

Lexicalized Syntax and Phonological Merge

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1 Whither syntax in a lexicalized grammar?

It is recognized across a wide range of frameworks that lexical information plays a fundamental role in determining the properties of syntactic structure (Chomsky 1981, Bresnan 1982, Pollard and Sag 1994, Steedman 2000b, Frank 2002). For instance, lexically specified properties of a predicate are widely agreed to determine the number and configurations of syntactic arguments, the case properties of these arguments, associated inflectional morphology, etc. This connection between lexical properties and syntactic structure takes its most extreme form in lexicalized grammatical frameworks, such as Categorical Grammar and Tree Adjoining Grammar, where lexical items are associated directly with pieces of syntactic structure, and where syntactic derivation consists exclusively in composing these pieces of structure, which I will refer to as *elementary structures*, adapting slightly the terminology from the TAG literature. In lexicalized grammars, no syntactic operations or structural constraints on syntactic configurations are involved in the specification of the properties of global syntactic structure apart from those responsible for determining the properties of elementary structures. As a result, lexicalized grammars deny the existence of syntactic movement operations, templates or schemata for grammatical constructions, and the like.

The viability of lexicalized grammars as a framework for linguistic theory depends on a basic hypothesis about the kinds of constraints that natural language grammars impose. Specifically, what I will refer to as the *Syntactic Lexicalization Hypothesis* (SLH) states that syntactic relations entered into by

a lexical item L must be expressed within the elementary structure that is associated with L.¹ If the SLH is correct, one might question what role is being played by the *syntactic* combination of elementary structures, since by hypothesis there can be no new syntactic relations created via such combination. It is of course true that the representations of sentences will require that elementary structures or something like them be combined in some fashion. On the one hand, a representation of a sentence needs to include a phonological form, establishing the ordering among the lexical items of the constituent elementary trees. In addition, the meaning of a sentence cannot be determined on the basis of an unstructured set of elementary structures, as that would leave us unable to distinguish, say, *The dog bites the postman* from *The postman bites the dog*. Rather, some process must form the semantic relations that hold between predicates and their arguments, operators and their scope, etc.

Such phonological and semantic representations are often taken to derive from or read off of a complex syntactic object that is constructed by the grammar, and indeed this might be taken to constitute motivation for a syntactic derivation that combines elementary structures. However, in light of the previous discussion I would like to propose an alternative conception, in which the only syntactic representations are those of the elementary structures. I assume that it is these elementary structures that are the object of phonological and semantic interpretation, yielding a pairing of local phonological and semantic representations. What has been traditional been thought of as a syntactic derivation will then involve the subsequent and

direct combination of these phonological and semantic representations.²

The idea that aspects of phonological and semantic interpretation applies not to a global syntactic object, but rather to a small piece of structure has been explored in the Minimalist framework (Uriagereka 1999, Chomsky 2001, Erteschik-Shir 2005, Fox and Pesetsky 2005) (cf. also Bresnan (1971) for an earlier exploration of similar ideas). In this line of work, the syntactic derivation builds structure by iteratively merging elements from a set of lexical items (and their combinations), up until some point at which time an operation of spell-out applies, which interprets the as yet derived object for the phonology and semantic interfaces. This point of spell-out is referred to as a *phase*, and has most often been taken to be delimited by the occurrence of one of a fixed set of syntactic categories. There has been a range of opinion concerning what spell-out accomplishes, and how its results are integrated with the rest of the sentence. For Fox and Pesetsky (2005), the effect of spell-out is to annotate a syntactic structure with further information relevant to the phonology, specifically an encoding of linear order among the terminals. The resulting augmented structure may then continue to participate in the syntactic derivation. In the work of Uriagereka (1999), the result of spell-out is no longer a syntactic structure, but rather an object analogous to a lexical item. The internal properties of such an object are inaccessible to subsequent syntactic derivation, but this object may itself be incorporated into a subsequent syntactic derivation in a manner analogous to other lexical items. Both of these approaches have their shortcomings, I believe. If spell-out simply annotates syntactic structure, it cannot provide an account of

the differing constituencies that appear to hold in the syntax and in the phonology, as illustrated in (1), where the right branching syntactic structure appears not to be matched by the flat iterated structure of the prosodic groupings.

- (1) a. This is (the cat that killed (the rat that ate (the malt that lay in (the house that Jack built))))
 b. (This is the cat) (that killed the rat) (that ate the malt) (that lay in the house) (that Jack built)

Assuming this divergence to be real, the “annotation” approach to spell-out will force us to posit an additional operation that is responsible for the deformation of the hierarchical structure appropriate for the representation of syntax (and semantics) into one appropriate for the representation of prosodic groupings. In contrast, the view of spell-out as producing an object analogous to a lexical item does have the potential to deal with divergences of the sort just discussed. However, as we will see below, the mode of combination of spelled-out domains is insufficiently flexible to accommodate the range of phenomena discussed below.

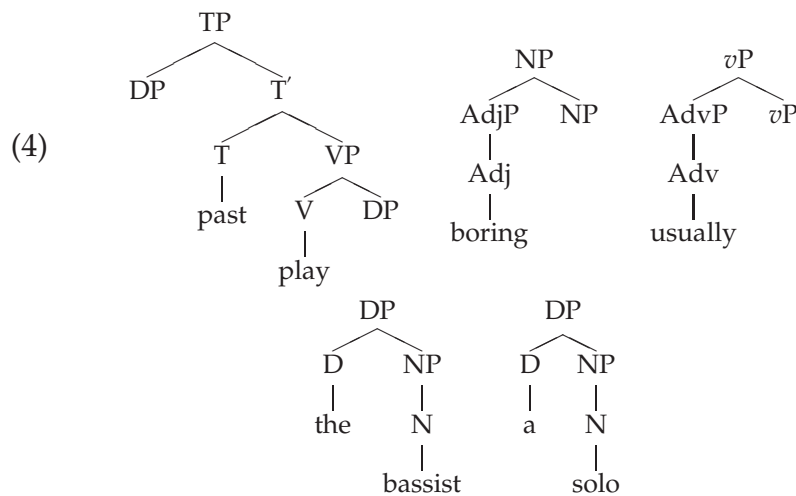
The conception I will argue for in this paper shares with the phase approach the idea that syntactic structure is spelled out locally. However, I will assume that the syntactic domain over which spell-out applies is analogous to that of a TAG elementary tree.³ Specifically, I adopt the view of elementary trees advocated in (Frank 2002) according to which they must satisfy two basic principles:

- (2) Condition of Elementary Tree Minimality (CETM): The syntactic

heads in an elementary tree and their projections must form an extended projection of a single lexical head.

- (3) Theta criterion:
- a. If H is the lexical head of elementary tree T, H assigns all of its θ -roles in T.
 - b. If A is a frontier nonterminal node of elementary tree T, A must be assigned a θ -role in T.

The CETM bounds the size of an elementary tree to the domain determined by a lexical head, while the theta criterion delimits the kind of nonterminal nodes that can decorate the frontier of an elementary tree. The following structures all constitute elementary trees under this conception:



In the TAG framework, these syntactic objects may be combined via the operations of substitution and adjoining to produce a complex structure. This approach raises the question however of why there should be two levels of syntactic organization, the hierarchical structure within elementary trees

and that resulting from the combination of elementary trees. Stated another way, this question asks why elementary trees should be reified as distinct types of syntactic objects.

The approach I advocate here avoids this question. Rather each of the structures in (4), is spelled out separately, resulting in a pairing (π, λ) of a phonological and semantic representation. No subsequent syntactic combination of the elementary trees takes place after spell-out, since the elementary trees qua syntactic objects cease to exist. Instead, I assume that two operations, Phonological and Semantic Merge, combine these (π, λ) pairings directly.

