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Cyclic Linearization and its interaction with other aspects of grammar: a reply

Our proposal is concerned with the relation between an aspect of phonology (linearization) and syntax.[1] In the picture that we had in mind, the syntax is autonomous — "it does what it does" — but sometimes the result maps to an unusable phonological representation. In this sense, linearization acts logically as a filter on derivations. We know of no evidence that the syntax can predict which syntactic objects will be usable by the phonology, and we know of no clear evidence that the phonology communicates this information to the syntax. In this sense, our proposal fits squarely into the tradition that Svenonius characterizes as the "mainstream".[2] We thus attempted to identify certain deviant configurations that are not plausibly excluded for syntax-internal reasons, but are filtered out in the linearization process.

Occupying center stage in our proposal is our view of Spell-out — in particular, the role played by the monotonic mapping between the syntactic derivation and the Ordering Table. (As the structure grows, the ordering table grows.) No account of actual linguistic phenomena, however, can rely solely on these abstract properties of Spell-out. Two other issues must be clarified and resolved in every case — or there is no explanation of anything to be had:

1. How does syntactic structure grow? What laws govern external merge and internal merge (movement)? In what ways does the class of possible merge operations differ from language to language? More concretely: In what positions are arguments and adjuncts externally merged? What triggers movement, and what are the possible landing sites for movement operations?

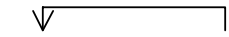
2. What is the "periodicity" of the mapping between syntactic structure and phonology? More concretely: Where in the derivation does Spell-out take place, i.e. what are the "phases" or Spell-out domains, and why are they what they are?

If we are right, the system as a whole may be thought of as having three components: a monotonic mapping between syntax and phonology (Order Preservation), rules for external and internal merge, and a specification of spell-out domains.

Faced with a particular phenomenon, it is a complex task to determine which of its aspects bear on which components of the overall system. Our strategy was therefore practical and fairly unambitious. We took for granted a general proposal concerning the laws of syntax that invokes rules of Merge in the sense of Chomsky (1995a, 2000, 2001a) and thus constructs structures "bottom-to-top". This is one example of a proposal for syntax that is compatible with our notion of "periodicity". Our goal was to see what happens when we take this view of syntax as a framework for provisional answers to the questions in 1, and combine these answers with a particular set of hypotheses relevant to the questions in 2.

We claimed that the result was a simplification of the syntactic system itself. We suggested first that the requirement of successive-cyclicity did not need to be stipulated, and continued with arguments that certain locality properties of Object Shift, Quantifier Movement and other constructions follow directly from our answers to the questions in 1 and 2 above.

In general, if our system is correct, we expect to find a characteristic pattern of interaction among movement operations that place an element E outside its original Spell-out domain D.

(1) 

In particular, when an element E exits D but cannot stop first at the edge of D — and the edge of D is occupied by some other element X — this movement will yield a Holmberg or Inverse Holmberg Effect. In the Object Shift construction, for example, E is the object and X may be an unmoved verb or other element. In the Quantifier Movement construction, E is the verb and X is the moved QP. In both constructions, the presence of X blocks the movement of E in ways discussed in our paper. The fact that Holmberg and Inverse Holmberg effects are found is thus an argument in favor of our overall system.

What we did not attempt was a comprehensive explanation of which movements do or do not target the edge of D. In some cases, our assumptions reflect the results of a substantial literature. For example, when QM places a quantified phrase in Spec, VP, verb-movement is blocked for linearization reasons, but would not be blocked if V could adjoin to the edge of its own maximal projection. We assumed that movement of this type is excluded for more general reasons, following the literature on the nature of head movement. In other cases, we made assertions concerning the presence or absence of movement through the edge of Spell-out domains which — though not outlandish — still await independent confirmation. We agree with our commentators that these issues provide an important agenda for future research, and that the results of this research are very likely to bear on the evaluation of our proposals. One step towards further progress might be a more precise characterization of the properties of movement required to derive the Holmberg and Inverse Holmberg effects within our system. In the next section, we offer some clarifications and speculations on this topic.

