

LIGHT NP SHIFT AND VERBAL ADJUNCTS IN ENGLISH

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The ordering of post-verbal elements in English is somewhat variable, a flexibility manifested in phenomena such as heavy NP shift and split phrasal verbs. This paper argues for a unified approach to these alternations, one that views both as the result of syntactic Object Shift mediated by a phrasal phonology constraint. In section 1, I present reasons why the two alternations should be considered together, and why syntax should play a role in the discussion. Section 2 includes a review of syntactic approaches to these phenomena and my own account, which is primarily a generalization of earlier work. Section 3 provides additional evidence for this account, focusing on the effects of verb raising and the ordering of elements in a SVO language with no verb inflection (Mandarin Chinese). In Section 4 I use the prosodic hierarchy and recent work in phrasal phonology as a basis to posit a phonological constraint that would serve to motivate alternate orderings of direct objects and verbal adjuncts. In Section 5 I conclude by discussing potential objections and future work.

1. A Single Alternation

1.1 Two Kinds of Shift

Traditionally, heavy NP shift has been thought of as a rightward movement of the “heavy” direct object to the end of an utterance.

- (1) a. I kept information from Bill
- b. I kept from Bill information I thought would be upsetting

The phrasal verb alternation, on the other hand, is more commonly regarded as the leftward movement of a “light” direct object.

- (2) a. This spray keeps away all kinds of insects
- b. This spray keeps them away

However, if we consider (1a) as analogous to (2b), and (2a) as the counterpart to (1b), the two alternations collapse into one; if the direct object is sufficiently light, it will appear next to the verb, however if it is relatively heavy, it appears at a distance. The weight of the object is measured relative to the other post-verbal element. It is important, for reasons that will become clear in sections 2 and 3, that this alternation is in fact a “light NP shift,” which is to say

that “heavy NP shift” is not rightward shift, but rather a “failure” to shift leftward. Note that neither form allows a pronoun to remain *in situ*:

- (3) a. *I gave out it
b. *I sent to my mother it

This is important, because cross-linguistically it is the pronoun that undergoes obligatory Object Shift (e.g. Scandinavian languages) or pre-verbal cliticization (e.g. Romance languages), suggesting that it might be possible to derive a unified account of light NP shift.

1.2 Particles and Prepositions

One significant barrier to viewing (1) and (2) as two examples of a single phenomenon is the (not unwarranted) assumption that phrasal verbs are basically a single unit (consisting of a verb and a dependent particle) while prepositions are syntactically and semantically independent, appearing as either as arguments or adjuncts to the verb; as such, the semantics of prepositions are generally predicable, whereas the semantics of these particle verbs often have little or nothing to do with their component parts, which in turn suggests a separate lexical entry. For instance, the preposition *out* always indicates movement towards an exterior, whereas particle *out*, though it can certainly have its prepositional meaning, also appears in a number of phrasal verbs where that meaning is lost, e.g. *work out (at the gym)*.

I contend, however, that this is a mischaracterization and that phrasal verb particles should be viewed, syntactically, as intransitive prepositions, a argument that has been made for Dutch particles (Goss, 1989). The clearest evidence for this is the rather obvious fact that all phrasal verb particles are homophonous with a preposition. They can also apparently fulfill the same syntactic role.

- (4) a. *I put the book
b. I put the book on the table
c. I put the book down

(4a) shows that the verb *put* is ditransitive, requiring a complement that expresses the goal of the putting, *the table* in (4b). There are two ways to interpret (4c): either as a transitive verb *put down* whose object mysteriously moves left to split up the verb, or as a situation completely analogous to (4b), except the transitive preposition *on the table* has been replaced with an intransitive preposition *down*. The latter explanation seems the more parsimonious, especially given that a number of other prepositions can be used to the same effect (e.g. *up*, *out* and *in*); this also serves to explain why verbs which often take PP goal arguments (e.g. *take*, *get*, *go*, *send*) also tend to appear in particle verbs. In turn, phrasal verbs that take full PPs (i.e. those that do not have split forms) are also often very idiomatic (e.g. *hit on*) and both full PPs and

particles can have a strikingly similar effect on the semantics of the entire verb phrase:

- (5) a. ?? The bullet whistled
 b. The bullet whistled past my ear
 c. ?? The building blew
 d. The building blew up

Coordination is often used as evidence for the special constituency status of phrasal verbs. However, full prepositions and particles actually behave similarly with respect to their tolerance of certain types of repetitive and mixed coordination:

- (6) a. ?? I took from Bill_i the old set of keys and
 from (Bill_i/him_i) the rent for last month

b. ? I turned off the TV and off the stereo

- (7) a. * I took from Bill the new set of keys and
 to Tom the old set of keys

b. ?? I turned on the TV and off the stereo

- (8) a. I took the new set of keys from Bill
 and the old set of keys from Tom

b. I turned the TV on and the stereo off

In both (6a) and (6b), there is an entirely unnecessary repetition of the prepositional element, and the result is degraded. (7) seems worse, almost to the point of incomprehensibility, whereas both (8a) and (8b) are perfectly fine.

1.3 Verbal Adjuncts

Although prepositions (including particles) often have a significant effect on the semantics of a verb phrase, examples like *put* are actually fairly rare; the vast majority of verbs do not require a prepositional complement, though they may take one optionally:

- (9) a. I baked a cake
 b. I baked a cake for you
 c. I threw the ball
 d. I threw the ball up (into the air)

In these cases, the preposition adds extra information that is not syntactically required. The verb class (Levin, 1993) that a particular verb belongs to

determines not only the prepositions that may appear optionally, but also the adverbs that may appear with it; consider the incoherent examples in (10):

- (10) a. ??I baked a cake to Toronto
 b. ??I threw the ball apart
 c. ??I understood it relentlessly

For the purposes of the account presented here, it will be desirable to dispense with the distinction usually drawn between second arguments and adjuncts to the verb, using a single term, verbal adjunct, for all prepositions, particles, and adverbs that appear post-verbally (excluding sentential adverbs like *fortunately*), independent of whether the verb requires them for grammaticality. All verbal adjuncts (including those that would traditionally be viewed as arguments) will appear in the same syntactic location (the specifier of VP), and will be primarily differentiated by their phonological properties.

1.4 Why Syntax?

Before turning to the syntactic accounts, it is worthwhile to justify the application of generative syntax to English Object Shift (OS), especially in light of recent work that downplays or discounts the role of syntax in Scandinavian OS (Erteschik-Shir, 2005, Holmberg, 1999). Fortunately there are several phenomena that suggest English OS is a syntactic movement. First, consider the binding facts in (11):

- (11) a. I sent [each boy]_i to his seat_i
 b. *I sent his_i report card to [each boy]_i
 c. I sent (home) with [each girl]_i a copy of her_i report card
 d. *I sent to her_i parents [each girl's]_i report card

(11a) and (11b) show that in the standard ordering, the direct object binds the indirect object (verbal adjunct) but not vice-versa. When we reverse the ordering of the post-verbal elements in (11c) and (11d), we also reverse the binding facts, which would be unexpected if the shift were entirely phonological in nature, since binding is generally assumed to occur on the basis of a syntactic relationship, i.e. c-command (Chomsky, 1981); if a verbal adjunct is to bind a heavy object, it must be in an appropriate syntactic location to do so.

Another fact that suggests syntax should not be discounted is the fact that a heavy NP never appears to the left of a CP (or TP) complement.

- (12) a. I told all the students that were attending the class that he went
 b. ?*I told that he went all the students that were attending the class

Though (12a) is slightly run-on, the right intonation could render it acceptable, which is not the case for (12b), the “heavy NP” version. Note that in terms of number of segments, the DP complement is heavier than the CP, but that is not

enough to trigger their rearrangement. It is no coincidence that that CP complements always appear to the far left in English syntax; I claim that they occupy the same syntactic location as the direct object, but are not subject to OS (and in fact seem to be intrinsically heavy). This seems in line with the empirical studies in Wasow 2002, which found that syntactic complexity, and not just pure phonological weight, was relevant to the choice of post-verbal ordering.

A final clue is given by the unacceptability of (13c):

- (13) a. I got from her a complete list of references
 b. Who did you get a complete list of references from?
 c. *Who did you get from a complete list of references?

Wh-movement is blocked in the heavy NP alternation. I will not attempt to explain this phenomenon, only noting that the unacceptability of (13c) also suggests an interaction between phonology and syntax.