In this paper, I begin an exploration of this perspective, focusing my attention on the phonological side. I first explore the nature of the combinatorial operation of Phonological Merge. As we shall see, this operation permits rather flexible sorts of combination of phonological representations, in a manner that is somewhat reminiscent of the TAG operations for syntactic structure building. Then I will turn my attention to the nature of the spell-out process in this model, and the explanatory possibilities that are afforded by decomposing sentences in the way envisioned here. During the discussion, I consider consequences of this approach in a number of empirical domains, including object shift in Scandinavian, Spanish determiner allomorphy, English *do*-support, and English and German phrasal stress.

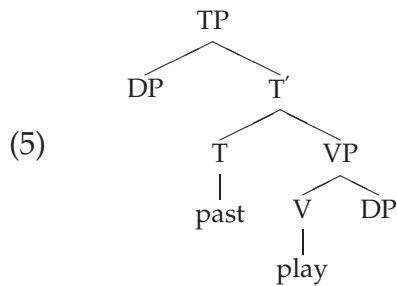
Though my focus here is phonological, there is one assumption about semantic composition that will play an important role: the requirement that combination of phonological and semantic representations will take place

in a synchronous fashion (Shieber and Schabes 1990, Shieber 1994). That is, alongside each combination over phonological representations of the sort discussed in this paper, there will be a corresponding combination of semantic representations. This will ensure that there is a sensible correspondence between the semantics that is composed for a sentence corresponds to the complex phonology that is constructed.

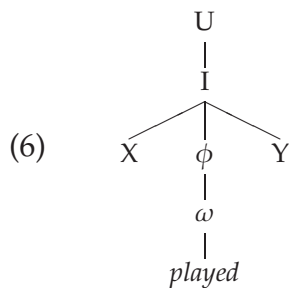
A final note before proceeding: Note that my goal here is to demonstrate the interest and potential of a novel approach to syntactic derivation. The current paper should be seen as only the beginning of the much larger enterprise of developing of this approach. As a result, I leave for future work the analysis of a vast array of issues that have been investigated in the syntax literature over the past half century that appear to require a syntactic representation of the sort I am denying here. My current belief is that these can be handled either in terms of morphophonology or semantics. So while the proof of the pudding is in the eating, I hope to convince the reader that the approach I advocate is worth pursuing.

2 Phonological merge

Consider the following elementary tree headed by the verb *play*:



I assume that the phonological output of spell-out when it is fed such a structure will be a representation of (at least) prosodic constituency. Thus, given (5), spell-out might produce a structure like the following:



The constituents in this structure correspond to levels in the prosodic hierarchy (Selkirk 1984, Nespor and Vogel 1986). At the lowest level in this structure is the Phonological Word ω , then the Phonological Phrase ϕ , then the Intonational Phrase I, and finally the Utterance U. These different levels have been postulated in order to account for the different loci of various phonological processes, either within a certain type of constituent or at its edge. For example, the Phonological Phrase is taken to be a domain that typically includes a pitch accent, whose boundaries are marked by boundary tones, and which is the locus for processes such as French liaison, Italian raddoppiamento sintattico and English stress retraction. As an illustration of the latter, we see in (7a) that the stress on the final syllable of *kangaroo* shifts to the initial syllable in the context of a following word *life* with stress

on the initial (and only) syllable, in order to avoid a “stress clash” between adjacent syllables. In contrast, in (7b) where the following word is separated from the word-final stress by a phonological phrase boundary, word-final stress remains.

- (7) a. [_φ the kángaroo’s life] is full of surprises.
 b. John [_φ persevéres] [_φ gladly and diligently]

The Intonation Phrase is the domain to which intonational contours are associated and is also the domain within which processes like the flapping of *t* in American English occur (Nespor and Vogel 1986). As seen in (8), when a word final *t* precedes a word beginning with a vowel, it can be pronounced as a flapped *t* (indicated here by underlining), even when separated by a phonological phrase boundary.

- (8) a. John [_I [_φ met̩] [_φ Anne and Sue]]
 b. Anne and Sue [_I [_φ met̩] [_φ anonymously and anxiously]]

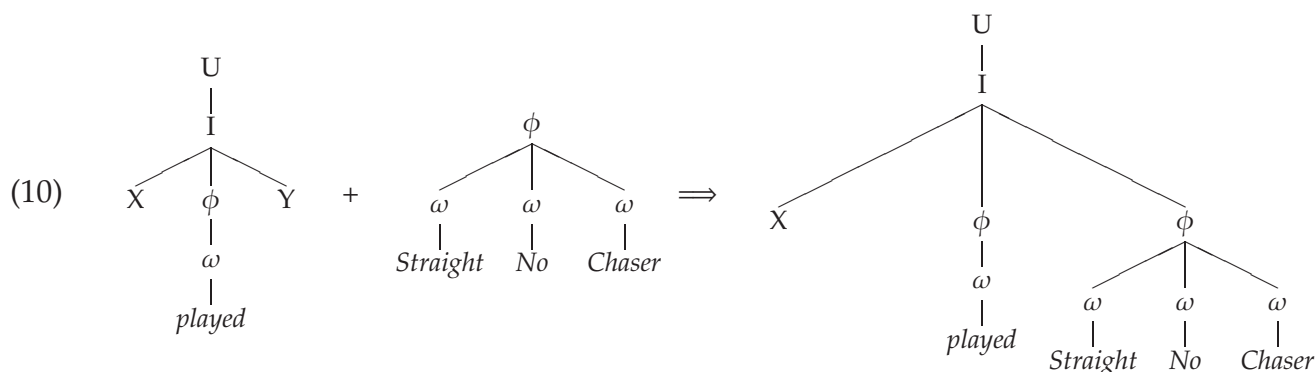
In contrast, when the word final *t* occurs at the right edge of a intonational phrase that is formed by the parenthetical in (9), it does not undergo flapping.

- (9) [_I Roger] [_I alias the rat/*rat̩] [_I eats only cheese]

Selkirk (1984) proposes that prosodic constituents differ from their syntactic counterparts in a significant respect in that they obey what she labels the Strict Layer Hypothesis: constituents of a given type may embed constituents only of the next lowest type in the prosodic hierarchy. Thus, while phonological phrases may constitute subconstituents of intonational phrases, intonational phrases may not constitute parts of phonological

phrases. Among other things, this has the effect of preventing recursion in phonological structure.

The prosodic structure in (6) contains two constituents labeled X and Y in addition to those categorized with some prosodic type. These constituents are what I will refer to as *phonological variables*, whose content will be instantiated during the application of the Phonological Merge (PMerge) operation. PMerge combines one phonological structure with another containing a phonological variable. Thus, given the verbally-headed structure in (6) and the prosodic counterpart of a DP structure, PMerge accomplishes the structural combination in (10), replacing the variable Y.



Note that the Strict Layer Hypothesis allows us to uniquely identify the prosodic category of phonological variables on the basis of the context in which they occur. For instance, since both X and Y in (6) are immediate subconstituents of an intonation phrase, each must be an independent phonological phrase. I assume that PMerge is constrained to respect the representation of prosodic structure present in the elementary structures, so that its results will also abide by the Strict Layer Hypothesis. As a result,

if a phonological constituent does not match in type with that of a phonological variable, PMerge cannot apply. This is instantiated in the following (preliminary) definition of PMerge:

$$(11) \text{ PMerge}(A_{C_i}, B_{C_j}) = B[A/X] \text{ for some variable } X \text{ of category } C_i.$$

(The notation A_{C_i} indicates a structure of prosodic category C_i , and $B[A/X]$ indicates the replacement of occurrences of X in structure B by the structure A .) As a result of this definition, only phonological representations that are full phonological phrases can be merged into the the phonological variables in (6). In the case of a DP elementary tree headed by a demonstrative pronoun for instance, its prosodic representation will not project to a phonological phrase but perhaps only a phonological word as shown in (12), and the merge of such a structure into the postverbal position Y in (6) will not be possible.