1. Movement through the edge: OS vs. QM

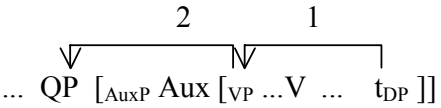
Acute questions arise when we compare our account of Holmberg's Generalization (HG) in OS with the account of the Inverse Holmberg Effect (IHE) in QM. Opposite assumptions seem to be needed for the two constructions. Movement through the edge of VP is prohibited for OS, but is found with QM. One would like to understand why. First, however, we should clarify what assumptions are needed, especially in light of a variety of observations and suggestions offered by the commentators.

We agree with Sells that a key difference between our proposal and the larger family of order preservation/shape conservation accounts in the literature is its interaction with successive cyclicity, as evidenced principally by the IHE that we discussed in connection with Scandinavian QM and Korean scrambling (following Ko (2004)). When we observe apparent violations of shape conservation, one might imagine, in agreement with Williams's commentary, that we are observing the effects of deletion of ordering statements (a possibility also discussed in a slightly different form by Müller) — thereby sidestepping an ordering contradiction. It is the IHE that teaches us (we suggest) that the apparent violation of shape conservation did not result from deletion of an ordering statement, but instead results from an intermediate, phase-internal, successive-cyclic step.

In QM, the apparent violation of shape conservation compels us to posit successive cyclic movement through the edge of VP. It is the quantified phrase in this intermediate VP-initial position, in turn, that blocks V-movement to C. If Williams were correct, and it is deletion of

ordering statements rather than successive-cyclic movement that yields the apparent violation of shape conservation, the interaction with V-movement would be unexpected.

Since the IHE plays a central role in distinguishing our proposal from possible alternatives, it is important to discuss considerations offered by our commentators that might call into question the existence of the effect. As we noted in our paper (following Rögnvaldsson (1987)), the QM construction, even when it first targets the left edge of VP, appears to involve a second step of movement to the left of auxiliary verbs (see example (36c) from our paper):

(2) 

If step 1 occurs before spell-out of VP, V-raising is impossible. (This is the IHE). Step 2 does not block Aux raising to C because spell-out does not re-occur until CP has been constructed.

Diesing, Holmberg, Nilsen, Sells and Svenonius present examples like (3) as a problem for our proposal. In this example, a negative QP (NegQP) co-occurs with V-raising to C:[3]

(3) Jan såg ingenting. (Swedish; Sells' (10))
Jan saw nothing

An example of this type is surprising, given the instances of the IHE that we discuss, if it involves QM of the NegQP in addition to V-raising. In fact, as our commentators note, contrasts like (4) below have been taken to suggest that QM for NegQPs (unlike other QPs) is obligatory:

(4) a. *Jag lånade Sven inga pengar. (Swedish; Sells' (11b))
I lent Sven no money

b. Jón hefur ekkert [sagt Sveini __] (Icelandic)
Jon has nothing said Svein-DAT
'Jon has told Svein nothing'

More precisely, (3) has the force of a counterexample to our proposals if both of the following claims are true:[4]

A. A NegQP must always undergo QM

B. QM always proceeds through the left edge of VP.

Claim A means that a NegQP must undergo movement to the landing site of step 2 in (2), and Claim B means that all movement of this sort also involves step 1 in (2).

Both A and B are reasonable assumptions — but they are not the only natural assumptions compatible with the data. As we will argue, it is possible to reject either A or B and still maintain our explanation for the IHE without running afoul of the facts in (3) and (4).[5] We first discuss a

solution that rejects A (in favor of a well-motivated alternative), and then discuss a different solution that maintains A but rejects B.

Alternative 1: a NegQP need not undergo QM

The fact that the NegQP in (4) must undergo QM does not necessarily teach us that QM is formally obligatory for NegQPs (claim A). A plausible alternative, we think, is provided by Christensen (1986).[6] If her proposal is correct, QM of a NegQP is not obligatory in *all* situations. It is forced for principled reasons in exactly those constructions like (4) in which we seem to detect its obligatoriness — and is *not* required elsewhere.

Christensen suggests that a NegQP is licensed when it is string-adjacent to (phonologically null) sentential negation. This "licensing" could be thought of as a well-formedness requirement on NegQPs, e.g. (5):

(5) *[... Neg X NegQP...], where X is overt.