2 Syntactic Accounts

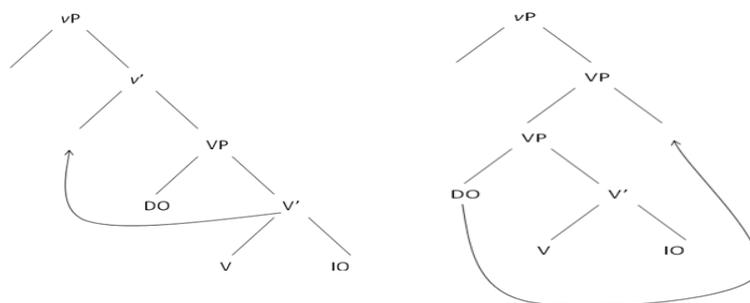
2.1 Heavy NP Shift

The seemingly rightward movement of heavy NP shift has always been problematic for X-bar generative syntax, because such movement is disallowed in head-initial languages like English; the syntactic tree branches down to the right, but feature checking can only draw constituents up the tree, to the left. Within that tradition, two major approaches have been taken to explain the syntax of heavy NP shift, both of which begin with the assumption that heavy NP shift is derived from the more common ordering.

One theory suggests that it is not the heavy NP that undergoes movement, but instead the indirect object (Kayne, 1994, Larson, 1988). In this view, the direct object (DO), in the specifier of VP, remains *in situ* while both the verb and the indirect object raise past it together into *vP* (14a). But then the question becomes: why would the indirect object undergo syntactic movement in response to a property of the direct object? And why can't CP complements undergo the same movement?

Another approach (14b) has the direct object raising to become a right adjunct to the VP (Haegeman and Guéron, 1999).

- (14) a. b.



Though a move like this solves the ordering problem, it immediately runs afoul of the binding facts we saw in the last section. If the DO is right adjoined to VP, it should be able to bind the IO with VP, and not the other way around, as we saw in (11). In general, I am highly suspicious of right adjunction, where the linear ordering in the surface structure is subverted in the syntax. The account presented here will use the rightmost position of adjuncts as evidence for OS; there will be no need to posit right adjunction at the VP level.

2.2 Phrasal Verbs and Object Shift

All the ideas that will form the core of my syntactic account have been presented elsewhere, generally in explorations of phrasal verbs and object shift in Germanic languages (including English), though as far as I am aware they have not been applied simultaneously to English OS in the manner here. Perhaps the most relevant is Johnson (1991), which characterizes split phrasal verbs as resulting from a pair of movements; the raising of the verb to a vP shell (Larson 1988), and the subsequent movement of the object to a syntactically adjacent position for the purposes of morphological case marking; this serves to explain why the movement is mandatory for case-marked pronouns. My account does not need this feature (see section 4), and so I will sidestep the question of case and simply assume that transitive verbs have a selectional feature that they must check locally with their DP object, i.e. [DP*].

Johnson makes explicit reference to Object Shift in Scandinavian, which indeed does seem directly analogous; in fact, early modern English had OS of the sort that is seen in Scandinavian, where object DPs (generally pronouns) appear on the left of negation (these examples were automatically extracted from a corpus of Shakespeare plays):

- (15) a. Transform us not to women
 b. My motion, have it not in my tongue

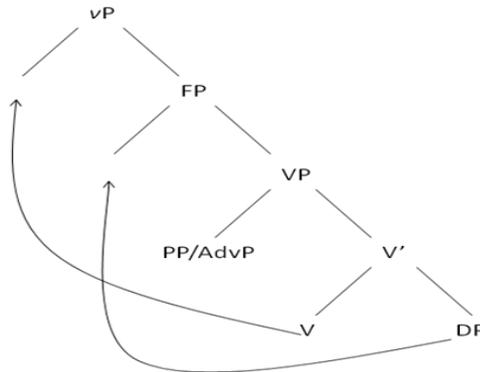
The ungrammaticality of (15) in modern English can be explained by the loss of V to T verb raising over the last 400 years (Kroch, 1989b, Roberts, 1985); since the verb does not raise to Infl in modern English, there is no object shift past negP at the edge of IP.

Johnson's account is based directly on the approach to Scandinavian OS in Holmberg 1986, however, the account in Holmberg 1999 denies case as the primarily motivator of OS. The role of the verb in his account is not attractor but rather blocker; the object moves in the phonology because of an [-focus] feature, but it cannot move if the verb remains *insitu* in the syntax. In coming to this conclusion, Holmberg had noted that OS does not always place the verb and object in direct proximity (though the object never moves past the verb), and that information structure (and not case) seems to play the crucial role in deciding whether OS occurs; this seems to be at least true in English as well, though perhaps to a lesser extent (Wasow 2002).