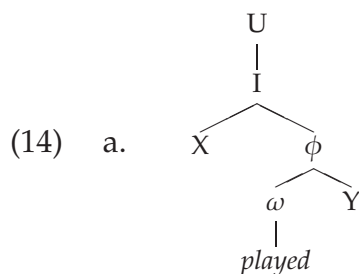
$$(12) \begin{array}{c} \omega \\ | \\ \textit{this} \end{array}$$

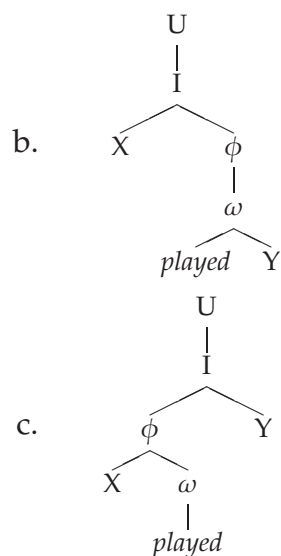
Thus far I have been silent about the way in which an elementary tree is mapped onto prosodic structure. A wide array of proposals have been made to accomplish this mapping (Selkirk 1986, 1996, Nespor and Vogel 1986, Zec and Inkelas 1990, Truckenbrodt 1995), but it is beyond the scope of this paper to choose among them and not crucial that we do so. What is important for present purposes is the locus of the information that is necessary to compute this mapping. As we have just seen, weak pronominal objects project to different prosodic constituents than full DPs. More generally, phonologically weightier elements will parse as prosodic constituents

higher in the prosodic hierarchy. In addition, the discourse status of the entities denoted by the various constituents is also significant in determining prosodic constituency.

- (13) a. What does Mary prefer?
 $[\phi$ Mary prefers] $[\phi$ corduroy]
- b. What do you know about Mary?
 $[\phi$ Mary] $[\phi$ prefers corduroy]

In (13a), where both the subject and predicate are given in the discourse, the object is parsed into an independent phonological phrase. In contrast, in (13b) only the subject is given, and the remaining material is parsed into a single prosodic constituent. Note, however, that neither phonological weight nor focus structure are represented in the verbally-headed elementary tree in (5): this structure simply encodes the fact that we have a transitive verb that takes a DP subject and object, but says nothing about the phonological weight of the arguments or their discourse status.⁴ As a result, the spell-out operation must be non-deterministic, permitting multiple possible outputs for a single syntactic representation. Alongside (6) then, spell-out might produce any of the following prosodic representations for the elementary tree in (5) (among others).





Observe that the structure in (14a) will now tolerate PMerge of a demonstrative like the one in (12) at the variable corresponding to the object position. The prosodic structure in (14b) would be required for an object that does not even project an independent phonological word, as Richards (2004) suggests for weak object pronouns, but only a foot. Finally, the structure in (14c) will be the one appropriate for the context in (13a), where the object alone is in focus and as a result projects an independent phonological phrase.

2.1 Merger of adjuncts

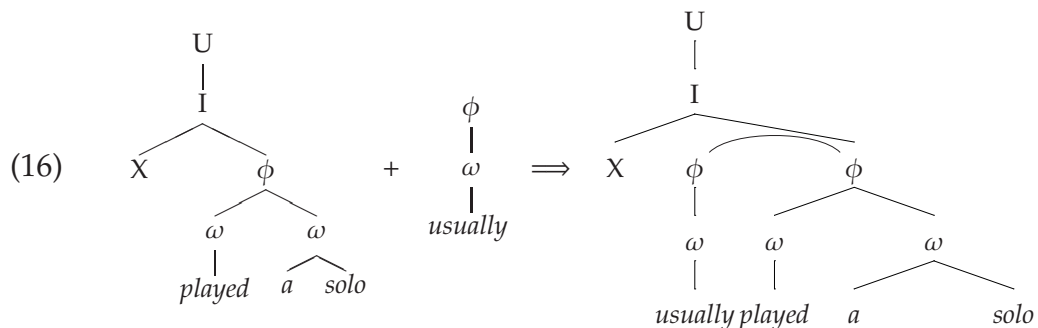
As noted earlier, elementary trees do not include a representation of modifiers of the lexical head. In the TAG context, this translates into a derivation in which modifiers are adjoined in during the course of the syntactic derivation. Under the current proposal where combination of the lexical content of the elementary trees takes place over phonological representations, this combination will fall to the PMerge operation. As yet, however, because

there is no representation of the modifier in the elementary tree, there will be nothing in the structure that can be translated into a phonological variable in the prosodic structure into which a modifier may PMerge. In order to overcome this difficulty, I propose to revise the formulation of the PMerge operation as follows:

$$(15) \text{ PMerge}(A_{C_i}, B_{C_j}) = B[A/X] \text{ for a variable } X \text{ of category } C_i; \text{ or} \\ B[A > C_i]$$

(where $B[A > C]$ denotes the result of concatenating A to some category C within B)

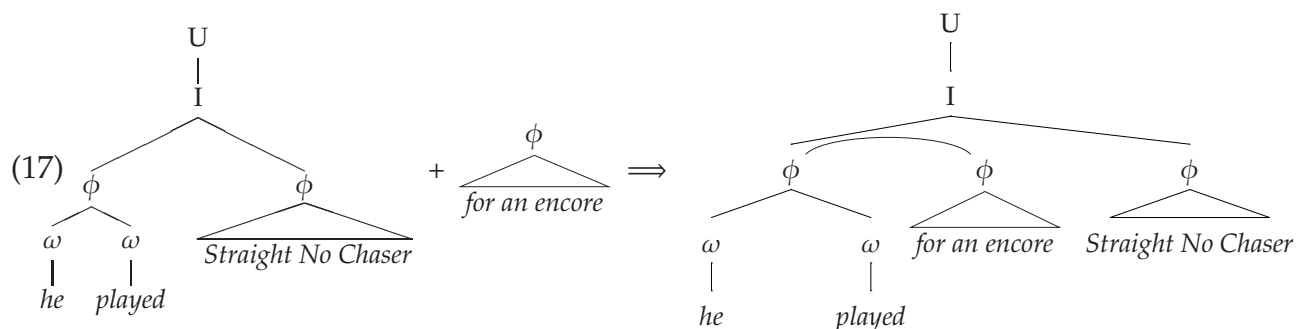
The latter clause of this definition will permit the insertion of an adverbial like *usually* that projects a phonological phrase into the clausal structure in (10) by concatenating the prosodic representation of the adverb to some phonological phrase in the structure.⁵



The concatenation portion of PMerge is ill-defined in the sense that it does not uniquely determine where some structure gets inserted. I assume that the elements that are merged may have some morpho-phonological specification that indicates whether they attach to the left or to the right of a

constituent. However, this still leaves open the question of which constituent this will attach to, when an elementary prosodic structure include more than one constituent of the relevant type. For now, I put this issue aside, but return to it below.

This approach to adverb placement has the welcome consequence that an adverb may not appear between the verb and its object in this representation: there is no ϕ boundary at this position to which the adverb could be attached. However, if the object of the verb were assigned a prosodically weightier representation, for instance an independent phonological phrase, the adverb can be inserted between the verb and object. This yields a derivation of so-called heavy NP shift via the interleaving of prosodic constituents that is possible with PMerge rather than a syntactic movement process.⁶



Observe that this analysis does not extend to cases of heavy NP shift with ditransitive verbs, as in (18).⁷

(18) Alice explained [to him] [the problem with the solution].

In such cases, if we take both arguments to be generated as part of the verb's elementary tree, they will both give rise to phonological variables whose

order is determined within the derivation of the elementary tree and is fixed at spell-out. Any effect of heavy NP shift would therefore not derive in this case from the possibility of interposing an adverb, but rather from some reordering within the original elementary tree. If this analysis is correct, we we should expect to find distributional differences between these two types of heavy NP shift. One suggestive difference concerns the licensing of parasitic gaps: they appear only to be licensed in the cases of HNPS across adjuncts, as seen in (19) but not across a prepositional dative argument, as in (20).