— or else as a condition on the morphological formation of the negative word from its semantic subparts (e.g. the formation of *no book* from *not + any book*):[7]

(6) [... Neg X [*any* NP]] —> X [*no* NP], where X is *not* overt.

If Christensen's proposal is correct, the natural conclusion is that QM is formally optional for all QPs. When the absence of QM leaves overt material intervening between sentential negation and the quantified expression, a negative word cannot be licensed (or formed).

Consider now a circumstance in which a (potential) NegQP α is separated from negation by VP-internal overt material that does not later move out of VP, as in (4a):

(7) Neg $[_{VP}$ ...X...α ...] (*X* overt)

Here, if α does not move to the left of X (as it does in (4b)), it will never have a chance to appear adjacent to Neg. It is in this situation that QM will appear to be obligatory, even though it is formally optional. On the other hand, consider a circumstance in which X is an element that itself moves out of VP to a position to the left of Neg, as is the case when X is a V that moves to C. If no other material intervenes between α and Neg, no QM will be necessary in such a case. For this reason, when a NegQP is the leftmost element in VP except for the verb itself, V-to-C movement is possible, as in example (3) — the case of concern to our commentators. If this is the correct view of the apparent obligatoriness of QM for NegQPs, then the co-occurrence of a NegQP object with V-to-C movement seen in (3) is not a problem.

This approach provides a simple perspective on the variation observed among the Scandinavian languages in the distribution of NegQPs (Svenonius (2000); Nilsen (this issue)).

As Christensen notes, a NegQP object in Norwegian is acceptable *only* in a clause in which V-to-C movement has taken place, and furthermore may not surface to the left of other VP-internal material. Thus, examples like (3) have an acceptable Norwegian counterpart, but neither example in (4) is acceptable in Norwegian.

It should be obvious how such a language might fit naturally into the alternative sketched here. Norwegian is a language in which NegQPs are licensed or formed in accordance with the adjacency requirement discussed above — but QM is entirely unavailable. (Alternatively, QM is available but covert.) The adjacency requirement entails that structures in which Neg and the relevant QP are not adjacent will be unacceptable,[8] just as they are in the other Scandinavian languages, but the situation cannot be mitigated by movement of the NegQP.[9]

Alternative 2: QM need not proceed through the edge of VP

Suppose now that we learn somehow that Alternative 1 is wrong and that QM is in fact formally obligatory for NegQPs across the Scandinavian languages. We would then naturally take examples such as (3) to call into question claim B — that QM always proceeds in two steps via the left edge of VP, as in (2). There is in fact nothing intrinsic to our system that forces QM to uniformly proceed through the edge of VP. Instead, it is crucial that QM proceeds through the edge of VP only in those cases in which we observe successful fronting of a QP over overt VP-internal material. It is entirely possible to reject claim B in favor of the hypothesis that step 1 of QM is optional in the Scandinavian languages (other than Norwegian, to which we return below).

Consider a situation in which we observe a QP preceding VP-internal material that it would otherwise follow (as in (4b)). If we can be sure that this order reversal is not the result of phase-internal movement to a position lower than the edge (as discussed in Anagnostopolou's commentary; see section 3 below and in particular footnote 25), it must be movement *through* the edge. Such movement will have exactly the consequences we discussed in our paper under the rubric of IHE. Consider a case in which the verb in VP is finite, and moves to C. If QM still proceeds through the edge, an ordering contradiction will result, just as discussed in our paper. If, on the other hand, QM does not proceed through the edge, no ordering contradiction will result, and the structure will correctly be allowed.

More specifically, the paradigms that are relevant for testing IHE involve cases in which we know that a QP could precede an element α internal to the VP only if the first step in (2) has applied. In such cases, we predict that V-movement to C would be impossible. We thus predict the incompatibility of V-movement with non-string vacuous QM (relative to VP-internal material; see examples (38), (40d) and (41b) from our paper) — but do not exclude the co-occurrence of V-movement with string-vacuous QM as in (3), even under the assumption that Claim A is correct and Alternative 1 is wrong.

What is crucial is that the first step in (2) is optional. If QM proceeds through the edge of VP, it allows reversal of order among a QP and other overt VP internal material, but blocks V-movement to C. If QM does not proceed through the edge of VP, it may not produce a reversal of order among the QP and other overt VP-internal material — which is why V-to-C movement is possible and in fact required in such configurations.