Bolajik (2002) provides a solution to the proximity problem, proposing that OS always occurs in the syntax, but that movement creates an A-chain, a series of copies at each step of the movement. The phonology (PF) has as a choice of which of these copies to pronounce and which to delete. All things begin equal, the phonology will select the highest copy in the syntax, however if there is a phonological constraint that is violated by this choice, lower copies are available as a last resort. This provides the mechanism for alternations that are syntactic in nature, but sensitive to the phonology; it is my claim that the phrasal verb/heavy NP in English is just such an alternation.

One final piece of the puzzle is provided by accounts of phrasal verbs which suggest the phrasal verb particle is merged above the verb in VP (Nicol, 2002, Solà, 1996). This is also traditionally the position where prepositional and adjuncts are merged into VP, which leads us directly to the syntactic picture in (16):

(16)



Verbal adjuncts of all stripes are left adjoined to VP, which otherwise contains the verb and the direct object. When the verb moves up into the vP shell, the direct object, drawn by the strong DP feature, moves with it past the adjunct(s), which then appear(s) at the far right in the surface structure. However, if the phonology blocks the latter movement, the DO appears *in situ*, and we have the heavy NP ordering(12c), the same ordering we see in the case of CPs(12a):

- (17) a. I explained to him patiently that he should not bother.
 b. ?*I explained to him that he should not bother patiently.
 c. I received from her recently a long letter which explained things.
 d. ?* I received from her a long letter which explained things recently.

In order to find additional support for this syntactic model, I now turn to a language that would not usually enter into a discussion of OS: Mandarin Chinese.

3 Mandarin Chinese and Deep Structure

I have suggested the underlying order of elements in the VP is Adjunct-Verb-Object, but that mandatory verb raising in English means that we never see this particular ordering; the verb will always appear in vP . But why do verbs raise at all? It has long been argued that verb raising is a reflex of verb inflection of some sort (Roberts, 1985); Biberauer and Roberts (2005) claim that differences in constituent ordering between Romance and Germanic languages is directly attributable to differences in the richness of agreement and tense marking on the verb. This suggests that less inflected SVO languages will have no or minimal verb raising; English seems to bear this out, having lost both V to T verb raising and the richer tense and agreement system seen in other European languages; nevertheless, English verbs are inflected for both tense and person, and it is my contention that this inflection is enough to trigger VP to vP raising.

Fortunately for my account, there is at least one SVO language with no inflection: Chinese languages are well-known for their complete lack of tense, agreement, and even case marking. The account of Mandarin VPs in Sybesma 1999, for instance, makes no use of verb raising¹; instead, the focus of his argument is that in Mandarin Chinese only a single constituent can ever appear after the verb. Other complements to the verb must appear pre-verbally, as adjuncts, resulting in the Adjunct-Verb-Object ordering:

- (18) Wo hui ti ni gei ta song naben shu
 I will for you to him give that.CLASS book
 ‘I’ll give that book to him for you’

- (19) Ta jinjin zhuazhu wo de shou
 Sh tight grasp I POSS hand
 ‘She holds/held my hand tightly’

This is exactly the ordering predicted when the two movements in (16) do not occur. I suggest that Mandarin Chinese, because of its lack of inflection, may

¹There is one construction in Chinese that does suggest verb-raising: when both an object and a post-verbal resultative adverb appear in a sentence, the verb is duplicated. One interpretation is that movement occurred (for reasons other than tense and agreement) and then both copies in the chain were pronounced.

actually represent the deep VP structure of SVO languages before the adjacency requirements of agreement, tense, and case marking conspire to scramble the ordering.

There is one very obvious counter example to this which should be dealt with directly: there are certain prepositions that *can* appear after the verb. For instance, the same basic meaning as (18) could be (awkwardly) expressed as follows:

- (20) Wo hui ti ni song shu gei ta
 I will for you give book to him
 'I'll give a book to him for you'

There are other prepositions that have this same property (e.g. *zai*, which means *at*), but it is important to note that every preposition that demonstrates this behavior (and there are many that don't) has another property: it can appear alone as a verb. For instance *gei*, in addition to being a preposition that can mean both *to* and *for*, is also the most basic word for *give*. The other preposition in (20), *ti* could not appear sentence finally, nor does it appear alone.

- (21) gei wo
 Give me
 'Give (it) to me'

- (22) *ti wo!
 For me!

