded base-generated material in D-structure. The merge of a C(wh)$_{[prs]}$ with its EPP feature and unvalued [pros:?] feature at Spec-C(wh)$_{[prs]}$ licenses a move of [WHICH STUDENT] from out of its stranded position in the Spec of E-Foc$_{[prs]}$P to the left periphery:

(25) a. N_4={C-wh$_{[prs]o}$, C_o, E-Foc$_{[prs]o}$, v_o, John$_o$, SEE$_o$, YESTERDAY$_o$, WHICH$_o$, WHICH$_o$, STUDENT$_o$.

b. [$_{\text{C-wh}_{[prs]}P}$ **[pros:?]** C-wh$_{[prs]}$**{EPP}** [$_{CP}$ [$_{vP}$ JOHN$_2$ [$_{vP}$ t$_1$ [$_{VP}$ t$_2$ SEE t$_1$ YESTERDAY]]]$_3$ [$_{\text{E-Foc}_{[prs]}P}$ NMM-E-Foc [$_{DP}$ WHICH [WHICH STUDENT]$_{[pros:wh]}$]$_{[pros:E\text{-}Foc]_1}$ E-Foc$_{[prs]}$ ~~{EPP}~~ **t$_3$**]]

c. [**C-wh$_{[prs]}$P** **[WHICH STUDENT]$_{[pros:wh]4}$ {EPP}** [$_{CP}$ [$_{vP}$ JOHN$_2$ [$_{vP}$ t$_1$ [$_{VP}$ t$_2$ SEE t$_1$ YESTERDAY]]]$_3$ [$_{\text{E-Foc}_{[prs]}P}$ NMM-E-Foc [$_{DP}$ WHICH **t$_4$**]$_{[pros:E\text{-}Foc]_1}$ E-Foc$_{[prs]}$ ~~{EPP}~~ **t$_3$**]]]

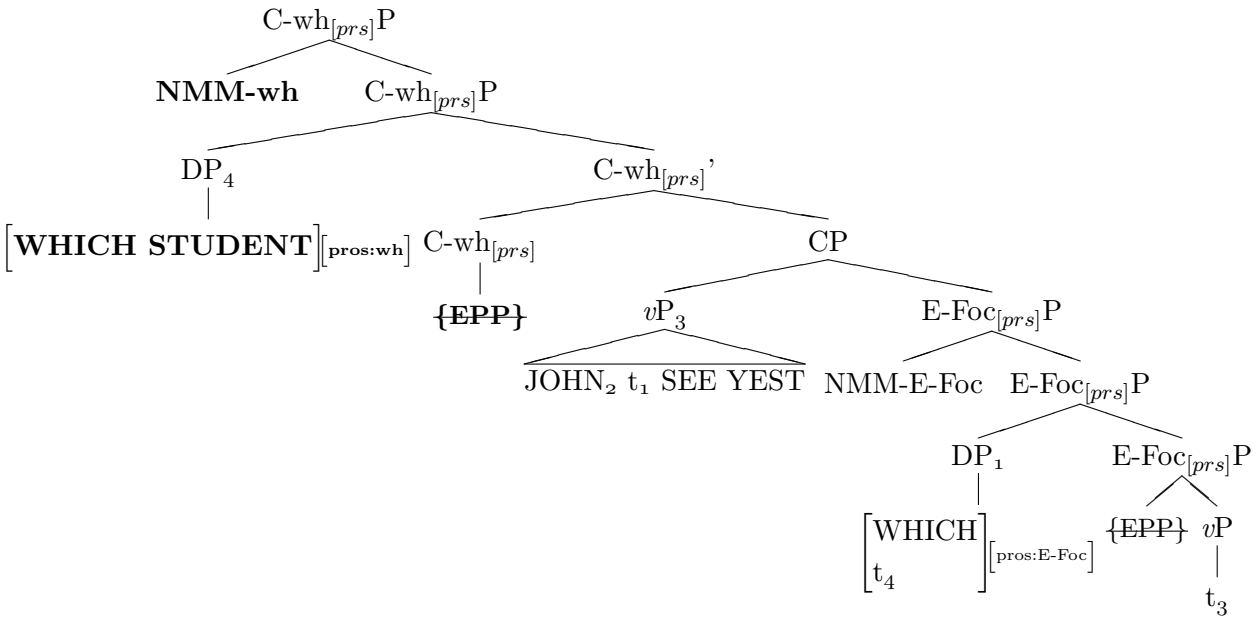
As with the earlier derivation of a prosodically-licensced CP layer, this movement triggers C-wh's corresponding NMM feature, NMM-C-wh, for the final derivation in (25d).