This approach, like Alternative 1, allows a simple statement of the difference in this domain between Norwegian and the other Scandinavian languages. In essence, the only type of QM allowed in Norwegian is the kind seen in (3), where in the current approach, QM has not proceeded through the left edge of VP, but moves the QP in one step to its final landing site. What is excluded in Norwegian are those cases of QM that crucially involve an initial step through the left edge of VP. Consequently, as we noted in footnote 22 of our paper, and as stressed by Nilsen in his commentary, we would characterize Norwegian as a language in which step 1 in (2) is impossible (or obligatorily covert), with the result that QM must move in one step from inside the VP Spell-out domain to its final landing site.

It thus seems to us that examples such as (3) do not undermine the evidence that we provide for the IHE, and with it, the strong evidence for a central claim of our approach: that what is involved in order preservation is not faithfulness to an underlying order (as in many other approaches) but faithfulness to the order established at particular stages of the derivation.

Cross-linguistic variation:

It is also important, of course, to determine (if possible) which of the two alternatives just sketched is correct. Alternative 2 makes a clear cross-linguistic prediction. If Alternative 2 is correct, the availability of step 1 of QM (movement to the edge of VP) is subject to parametric variation. It is impossible in Norwegian and optional in the other Scandinavian languages. All things being equal, we might conceivably expect to find languages in which this step is obligatory. Imagine that Alternative 1 is false, and that claim A (obligatory QM for NegQP) is thus true. In a language in which the first step of QM is obligatory, examples like (3) should be impossible, but the contrast in (4) should still hold.[10] We do not know of any such language at present, but investigation of the prediction should help decide among the competing proposals.[11]

More generally, as our commentators note, one wants to ask whether there is a larger theory that determines which movements proceed through the edge of VP and which do not.[12] Why should it be the case, in some languages at least, that QM may proceed through the edge of VP, but OS cannot? It is possible, of course, that there is no interesting answer to this question, and that it is an accident of history that the Germanic languages do not contain an unequivocal example of OS proceeding through the left edge of VP.[13]

Suppose we could convince ourselves, however, that OS across languages never involves an initial step of movement to the edge of VP. A familiar strategy for explaining such a fact would propose that movement is always blocked unless required by some independent factor. If this strategy is productive, we will discover factors that motivate movement through the edge of VP in exactly those cases where HG is not observed, and we will discover no such factor in the case of OS.

One possible motivation for movement through the edge of VP is the interaction between semantics and economy principles within syntax. Assume that quantificational elements may not be interpreted in argument positions (Heim (1997); Larson and Segal (1995); among others). If this is true, a QP may not be interpreted in situ, and must undergo movement. (Similar considerations might apply to *wh*-phrases and to phrases with topic/focus features.) It is possible that movement to the edge of VP is motivated by this semantic factor, and that there is no independent feature of *v* that could motivate such movement. In the case of quantificational

phrases, it is the semantics that motivates the movement, and in the case of OS there is no motivation. [14]

Things cannot be quite this simple, given various observations made by our commentators (and in particular by Bobaljik) concerning passive and unaccusative VPs. Bobaljik makes it clear (based on the interaction of passive and OS) that the surface subject of a passive or unaccusative clause must move through a left-edge position within the lower Spell-out domain. We might view this movement as a response to the case requirement of the noun-phrase, much like movement through the specifier of a "defective" infinitival TP in a raising construction, or alternatively as a response to a feature and an EPP requirement on *v*P. (See Pesetsky and Torrego (2004) for one possible approach to such constructions.) In this context, we agree with our commentators that more work must be done to distinguish the possibility of movement through the edge of VP in passive and unaccusative constructions from its apparent impossibility in OS.

2. Periodicity

As many of our commentators note, the precise identity of the Spell-out domains (i.e. the *periodicity* of Spell-out) is just as crucial to our accounts of HG and IHE as is the question of which movements target the edge. As always, one wants to determine whether there is a hypothesis about the periodicity of Spell-out that is coherent and in accordance with the facts of individual languages, and also whether there is a plausible general theory that predicts the array of Spell-out domains cross-linguistically.