This suggests that [*book to him*] in (20) might be reanalyzed as an independent clause which passively expresses the result of the giving (a book is given to him) and not two independent constituents (this would need to be true under Sybesma's account). In general, resultative adverbs appear post-verbally in Chinese (usually supplanting direct objects) which means they cannot easily be lumped into my classification of verbal adjuncts. Further discussion of other such phenomenon in Chinese would, however, take us too far afield.

4. A Single Phonological Constraint

In those cases in English where direct objects appear to the right of a verbal adjunct, I claim that a phonological constraint has blocked object shift at PF. In this section I will speculate to the nature of such a constraint. I adopt, without discussion, the basic formalism of the prosodic hierarchy (Nespor and Vogel, 1982, Selkirk, 1980), in particular I assume the following prosodic categories (in order from largest to smallest):

- (23) Utterance (Ut) > Intonational Phrase (IntP) > Phonological Phrase (PhP) >
 Prosodic Word (Pwd) > Foot (Ft) > Syllable (σ) > ...

My account will rely on the strict layering hypothesis, which ensures that a prosodic unit at any given level is fully contained within another unit at the next higher level. This entails that the prosodic structure of any given utterance can be expressed as a tree, with each layer of the tree corresponding to one of the prosodic categories.

Trukenbrodt (2007) describes how the interface between syntax and phrasal phonology can be characterized as a series of edge and wrap constraints that in general conspire to ensure that syntax XPs are mapped to prosodic units. A simple example of this is given in (14)

(24) [[[[Beverly]_{PwD}]_{PhP} [[likes]_{PwD} [Alabama]_{PwD}]_{PhP}]_{IntP}]_{Ut}

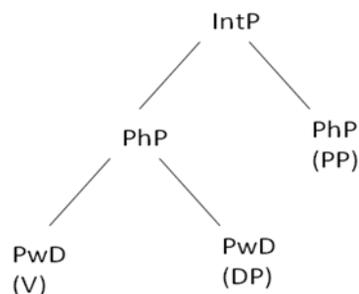
Both DPs are contained within a prosodic word, and the VP *like Alabama* forms a phonological phrase. Note that a prosodic word does not necessarily correspond to a single syntactic word, it may contain, for instance, unstressed functional heads (Selkirk, 1995).

Since prosodic structures can be represented as trees, it is possible to define the same types of relationship as are typically used in syntactic analysis. I define such a relationship, *p-command*, as being directly analogous to syntactic c-command: a prosodic unit *p-commands* its sister and all children of its sister. Using this relationship, I propose the following phonological constraint:

(25) The smallest prosodic unit that wraps any XP merged in VP (i.e. the direct object and verbal adjuncts) must *p-command* the prosodic unit which contains the verb (the head of VP)

That is, for any prosodic unit such that there is no lower prosodic unit which contains an XP that was merged under a VP projection (ruling out the external argument, i.e. the subject), that prosodic unit must be sisters to the prosodic unit which contains the verb. For instance, in (26), both the PhP containing the PP as well as the PwD containing the DP *p-command* the PwD that contains the verb:

(26)



The upshot of this restriction is that lighter XPs must be closer to the verb; if a larger prosodic unit intervenes, then the restriction will not be met.

- (27) a. [[Bill [[sent [it]_σ]_{Pwd} out]_{PPh}
 [to all his friends]_{PhP}]_{IntP}]_{Ut}
 b. [[Bill [[sent out]_{PhP}
 [information about the party]_{PhP}
 [to all his friends]_{PhP}]_{IntP}]_{Ut}
 c. [[Bill [sent out]_{PhP}
 [to all his friends]_{PhP}]_{IntP}
 [instructions on how to get to his birthday party]_{IntP}]_{Ut}

In (27a), the unstressed pronoun *it*, which cannot form a foot on its own, must be adjacent to the verb in order to form a single foot (and prosodic word) with the verb, satisfying the constraint. In (27a), it is *out* which is in danger of violating the constraint; if the DP object is weighty enough to form its own phonological phrase, then its presence between the verb and its adjunct would prevent (25) from being satisfied, and so an earlier copy of the DP object must be pronounced. Similarly in (27c) the DP must appear at the far right so that the PhP *to all his friends* can satisfy the constraint.