- (19) a. He rejected [the paper he had been sent] without reading it.
 b. He rejected without reading *e* [the paper he had been sent].
- (20) a. He donated [the statue he had been working on for years] to an admirer of it.
 b. * He donated to an admirer of *e* the statue that he had been working on for years.

Though I leave for the future the proper analysis of the licensing of parasitic gaps in the context of the current analysis, this pattern points to the conclusion that these two cases of apparent displacement are the result of different processes.

The formulation of PMerge given thus far requires a slight modification if it is to deal with cases involving complex arguments, which are broken up into multiple prosodic constituents. Take for instance a sentences like the following:

- (21) He played (ϕ Straight No Chaser), (ϕ Round Midnight) (ϕ and Brilliant Corners).

I assume that the conjoined object will be derived via the concatenation of three separate phonological phrases. We must allow for the insertion of such a concatenated structure into one of the slots specified by a phonological variable. Since all of the concatenated phrases will be constituents at the same level of the prosodic hierarchy, the insertion of many such constituents will not induce a violation of the strict layer hypothesis. On the semantic side of the derivation, we will however require that these concatenated constituents contribute a unitary interpretation for the verb's internal argument.

2.2 Object shift

This line of analysis suggested in the last suggestion for the insertion of adverbs provides a analysis of the phenomenon of object shift, in a manner that is similar in certain respects to the proposals made by Erteschik-Shir (2005), Vogel (2004), and Richards (2004). Before developing this analysis, I will provide some background on the phenomenon.

In the Scandinavian languages, as the following Swedish example illustrates, the verb precedes the object in its VP internal position.

- (22) Jag har inte kysst Marit.

I have not kissed Marit.

In sentences with an auxiliary verb, negative elements like *inte* and certain types of adverbial elements mark the left edge of the VP, and therefore must

precede the lexical verb which remains in situ. When there is no auxiliary verb however, the lexical verb precedes negation and adverbials.

(23) Jag kysste inte Marit.

I kissed not Marit

This has been taken to show that finite main verbs (in matrix clauses) undergo movement to a higher position. This position is usually taken to be the head of CP, and the subject or some other element must fill the specifier of this projection, giving rise to the verb second effect.

So far this is fairly straightforward. Where things get interesting is when the object of the verb is a pronoun. In such cases, the pronoun too moves out of the VP, appearing to the left of the negation.

(24) Jag kysste henne inte.

I kissed her not

This movement of the object pronoun is known as *object shift* (OS). As first noted by Holmberg (1986), OS is in fact only possible when the verb has left the VP. Otherwise, the pronoun must remain within the VP.

(25) a. *Jag har henne inte kysst.

I have her not kissed

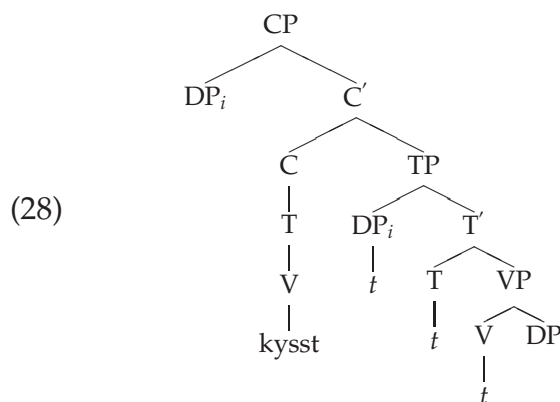
b. Jag har inte kysst henne.

This correlation between verb movement and the possibility of OS has come to be known as Holmberg's generalization. However, as Holmberg (1986) also observes, OS is blocked not only by failure to move the verb, but also by the failure to move anything else out of the VP that precedes the base position of the object, such as a particle or an indirect object.

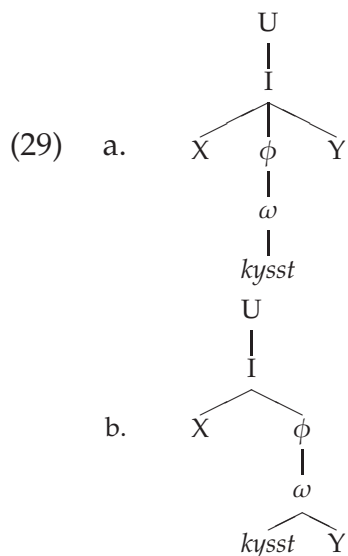
- (26) a. * Dom kastade me inte ut.
 they threw me not out.
 b. Dom kastade inte ut me.
- (27) a. * Jag gav den inte Elsa.
 I gave it not Elsa
 b. Jag gav inte Elsa den.

Holmberg (1999) thus characterizes the generalization on OS as a prohibition against movement across any phonologically visible category, with the crucial exception of adverbs and negation. This restriction has the consequence that OS is possible so long as it does not reorder any of the elements within the verb phrase. This is a surprising property for a movement operation to have, as displacement has typically been taken to be the principle motivation for the existence of a movement operation. Moreover, it remains a puzzle why adverbs and negation are exempt from the prohibition against reordering.

I take Holmberg's proposal that OS prohibits reordering as a *reductio ad absurdum* for the idea that OS is the product of syntactic movement.⁸ Instead, I propose that OS derives from the interaction of the PMerge operation and the prosodic constituency that is assigned to clausal structures. Since PMerge lacks the ability to reorder elements present in an elementary tree, examples (25a), (26a) and (27a) cannot be generated. To see how cases of OS can be generated, consider the structure for a simple Swedish sentence:

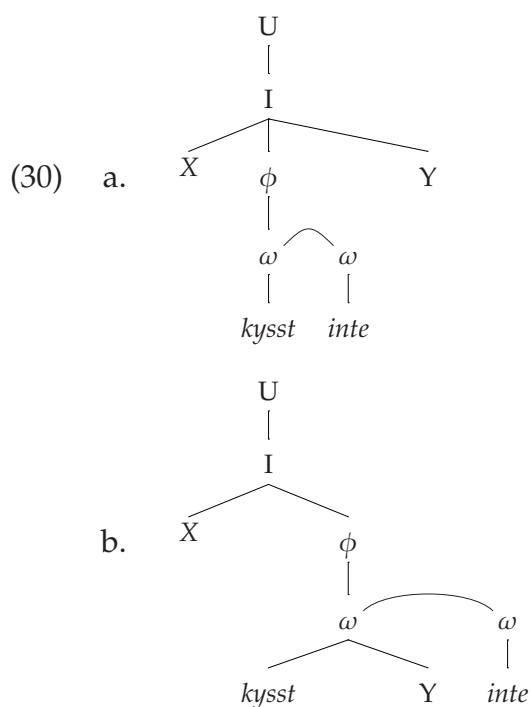


As before, a number of prosodic constituencies are possible when this structure is spelled out, among which are the following:



In the first of these, the object is spelled out as an independent phonological phrase, while in the latter, it is spelled out as part of the same phonological word as the verb.⁹ Let us assume that the negation *inte* is generated as an independent elementary tree, whose phonological spell-out is (at least) an independent phonological word. Observe now that if we attempt to PMerge *inte* with (29a), the negation may intervene between the verb and the variable Y, as shown in (30a). In contrast, PMerge of *inte* with the structure in (29b)

will not tolerate such intervention. The negation may only precede or follow the phonological counterpart of the entire VP. When the negation is PMerged to the right of the “VP,” this yields the structure in (30b).



When the phonological variables X and Y are instantiated through further applications of PMerge, the two structures in (30) will give rise to the orderings with unshifted and shifted structure respectively.