If detailed investigation uncovers Spell-out domain *paradoxes*, we would of course have reason to be suspicious of the approach. One salient question raised in our paper concerns the inclusion (or exclusion) of the external argument in the Spell-out domain that includes the verb and object. A similar question can be asked about auxiliary verbs. Both questions are taken up by some of our commentators. We offer a few comments on the issue here.

The status of the external argument:

As we noted in our paper, the ability of a finite verb to move to the left of the subject in Scandinavian V2 constructions indicates that the subject and the verb are not ordered until the domain in which V2 is established is Spelled-out. We assumed that this domain is CP. We therefore concluded that the subject in Scandinavian is not part of the lower Spell-out domain — i.e. not part of the domain that is responsible for HG effects and IHE. We thus proposed that *v*P is not a Spell-out domain in Scandinavian, but that VP is.

Certain observations by our commentators and others can be taken to reinforce the view that the subject does not form part of the lower spell-out domain. The "scorecard" that we might assemble from our paper, the commentators' remarks, and relevant other literature includes the following considerations:

(8) *Arguments that the external argument is not part of lower Spell-out domain*

a. The finite verb may move over the external argument in Scandinavian V2 (as just discussed).

b. OS may move an object over the external argument under certain circumstances in Swedish and Icelandic (Anagnostopoulou (this volume), examples (18) and (19); as well as remarks by Nilsen, Sells, Suranyi and Svenonius).

c. A floated quantifier associated with the subject may appear to the right of an object that has undergone OS in Icelandic, while the subject itself appears to its left (Anagnostopoulou (this volume), examples (16) and (17)).

At the same time, other considerations point in the opposite direction:

(9) *Arguments that the external argument* is *part of lower Spell-out domain*

a. Short V-movement in Northern Norwegian (independently attested) may not apply over a *v*P-internal left-peripheral external argument (a position for external arguments that is also independently attested) (Svenonius (this issue), citing Bentzen (2003)).

b. OS over the subject, of the type mentioned in (8b), is *impossible* in Norwegian and Danish — and under certain circumstances, in Swedish as well (Nilsen (this issue); see also Anagnostopoulou (this issue), note 3).

c. A floated quantifier associated with the subject may *not* appear to the right of an object that has undergone scrambling in Korean and Japanese, while the subject itself appears to its left (Ko (2004), citing Haig (1980); Kuroda (1983); Saito (1985), Miyagawa (1989); Fujita (1994), among others) — in contrast to the situation in Icelandic presented in (8c), as observed by Anagnostopoulou (this issue).

To the extent that the apparently conflicting evidence comes from distinct languages and dialects, one might account for the diversity of relevant data by proposing that there is cross-language variation in Spell-out domains, i.e. variation in periodicity. In some cases, we suspect that this approach is on the right track.[15]

As noted in (9b), for example, Ko (2004) shows that the interaction of subject-related floated quantifiers with object scrambling suggests that *v*P is a Spell-out domain in Korean and Japanese (in addition to VP). Anagnostopoulou (this issue), noting the argument from (8a) against *v*P as a Spell-out domain in Scandinavian, pointed out the correct prediction in (8b). In agreement with Anagnostopoulou, we do not believe that the contradictory data from Korean/Japanese and Scandinavian present a "periodicity paradox". Instead, we suggest that they argue for cross-linguistic variation in periodicity.[16]

Other cases of apparent differences among languages, on the other hand, might very well be due to differences in syntax proper, rather than periodicity differences. Consider, for example, the question of object shift over the subject — that is, (8b) vs. (9b).

Following Sells (2001), we might assume that the subject is occupying its normal surface position in such cases and that OS is thus moving the object higher than usual, yielding a case of "Long Object Shift". The argument that *v*P is not a Spell-out domain is straightforward. The existence of HG effects with OS makes it clear that, if *v*P is a Spell-out domain, OS does not move through its edge. Given this fact, if *v*P is a Spell-out domain, Subject<Object ordering is established when it is spelled out. If the syntax allows the object to undergo OS that places it to the left of the subject, an ordering paradox results, which should exclude the construction. If, on the other hand, *v*P is not a Spell-out domain, the subject will not be ordered with respect to the object until Spell-out applies again, presumably at the CP level. As a consequence, the object is free to undergo movement that places it to the left of the subject, without any danger of an ordering contradiction. Thus, we might take the possibility of "Long Object Shift" in Icelandic and Swedish as an argument that *v*P is not a Spell-out domain — a conclusion consistent with the other evidence in (8).