d. [**C-wh$_{[prs]}$P** **NMM-C-wh** [C-wh$_{[prs]}$P[WHICH STUDENT]$_{[pros:wh]4}$ ~~{EPP}~~ [CP [vP JOHN$_2$ [vP t$_1$ [VP t$_2$ SEE t$_1$ YESTERDAY]]]$_3$ [E-Foc$_{[prs]}$P NMM-E-Foc [DP WHICH **t**$_4$]$_{[pros:E-Foc]1}$ E-Foc$_{[prs]}$ ~~{EPP}~~ **t**$_3$]]]]

e. The final derived structure:

[**C-wh$_{[prs]}$P** [WHICH STUDENT]$_{wh}$ [SEE JOHN YESTERDAY] [WHICH]$_{E\text{-}Foc}$]

f. The final derived representation:



4 Ramifications

This section enumerates the key benefits of approaching prosody from a phase-based analysis. From the above derivations, it is clear that non-manually marked constituents certainly do fulfill the "independence" of semantic propositions (Chomsky 2001, Matushansky 2004).

4.1 The Hierarchy of Prosody

Firstly, the placement of an EPP feature with the proposed C-type heads instantiates a trigger by which, barring relativized minimality violations, the prosodically-bound constituent moves to its preposed position. Secondly, the interaction of the relevant C-type head with the features in its edge position allow the closely linked NMM nodes to merge at the desired positions where they give structural indications for hierarchy and prosodic domain.

Note that the EPP feature places these NMM nodes into *phase edge positions*, where they are ready to 1) escape and thereby expand their relevant domains, and 2) where they trigger transfer rules. The transfer at Spell-Out to PHON maps prosody–the articulation of the NMM–to a manually articulated domain. The transfer to SEM maps the scope of the prosodic interpretation to its relevant phrase–in our cases, the prosody of topic vs focus and wh-questions.

4.2 The Domains of Prosody

Deriving these boundaries as explicit in the syntax is crucial for capturing the domain of articulation as well as the domain of meaning within the prosodic boundaries. In the case of ASL Topics, such a C head, and its edge position for housing prosody, exists per Topic. In the case of ASL Emphasis-Focus, the relevant domain of the e-focused material is limited to the domain the focused material, as provided after stranded raising. In the case of ASL wh-marking, the prosody spread simply corresponds to the c-commanded domain of its NMM abstract head. For each of these, a pattern of command exists: The domain of the NMM corresponds to the minimal domain of the proposal's relevant C-type head.

4.3 Economy

A phase-based analysis of prosodic cues in ASL may appear at first to add to the technical nature of our assumptions. However, the analysis gains momentum as a precision-oriented approach by which the empirical interactions across multiple domains is systematically accounted for. Moreover, the approach is aided by positive economy considerations, and it is simplified under the stepwise analysis of the Phase Impenetrability Condition.

Note that the Inclusiveness Condition is maintained. Non-manual markings are treated as abstract heads in S_o; they are not called upon via stipulations at a later stage. Also, as advocated in Chomsky 2001, no LF cycle is required. The computation simply transfers the lexical array at the economic point where articulation and semantics is teased apart—at Spell-Out. The desired word order of the displaced elements and their corresponding prosodic domains are obtained via transfer rules to PHON, and prosodic domains for interpretable prosodic meaning are delivered to SEM. Since we want to only compare convergent derivations, we can, at an earlier stage in the derivation, rule out ungrammatical sentences such as (2a) and (4c-4d). Examples (3b), (3d), (4b), and (4d) are mostly unacceptable, as the missing piece per derivation–the associated non-manual marking features–prevent transfer to SEM.

Since we build phases out of CP-type projections (Rizzi 1997), we are able to borrow all the previously argued-for assumptions behind phase integrity maintained by Chomsky (2000) and Matushansky (2004). This entails the status of these prosodic domains as "propositions." And since we merge NMMs as extensions of phase-edges, not as edges of separate phases, the arguments such as WHICH STUDENT form a pair with the NMM, such as NMM-wh, for deriving successive cyclic movement through the phase "escape hatch," via the operation for Internal Merge, and driven by the evaluation of unvalued features.

5 Conclusion

As a followup to systematic accounts for two movement phenomena in ASL, we've seen that a phase-based account 1) bolsters these analyses for focus and topic with the desired displacements of word order, and 2) delivers a hopeful crosslinguistic conjecture for dealing with prosodically-cued movements, such as the obligatory, overt ones seen in ASL syntactic non-manual markings.

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