The discussion thus far does not address the significant issue of how the precise position of the PMerged negation is determined. In both of the structures in (30), the PMerge operation permits the attachment of *inte* to the left of the phonological word to which it attached as well as to the right. To rule out the former possibility, we might stipulate that *inte* is lexically specified as being an enclitic of sorts, so that it must attach to a

phonological word to its right. Other adverbial elements, particularly those which project higher levels of prosodic structure, might not show such directional dependence, and we will therefore get insertion either to the left or the right of prosodic constituents of the appropriate sort. However, even with such stipulations, an important question remains open about the difference in placement of negation between simple and compound tenses. In compound tenses, negation must precede both the verb and the object.

- (31) a. Jag har inte kysst henne.
 I have not kissed her
 b. *Jag har kysst henne inte.
 c. *Jag har kysst inte henne.

The last of these examples is ruled out for reasons already discussed. However, nothing in what we have said rules out the order in (31b), particularly since the verb and object will surely form the same type of prosodic constituent as before. There is however one significant difference between the prosodic structure of this case and the one with the simple tense: In the context of the compound tense, I assume that there is another prosodic word boundary in the prosodic structure associated with the elementary tree, to the right of the auxiliary verb. We might therefore constrain PMerge to apply in a leftmost fashion, so that instances of PMerge (for at least a certain class of elements) must go to the linearly first site that is phonologically permissible.¹⁰ A second source of constraint on the locus of PMerge might stem from the semantic side of the derivation. Recalling that applications of PMerge will proceed in synchrony with semantic compositional

operations, we must ensure that the negation PMerges with a constituent whose corresponding semantics are appropriate for the application of sentential negation. From this perspective, it might be possible to rule out example (31b) if the semantics corresponding to the rightmost phonological phrase *kysst henne* could not be the argument of sentential negation, as the latter plausibly requires tense in its scope. A similar argument will have to be made for embedded clauses, which show the same pattern as compound tenses: negation must precede the verb.

(32) ... att jag inte kysste henne
 that I not kissed her

(33) * ... att jag kysste henne inte
 that I kissed her not

In this case, the complementizer and subject form a prosodic constituent that provides the crucial attachment site. If we assume that tense is associated with the C head the semantic constraint on attachment would apply as well.

Thus far, all of the examples of OS we have considered involve pronominal objects. This was no accident: in the mainland Scandinavian languages, OS is only possible with pronouns. Happily, the analysis just presented provides a simple explanation for the restriction of OS to pronominal objects: it is only weak pronominals in virtue of their reduced phonological character which can be inserted into the slot Y in (30b): pronouns are the only DPs that can be parsed phonologically as a proper subpart of a phonological word. Consequently, apparent OS, now understood as the result of tight phonological constituency between the verb and object, is blocked with full

DP objects.¹¹

In contrast, a non-OS structure like (30a) requires that the object be a phonologically weightier constituent (represented there as a phonological phase, though see note 9) that is parsed separately from the element preceding it. My analysis leads us to the expectation that OS of unstressed pronouns should be obligatory: if such pronouns may not project to the level of a phonological phrase, they cannot be inserted into a structure that licenses the interpolation of negation. This expectation is borne out for all the Scandinavian languages except for Swedish. Only in Swedish can pronouns fail to precede negation.

(34) a. Hun såv ham ikke. (Danish)

she saw him not
'She didn't see him.'

b. *Hun såv ikke ham.

(35) a. Jag kysste henne inte. (Swedish; Sells (2001))

I kissed her not

b. Jag kysste inte henne.

Under the current proposal this distinctive property of Swedish OS should be related to a difference in prosodic outputs. Specifically, we can assume that Swedish pronouns may project to larger prosodic constituents than other Scandinavian pronouns, thereby allowing them to be PMerged with the variable Y in (30b). If Swedish pronouns are indeed more phonologically independent than the rest of their Scandinavian counterparts, we should expect to find not only an absence of OS, but more freedom in general

regarding the placement of adverbials to the left and right of the pronouns.¹² This is in fact what we see in the phenomenon of adverbial intermingling (examples from Kaiser (1997) via Sells (2001)): an object pronoun can surface in any position within a sequence of adverbials.

- (36) a. Igår läste han *dem* ju alltså tolingen inte.
 yesterday read he them as you know thus probably not
 'Yesterday, as you know he probably did not read them thus.'
- b. Igår läste han ju *dem* alltså tolingen inte.
- c. Igår läste han ju alltså *dem* tolingen inte.
- d. Igår läste han ju alltså tolingen *dem* inte.
- e. Igår läste han ju alltså tolingen inte *dem*.

Note however that adverbial intermingling is impossible in other Scandinavian languages, as the following Danish examples illustrate:

- (37) a. Peter læste *den* uden tvivl ikke. (Vikner 1989)
 Peter read it without doubt not.
- b. *Peter læste uden tvivl *den* ikke.
- c. *Peter læste uden tvivl ikke *den*.

Since adverbial intermingling requires the insertion of some set of adverbs to the left of the pronominal object, it follows that these orderings should be possible only with pronouns with a certain degree of phonological independence, as I hypothesized for Swedish.¹³ The examples in (36) point to another argument in favor of the prosodic approach to OS over the movement approach: if we assume that adverbs occupy fixed positions in clausal

structure (Cinque 1999), these cases would require multiple landing sites for OS. In contrast, if the PMerge operation is responsible for adverb insertion, the relative ordering of the pronoun and the adverbs will be determined by prosodic constituency. Of course much more needs to be said in order to account for the restrictions on adverbial ordering that Cinque (1999) discusses. However, assuming that this can be addressed, it might be possible to deal with variation in the positioning of participles across Romance varieties that Cinque documents in a prosodically-based manner.

The account of OS that I am giving here bears a certain resemblance to an analysis that is considered (and rejected) by Hellan (1994) in which the phenomenon of OS derives from the cliticization of the object pronoun onto the preceding verb. Under this analysis, the cliticization process feeds syntactic verb movement, allowing the cliticized object pronoun to get a “free ride” past the negation. A significant problem for this analysis, and the reason it was ultimately rejected by Hellan, arises in sentences in which an adverbial occupies the sentence initial topic position. When the verb raises to C, a cliticized object should necessarily raise along, moving past the subject to yield the order Adv-V-O-S (with an adverb initial sentence). Although such long OS is to some extent possible in Swedish as shown in (38a) (though subject to considerable restrictions, on which see (Josefsson 2003)), it is not possible in the other Scandinavian languages as seen in the Danish example in (38b) .

- (38) a. I hallen mötte honom en hemsk syn. (Swedish)
 in the hall met him a horrible view

'In the hall he met a horrible sight.'

b. * Hvorfor læste den studenterne ikke? (Danish)

why read it the students not

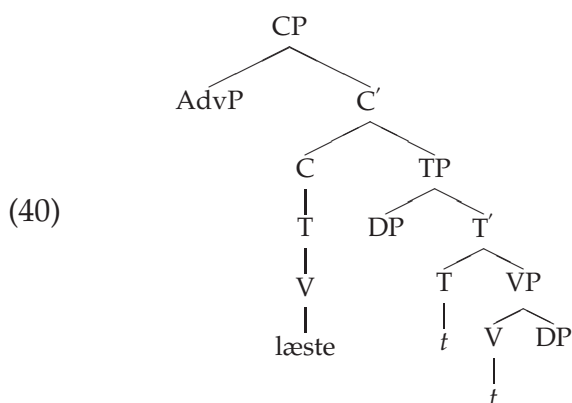
'Why didn't the students read it?'

Instead, the ordering that arises for such sentences is Adv-V-S-O, with the object obligatorily shifted past the negation but not past the subject:

(39) Hvorfor læste studenterne den ikke? (Danish; Vikner (1989))

why read the students it not

Hellan points out that if an object pronoun must undergo syntactic cliticization to the verb, such sentences cannot be generated. Observe though that this ordering is unproblematic on the analysis I am proposing. Displacement of the verb to C will take place within the elementary tree, prior to the formation of prosodic constituents, yielding a structure like (40) in which the verb precedes both the subject and (in-situ) object.