How might we explain those Scandinavian languages and syntactic environments that disallow Object Shift over the subject? In these cases, we must assume that some other property of the grammar prevents the object from preceding the subject. We might assume that in these case, *v*P *is* a Spell-out domain, with the consequence that Subject<Object order is established early in the derivation. While this view correctly excludes "Long Object Shift", it now becomes a puzzle that the verb may precede the subject in V2 (and in VP-fronting constructions with and without remnant movement, as discussed in our paper). One might conclude that we have found a "periodicity paradox", as suggested by several commentators.

It is possible, however, that syntax itself — not periodicity issues connected with the syntax-phonology interface — distinguishes these languages. (See the commentaries by Anagnostopoulou, Bobaljik and Diesing.) To allow Long Object Shift, under an analysis of the sort we have been considering, there must be a landing site for the object above Spec,TP. In a feature-driven theory of movement, for example, there must be an appropriately high head triggering the movement. It is quite possible that such a head is simply absent in the languages that disallow the construction (or triggers covert movement only), in which case one might suggest that *v*P is not a Spell-out domain in any of the Scandinavian languages.

Following suggestions of Anagnostopoulou (this issue) and Alexiadou and Anagnostopoulou (2001), one might also question the assumption that the subject in these constructions actually does occupy its usual high, *v*P-external position. In languages that allow apparent Long Object Shift, on this view, OS is actually "short" — targeting its usual position. It is the external argument that shows special behavior; it remains in a low position, perhaps Spec,*v*P, instead of raising to Spec,TP. If this analysis is correct, what distinguishes languages that allow the construction from those that do not is the possibility of a low position for the external argument. Once again, *v*P is crucially not a Spell-out domain. Crucially, once again, there is no periodicity paradox.

Some cases may pose more difficult problems, especially cases in which a single language appears to present conflicting evidence about the periodicity of Spell-out. For example, Svenonius points out, in connection with (9a) above, that though short V-movement in Northern Norwegian may not reorder the verb and external argument, long V-movement in the V2 construction may do so.[17] In this connection, it might be fruitful to re-examine the extent to which V2 presents a clear argument that *v*P is not a Spell-out domain.

As we noted above, it is crucial that the ordering of the subject and verb take place in the same Spell-out domain as that which establishes V2 order. In his commentary, Nilsen suggests that this domain might be lower than CP (Müller (2004); Nilsen (2003)), contrary to what we had assumed. Call this lower domain μP.[18] In effect, the movement of V over the subject in V2 would be a process akin (for Linearization purposes) to the movement of a QP in the QM construction across VP- (and *v*P-) internal material prior to movement from μP into the higher Spell-out domain CP.

As Shoichi Takahashi (personal communication) has pointed out to us, however, constructions with remnant [V(+X)] fronting can also yield V(+X)-S-O order. Since V moves over S here too, the reasoning just sketched would entail that the remnant movement takes place first within μP, like V-movement in V2 — which in turn means that OS over the verb took place within μP as well. Since these remnant movement constructions appear to obey HG (one of our central points), there must have been a Spell-out domain smaller than μP in which the relative order of the verb and VP-internal material was fixed. So if Nilsen's suggestion is on the right track, there must be three Spell-out domains in the clause: CP, μP and something like VP. It is interesting to investigate this possibility in light of Ko's (2004) arguments that *v*P and VP are both Spell-out domains in Korean. Specifically, one might suggest that universally the Spell-out domains are VP, CP and a projection in between — either *v*P or μP, depending on whether or not the language has V2.