I would argue that the variability evident in post-verbal alternations comes from a variability in which prosodic unit a particular syntactic XP will be mapped to. I suggest that PPs and VPs (including DPs which contain them) are generally mapped to phonological phrases, but TPs and CPs (and DPs which contain them) may be mapped to intonational phrases. This is, however, an oversimplification, since overall syllable count, information structure, and lexical factors all appear to play some role in deciding the position of post-verbal elements (Wasow 2002). For instance, we may be able to explain the [-focus] constraint derived by Holmberg (1999) for Scandinavian object shift as resulting from focus and stress effects on phonological phrasing. Unstressed elements are phonologically light, and so generally must be adjacent to the verb (28a); if an element is emphasized, however, it can appear in a location remote from the verb:

- (28) a. *Don't pick up him.
 b. Don't pick up HIM!
 c. Don't pick HIM up.
 d. ?Don't pick that guy we saw up

A pronoun that is sufficiently stressed (enough to form its own phonological phrase) will need to appear at the right edge, as in (28b) However, it is also possible to stress *him* such that the move is not blocked (28c); here we might postulate that the stress caused a break only at the level of prosodic word, allowing *up* to still be able to p-command the verb. (28d) looks awkward on paper, but if the *that guy we saw* was spoken quickly (slurred into a single prosodic word) it could easily be rendered acceptable; the phonology seems extremely flexible in this respect.

The effects of the constraint proposed here are not limited to “blocking” object shift; it can also block other syntactic movements. Consider the case of pre-posed particles.

- (29) a. Out they came.
 b. ?*Out the man and the woman he loved came.
 c. Out came the man and the woman he loved.
 d. ?*Out came they.
 e. ?*Came the man and the woman he loved

Here, the preposed *out* (a verbal adjunct) must form a phonological phrase with the verb in order to satisfy the constraint; this is possible when the subject is light (29a), but not when it is heavy (29b). Instead, the subject (actually the unaccusative object drawn to the subject position by the EPP feature) remains *in situ* (29c), an option that is not available in the case when the subject is light (29d) or when *out* is not present (29e).

I should note that this is not the first account that has used prosodic units as the basis for deriving a weight constraint: Zec and Inkelas 1990 proposed that heavy NP shift occurs when an NP contains at least two phonological phrases. This is basically compatible with my account (since two phonological phrases would likely form an intonational phrase, blocking light NP shift), however my version is significantly more general, covering particle verbs as well.

Finally, it is interesting to consider the potential rationale for a constraint of this kind, namely ease of both processing and production. When the syntactic parser (or producer) begins to parse an embedded CP complement, for instance, after a certain point there is generally no further need to consider whether any PP or adverbial adjuncts encountered might be adjuncts to the matrix VP, since all such adjuncts must have appeared previously in order to satisfy this constraint. The syntax of the matrix clause is thus settled, lightening the memory and processing load of the parser.

5. Conclusion

I have sketched a broad account of the post-verbal ordering in English, arguing that an interaction between syntactic object shift and a phonological constraint are responsible for alternate orderings of heavy NP shift and phrasal verb alternations. The breadth of my approach, however, leaves it open to a number of criticisms. For instance, I have ignored the semantic differences between various complements to the verb since they do not seem to play a role in the syntax of weight based alternations; I have not, however, offered up any explanation for the ordering of adjuncts. Though I have presented a concrete phonological constraint that could explain the phenomena, I have purposefully left the mapping between syntactic and prosodic units vague, because there are counter examples for any simple mapping I could propose. There are also some elements that obviously defy my constraint (e.g. *wh*-phrases). A less obvious but

more troubling objection: if we have a phonological constraint that ensures the DP object will appear exactly as close to the verb as necessary, isn't that sufficient to explain the phenomena at hand? Is there any need to appeal to object shift? I would argue that there is, since the DP subject will appear next to the verb even in cases where the verbal adjunct is phonologically lighter; OS is blocked only in the case when the DP dwarfs its adjunct, so an ordering of post-verbal elements based entirely on phonological properties will not produce the most natural orderings.

There are a number of ways to proceed with this research. Further cross-linguistic exploration of weight-based phenomena could inform the account considerably; pronoun movement in Romance languages (i.e. cliticization) is of particular interest, since it seem analogous to Germanic object shift yet different in important ways (the pre-verbal location of the clitic). It would also be interesting to look at other SVO languages with various degrees of verb inflection to see if the pattern noted here holds up. Finally, the phonological approach presented here is very preliminary and somewhat simplistic, additional theoretical and empirical work is necessary for a full account.

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