When this structure is spelled out, the direct object will continue to follow the subject. In the case of Swedish long OS, I assume that there is a syntactic process that applies within the elementary tree that accomplishes the

displacement. In order to accomplish the “short” OS of the direct object pronoun past the negation in (39), I will assume that the elementary tree may map to a prosodic structure in which the verb, subject and object may form a single prosodic constituent. As before, an appropriate representation will be necessary to license the insertion of a weak object pronoun, and we may assume that the verb-subject-object prosodic constituent is possible only when the object is prosodically weak. As a result of this prosodic constituency, PMerge will be unable to insert negation between the subject and object, yielding the impossibility of (41).¹⁴

- (41) *Hvorfor læste studenterne ikke den ?
 why read the students not it

More generally, the PMerge analysis of OS leads to the expectation that negation and adverbs may surface only in front of a phonologically weighty constituent present in the elementary tree. This expectation is borne out in a number of contexts. Engdahl et al. (2004) observe that in Swedish, postverbal subjects may be preceded by negation or adverbs only when they are phonologically heavy. Thus, while stressed pronominal subjects may either precede or follow adverbs, unstressed pronouns must precede them .

- (42) a. Då kommer vi/VI tyvärr för sent.
 then come we unfortunately late
 ‘Unfortunately we’ll be late then.’
 b. Då kommer tyvärr *vi/VI för sent.
 then come unfortunately we late

'Then it's unfortunately us that will be late.'

Furthermore, expletive subjects, which cannot be stressed, must appear before an adverb.

- (43) a. Här regnar det/*DET aldrig.
 here rains it(expl) never
 'It never rains here.'
- b. *Här regnar aldrig det/DET.
 here rains never it(expl)

Secondly, in clauses with ditransitive verbs, negation may precede the indirect object-direct object sequence so long as the indirect object is a full DP, independent of the properties of the direct object:

- (44) a. Jeg lånte ikke Marie bogerne. (Danish; Christensen (2003))
 I lent not Marie the books
 'I didn't lend Marie the books.'
- b. Jeg lånte ikke Marie dem.
 I lent not Marie them.

I propose that in such examples a prosodic break prior to the indirect object licenses the PMerge of the negation. In example (44b), the direct object *dem* is a weak pronoun which I take to form a single prosodic constituent with the preceding indirect object. Given the prosodic break after the verb, the negation must be PMerged before the indirect object-direct object grouping, yielding the absence of object shift.¹⁵ Under a view of OS in which pronouns move to a VP external position to satisfy some syntactic requirement, the well-formedness of examples like (44b) are surprising: this structure would

fail to satisfy whatever syntactic requirement it is that motivates OS.

As noted earlier, OS of weak pronominal objects is obligatory in the Scandinavian languages other than Swedish. However, when the pronominals are stressed they may remain in situ. This is unsurprising in the current context: I take stress on the pronoun to indicate that it projects a larger prosodic constituent, thereby licensing the PMerge of negation before it. Interestingly, Svenonius (2005) notes that the effects of stress on a pronoun are even more profound. In a Norwegian ditransitive clause containing a sequence of three pronouns, the negation may be inserted anywhere within the sequence so long as the pronoun immediately following it is stressed.

- (45) a. Vanligvis gir *ikke* HAN meg den. (Norwegian)
 usually gives not he me it
 ‘Usually he doesn’t give me it.’
- b. Vanligvis gir han *ikke* MEG den.
- c. Vanligvis gir han meg *ikke* DEN.
- d. Vanligvis gir han meg den *ikke*.

Once again, if take the presence of stress to indicate the left periphery of a phonological constituent at least as large as a phonological word, the analysis I am advocating leads us to expect that negation can be inserted at this point.

Finally, it is interesting to observe that OS applies to subcategorized pronominal adverbials as well, as Josefsson (2003) observes for Swedish:

- (46) Därför bor Sten där inte längre.
 therefore lives Sten there not anymore

‘Therefore Sten doesn’t live there anymore.’

Such subcategorized adverbs cannot precede negation when they are not pronominal.

(47) Därför bor Sten (*i Lund) inte (i Lund) längre.

therefore lives Sten (*in Lund) not (in Lund) anymore

Since these adverbials will be represented in the verbally-headed elementary tree in virtue of being subcategorized, they will be spelled out during the same process as object DPs. As a result, there will be the possibility of forming during spell-out a single prosodic constituent containing subject DP and the adverbial, thereby forcing the insertion of negation below this unit.

3 Spelling out spell-out

The discussion in the last section focused on the combinatorics of the phonology once the spell-out operation has applied to the individual elementary trees. In this section, I turn to the nature of the spell-out operation itself, considering the kind of computations that are carried out during the transformation of syntactic into phonological representations. I will discuss three operations which I take to apply during spell-out: resolution of allomorphy, morphological merger and assignment of phrasal stress. The central point of my argument in each case will center on one property of elementary trees, namely that they lack a representation of adjuncts. Consequently, we should expect that spell-out-related processes should be insensitive to the presence

of such elements.

3.1 Allomorphy

Spanish definite determiners are usually taken to come in two forms: masculine *el* and feminine *la*. Interestingly, in certain circumstances feminine nouns like *agua* ‘water’, but not ones like *torre* ‘tower’, surface with the determiner *el* (Harris 1989, Hayes 1990).

- (48) a. **el/la* torre
 b. *el/*la* águ

The relevant property that distinguishes these classes of feminine nouns is whether they begin with stressed *a*. Only those that do permit the *el* form of the determiner. Thus, we might be tempted to characterize the alternation in terms of a morphological rule of the following form:

- (49) $la \rightarrow el / _ \acute{a}$

This rule does not however capture a crucial fact about this *el/la* alternation. The stressed *a* that triggers the change cannot be on a prenominal adjective that is adjacent to the determiner, but must occur on the noun itself.

- (50) **el/la* álta torre
 the high tower

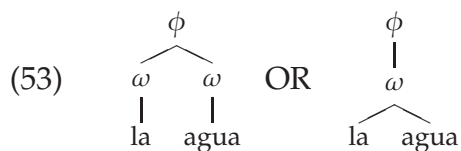
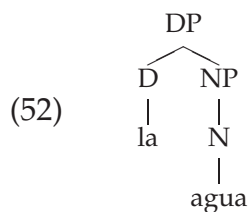
Recall that adjectives are not present in the elementary trees, and must therefore be integrated to the nominal structure via PMerge. Therefore, we can straightforwardly explain this pattern of *el/la* allomorphy via the

assumption that the process that resolves the rule applies at the point of spell-out of the nominal elementary tree.

One additional complication in this pattern of facts stems from the fact that the head noun beginning with the stressed *a* must be adjacent to the determiner in order for the *el* form to be possible. That is, if a prenominal adjective is inserted prior to a noun like *agua*, the *el* form is no longer possible.¹⁶

- (51) **el/la misma agua*
 the same water

This pattern fits into the analysis just sketched if we make more precise the assumptions about the prosodic structure of DPs. I will assume that the nominally-headed elementary tree in (52) may be spelled out in one of two ways, depicted in (53).



Let us further suppose that the the allomorphy rule in (49) may only apply within the domain of a prosodic word.

- (54) $la \rightarrow el / (\omega _ 'a)$

The result of this prosodic constraint on the rule's application is that the *el* form of the feminine determiner will surface only when the second of the two spell out options in (53) is chosen. Furthermore, because the determiner and noun will be tightly bound together in a prosodic constituent in such a case, subsequent PMerge of an adjective between them will be impossible. In contrast, when the first spell out option is chosen, the allomorphy rule does not apply, resulting in the retention of the *la* form of the determiner. Why then don't we find the surface form *la acqua*? I assume here that such an output is blocked because of the nature of this phonological representation. That is, even though *la* is parsed into an independent phonological word during spell out of the elementary tree, it cannot surface as such. As a result, some element must undergo PMerge into the phonological word to support the determiner. Assuming that determiners are phonologically proclitic, this will require the insertion of an element between the determiner and noun.

Of course, not all cases of allomorphy will be resolved in this way. The form of the English indefinite article is determined on the post-PMerge structure, since it is sensitive only to whether it is strictly adjacent to a vowel:

- (55) a. a/*an book/rotten apple
 b. *a/an apple/old book

Similarly, the form of the Italian masculine definite determiner varies on the basis of the word the immediately follows:

- (56) a. *il/*lo tipo/grande scoiattolo*
 the guy/large squirrel
- b. **il/lo scoiattolo/strano tipo*
 the squirrel/strange guy

Hence, there must still be some rules of allomorphy that apply post-cyclically, that is after the conclusion of the phonological derivation.

3.2 Morphological merger

Another process that appears to apply at the point of spell out of the individual elementary trees is morphological merger. As observed first by Chomsky (1957), the merger of V and finite inflection requires a certain sort of adjacency between these two elements. When this adjacency is disturbed as a result of the presence of negation or because of subject-aux inversion, a semantically empty verb *do* is inserted to bear the inflectional features.

- (57) a. *Lila [3sg,pres] not give interesting talks.* →
 Lila does not give interesting talks.
- b. *[3sg,pres] Lila give interesting talks?* →
 Does Lila give interesting talks?

One puzzling complication arises in the presence of adverbs: when an adverb intervenes between T and V, morphological merger appears to go through without any problem.

- (58) *Lila T[3sg,pres] always give interesting talks.* →
 Lila always gives interesting talks.

This has led to a variety of proposals to account for the apparent invisibility of adverbs (Bobaljik 1995, 2002, Ochi 1999). On the approach taken here, this array of facts follow straightforwardly from the assumption that T-V merger applies under adjacency at the point of spell out, since at this point the adverb has not yet been integrated into the clausal structure. Examples like those in (57) will be ruled out since T and V are not adjacent in the elementary tree, under the assumption that negation is present in the verbally-headed elementary tree in English, unlike in Scandinavian.

3.3 Assignment of phrasal stress

Let me turn finally to another process that I take to apply during the spell-out operation: the assignment of phrasal stress. As before, since elementary trees lack a representation of adjuncts, we should expect the assignment of prosodic prominence should be insensitive to the presence or absence of these elements (Feng 2002).¹⁷

This conclusion appears to be correct. Gussenhoven (1992) argues extensively that arguments and adjuncts pattern quite differently with respect to stress assignment. In contexts of wide focus (i.e., where the entire sentence expresses new information), for instance, the primary stress in a transitive sentence in both verb-medial languages like English and verb-final languages like German and Dutch appears on the object itself, and not on the verb.

- (59) a. She sang the whole ária.

- b. Sie hat die ganze Árie gesungen.
 she has the whole aria sung

In contrast, in the case of intransitive verbs with an adverbial modifier, the pattern is quite different: stress appears both on the verb and on the modifier.

- (60) a. She sáng the whole dáy.
 b. Sie hat den ganzen Tág gesúngen.
 she has the whole day sung

To account for this pattern, Gussenhoven proposes the following rule for assigning prosodic prominence to syntactic structures:

- (61) Sentence Accent Assignment Rule (SAAR): If focused, every predicate, argument, and modifier must be accented, with the exception of a predicate that, discounting unfocused constituents, is adjacent to an argument.

If we assume that each prosodic phrase can include only a single accent, the SAAR can be interpreted as saying that predicates (i.e., verbs) may form prosodic constituents only with their arguments, thereby allowing the retraction of stress from the verb onto the argument as in (59). The SAAR also tells us that verbs and modifiers may not form such constituents and therefore retraction is impossible in such contexts, as the examples in (60) demonstrate.

Gussenhoven provides no principled reason for this distinction between arguments and adjuncts with respect to prosodic constituency and stress retraction. However, in the context of the proposal in this paper, we can

understand the pattern of sentence accents directly. Specifically, if we assume that prominence is assigned at the point of spell out, the possibility of forming a prosodic constituent comprised of the verb and its object, and consequently the retraction of stress from the verb, will be unavailable for verb-modifier combinations, thereby forcing prominence on some element within the verbally-headed elementary tree (the verb). To ensure that an accent appears on the modifier as well, I will assume then that any elementary tree containing some focused element must include at least one accent.¹⁸

The approach adopted here diverges somewhat from the SAAR in cases where the object is separated from the verb by a modifier. Under the SAAR, the intervention of the adverb should prevent the formation of a prosodic constituent consisting of the verb and object, with the result that retraction of stress from the verb should be impossible. However, as Baart (1987) notes (cf. also Féry and Herbst (2004)), the intervention of a modifier does not affect the possibility of having an unaccented verb, whether the modifier is focused (as in (62a)) or not (as in (62b)).

- (62) a. We bestellen vandáag de ríngen (dan kunnen we ons
 we order today the rings then can we us
 morgen verloven). (Dutch)
 tomorrow marry
 'If we order the rings today, then we can get married tomorrow.'
- b. (Warum will Malte in Finnland wohnen?) Weil Halina
 why wants Malte in Finland live because Halina

tángos in Finnland komponiert. (German)

tangos in Finland composed.

‘Why does Malta want to live in Finland? Because Halina composed tangos in Finland.’

If we assume instead that accent placement is determined during spell-out of individual elementary trees, we can understand why inserted adverbial elements have no effect on stress placement. Note however that it will be crucial that the prosodic constituent inside of which stress retraction takes place must be large enough to permit PMerge of the adverb, thereby allowing for no accent on the verbs in (62). Since I am leaving open the details of the process of stress assignment, I defer to future work the nature of this constituent.

4 Conclusions

This paper has begun to explore a model of grammatical derivation that relieves the syntax of the burden of constructing recursive structure. Instead, it is only the phonological and semantic representations which can grow without bound. I have sketched out a number of consequences in the phonological portion of the derivation, and I hope to have convinced the reader of the explanatory force that this kind of approach might have.

This said, a great many issues remain open for future work. In terms of overall architecture, the semantic side of the derivation needs to be made explicit: it remains to be clarified just what character the local semantic

representations should have, what the combinatory operations over these representations will be, what kind of correspondences should be posited between the phonological and semantic elementary structures, and the proper formulation of the isomorphism condition for the two derivations. Past work on semantic interpretation in the TAG framework (Shieber 1994, Schabes and Shieber 1994, Shieber and Schabes 1990, Kallmeyer and Joshi 2003, Joshi et al. to appear) will play a helpful role in guiding these investigations, but there are certain to be novel questions given the differences between the syntactic representation assumed in the TAG work and the phonological representations assume here. From the perspective of this derivational system as a novel grammar formalism, it would also be useful to understand its formal properties such generative capacity and the like.

On the empirical side, the open issues are perhaps even more daunting. Since I am denying the existence of a global syntactic representation, any phenomena whose explanation was tied to properties of such a representation will need to be reanalyzed. Examples that spring to mind here are unbounded dependencies (e.g., wh-movement and raising), anaphoric dependencies, and scopal dependencies. Concerning the former, it is tempting to try to treat such dependencies in a manner familiar from work in the TAG framework, exploiting the similarity between the function of the adjoining and PMerge operations. As for the latter two, recent work has suggested that conditions on anaphora and scope can be recast in semantic terms (see among others Butler (2003), Jacobson (2003), Schlenker (2005)). Depending upon the assumptions that are made about the system for semantic combi-

natorics in the current system, it may be straightforward to integrate these results.

Notes

¹The SLH is a restatement in the more general context of lexicalized grammars of the “Fundamental TAG hypothesis” proposed in Frank (2002).

²Observe that in this context, the problem of assigning a syntactic “parse” to a sentence therefore requires only the determination of the elementary structures associated with the lexical items in the sentence, with the task of composing such structures left to some other component. This is precisely the division proposed in the supertagging model of Bangalore and Joshi (1999), and thus the current conception is resonant with that work.

³In what follows, I will assume familiarity with TAG. For background on the linguistic and formal properties of this formalism see Frank (2002) and Joshi and Schabes (1997) respectively.

⁴Cardinaletti and Starke (1999) suggest that the distinction between weak pronoun and full DP is in fact syntactically represented, in terms of the category level of the phrase, and such a syntactic distinction could be used to drive a difference in prosodic structure. Even if this approach is correct, it remains implausible that all relevant properties, such as number of syllables, will be syntactically represented. It has also been suggested

that the partition between focused and unfocused material is represented in syntactic structure, either as a feature on focused elements (Selkirk 1995) or more directly through non-standard syntactic constituency (Steedman 2000a). For the purposes of the present article, I put aside these options and explore instead the consequences of having a syntactic representation that significantly underdetermines prosodic structure.

⁵These dual modes of combination recall the operations of Tree Adjoining Grammar, and especially those of the mixed grammars studied by Joshi (1973).

⁶This proposal immediately raises the important issue of how to deal with the phenomenon of verb raising (Emonds 1978, Pollock 1989) in prosodic terms. That is, we must explain why it is possible for adverbs to intervene between the verb and object in French, but not in English. Such an explanation might have its roots in a distinct syntactic representation in the elementary tree, assuming that this syntactic difference gives rise to a difference in prosodic structure. Alternatively, there may be a difference in the syntax-prosody mapping in these languages. I leave this question for future work.

⁷Thanks to Ken Wexler for pointing this out.

⁸Rather than taking Holmberg's observation to constitute a *reductio ad absurdum*, Fox and Pesetsky (2005) attempt to provide a principled grounding for the restriction against reordering on the basis of a system of cyclic

spell-out that fixes the ordering of words within a certain derivational domain, but permits their subsequent movement so long as this order is maintained. If adverbs and negation are outside of the VP-containing phase, this proposal also explains why OS can cross these elements.

⁹Depending on the weight of the intervening adverb, it may also be sufficient to block OS for the object to be an independent phonological word. For present purposes, what is crucial is that object shift be associated with a tighter prosodic constituency between the object and the preceding constituent (here the verb). The details of the prosodic constituency will need to wait for further study of the phonology of the relevant languages.

¹⁰This follows a similar constraint proposed by Erteschik-Shir (2005:p.61) on the linearization of negation and adverbial elements.

¹¹Icelandic differs from the Mainland Scandinavian languages in permitting OS to occur with full DP objects. Under the present analysis, this will necessarily derive from a difference in how Icelandic syntactic structure is mapped onto prosodic representations. I leave open here the question of what distinctive property the grammar of Icelandic possesses that underlies this difference.

¹²Alternatively, Swedish might be distinguished from the other Scandinavian languages in the prosodic status of its negation and adverbial elements. If these can be spelled out as small enough prosodic constituents, PMerge could in principle insert them between a verb and a somewhat phonolog-

ically reduced object. This line of analysis would lead us to expect that such intercalation, and hence lack of OS, would be impossible with heavy adverbials. I do not know whether such a distinction is observed. There is however suggestive evidence that the prosodic weight of the pronoun is significant in determining the possibility of OS, as would be predicted under the proposal made in the text. In Josefsson's (2003) survey of acceptability of shifted and unshifted pronominal objects in Swedish, she notes that speakers preferred the shifted version of sentences with the monosyllabic pronoun *den* 'it' as compared to the unshifted version, but preferred the unshifted version of sentences with the disyllabic pronoun *honom* 'him'. This dependence on phonological weight suggests that the prosodic independence of the pronoun is playing a significant role in determining the viability of OS.

¹³The astute reader will have noted that these cases of adverbial intermingling constitute apparent counterexamples to the idea that PMerge applies in a leftmost fashion. I leave open the resolution of this puzzle. Note also that if adverbial intermingling requires only a certain degree of phonological independence of the objects, we should also expect to find it with full DP objects. This is essentially what we find in English in cases like the following (modeled on similar Icelandic examples in Thráinsson (1986)):

(lxiii) Gianni (rarely) puts (*rarely) the butter (rarely) in his pocket (rarely).

The impossibility of placing the adverb between the verb and direct object is related to factors of VP-internal prosodic constituency discussed earlier.

¹⁴Erteschik-Shir (2005) proposes an analysis of object shift that shares certain properties with the one I am proposing. Specifically, although she assumes adjuncts to be present in the syntactic structure, she takes their surface position to be the result of a linearization process that is subject to phonological constraints. Certain elements, such as weak object pronouns, must undergo a process of *prosodic incorporation* (PI) with an adjacent word, and it is the necessity of doing this which is taken to block the occurrence of negation between the verb and pronominal object. From Erteschik-Shir's discussion, it appears that the process of PI can precede the linearization of adverbs, and thus it is also necessary for her to stipulate that these adverbs cannot themselves serve as the hosts for PI. Such a stipulation is unnecessary on the conception proposed here, since the determination of prosodic constituency (and hence the formation of a verb-object unit) necessarily precedes the insertion of the adverb.

¹⁵We also need to rule out the possibility of PMerging negation after the IO-DO unit, giving rise to the appearance of OS for both the IO and DO:

(lxiv) *Jeg lånte Marie dem ikke. (Danish)

I lent Marie them not.

I assume that this example is ill-formed for the same reason that blocks OS of full DP objects with transitive verbs.

(lxv) *Jag kysste Marit inte. (Swedish)

I kissed Marit not

In both cases, we must prevent negation from PMerging into a position further to the right than the appropriate one. One possibility is to invoke the leftmost condition on PMerge inherited from Erteschik-Shir (2005:p.61) that was mentioned above. Additionally, the requirement that the semantic derivation take place in synchrony with the phonological derivation might have the effect of blocking examples like (lxiv) if the semantics corresponding to the rightmost phonological phrase consisting of *Marie dem* could not be the argument of sentential negation. Similarly, (lxv) would be ruled out assuming that the semantics associated with *Marit* were not appropriate for negation.

¹⁶Adam Albright (p.c.) has pointed out to me that the empirical situation is slightly more complex. He notes that with the gender-invariant adjective *gran* 'large' in prenominal position, the *el* determiner is apparently possible for at least some speakers: *el gran águila* 'the big eagle' registers 293 hits on google, while *la gran águila* yields 1120 hits (search conducted on August 11, 2005). (By way of comparison, *el misma agua* shows only 11 hits in comparison to 5390 hits for *la misma agua*, a pattern that suggests the impossibility of the former.) It is possible that these examples were generated by speakers for whom the noun *águila* has been reanalyzed as masculine. If not, it remains to be explained why uninflected forms like *gran* behave differently from inflected forms like *misma*. One possibility lies in another distinction between these two classes of adjectives: *gran*, in virtue of having no gender inflection is monosyllabic, and therefore may project a smaller prosodic constituent than the disyllabic *misma*, and therefore might allow

for the possibility of PMerge between the determiner and noun in a prosodic structure even where these form a tight prosodic constituent. If this is the correct generalization, we should expect that polysyllabic uninflected adjectives should pattern with *misma*. I leave the investigation of this question open for future work.

¹⁷Feng (2002) make the same point in the context of a TAG-based theory of the phonology-syntax interface. As in the current proposal, Feng assumes that prosodic prominence is computed over elementary trees. His proposal diverges from what I suggest here, however, in that the this computation of prominence yields as output not a phonological object, but rather an elementary tree whose nodes are annotated as prosodically weak or strong. These annotations constrain the insertion of subsequent elementary trees during the TAG derivation in a similar fashion to the way that prosodic structure constrains application of the PMerge operation. Feng also applies this idea to an analysis of the distribution of ba-NPs in Chinese.

¹⁸As before, I leave open the proper characterization of the function that assigns prosodic constituency to elementary trees, as well as the principle that assigns prosodic prominence.

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