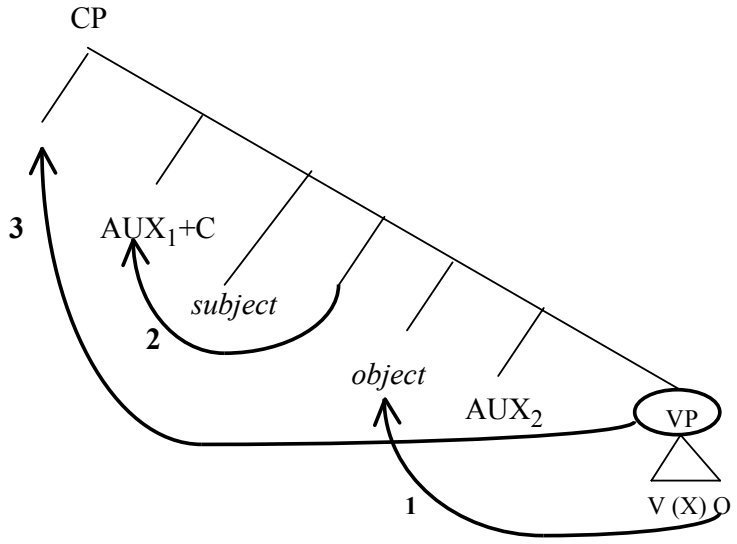
The status of auxiliary verbs:

The fact that auxiliary verbs are outside the lower Spell-out domains of a clause is perhaps less controversial than the periodicity status of the external argument and *v*P. Here too, important issues arise, as noted in particular by Holmberg in his commentary.

As Holmberg points out, if the first Spell-out domain above an auxiliary verb *Aux* is CP, we expect OS to be able to cross Aux as long as V<O order is preserved. If, on the other hand (as pointed out by Svenonius in his commentary) there is a Spell-out domain between VP and CP that includes Aux but does not include the landing site of OS, then we do not expect OS across Aux to be possible. These questions interact crucially with the question of the external argument just discussed — since if Aux is contained within a Spell-out domain lower than CP, *a fortiori* the external argument is also contained within that Spell-out domain.

As it happens, we have been conducting a pilot study on these very questions.[19] A relevant configuration, as Holmberg notes, is one in which OS occurs in conjunction with remnant VP movement to Spec,CP — and enough auxiliary verbs are present to allow one to see OS moving over one of them, while (of necessity) another auxiliary verb has moved to C, as part of the V2 phenomenon.[20]

(10)



VP ordering: **V (< X) < O**
CP ordering: **VP < AUX$_1$ → V (*or X*) < AUX$_1$**
AUX$_1$ < *subject*
subject* < *object
***object* < AUX$_2$**

If there is no Spell-out domain that contains Aux2 in (10) while excluding the landing site of OS, our approach predicts that the result should be acceptable.

This prediction can only be tested if VP topicalization in a complex structure of this sort is acceptable independent of OS. In his commentary, Holmberg offers the judgment (his (8c)) that VP topicalization is in fact excluded in these environments, independent of OS, rendering the prediction untestable.

Our three consultants presented a more mixed picture. One of them showed a pattern that can be interpreted as fitting the prediction under the assumption stated, though the best examples were still degraded. Another consultant provided very similar judgments, but only if VP-fronting stranded the light verb 'do' — a phenomenon more general in Swedish, whose analysis is somewhat open (Anders Holmberg, personal communication). Finally, a third consultant presented judgments much closer to Holmberg's.[21] We hope to explore these issues in greater detail in ongoing research.

3. OS of IO over DO: just linearization?

As many of our commentators have pointed out, some of the facts that are explained by Cyclic Linearization (CL) might also follow from syntax-internal principles such as Attract Closest (AC; see Chomsky (1995b, 2000), Richards (1999); Richards (1997) among others). As we will see in the next section, Superiority phenomena do not follow from CL. We thus will need both AC and CL. This raises immediate questions about the division of labor between these two constraints.

The questions are particularly pertinent to the investigation of the distribution of IO-DO reorderings.

In a range of cases, IO blocks movement of DO. One would like to know whether this is an effect of AC or CL, or both.[22] One reason to think that CL is the governing factor in regulating OS is the apparent fact that DO can undergo object shift over IO when subsequent movements restore IO<DO order. This, if our data are correct, is the case when OS of DO is followed by remnant movement of the verb and IO.

(11) ?[Gett henne t_{DO}] har jag den_{DO} inte...
given her have I it not (Holmberg pc)

In (11) ((30a) from our paper) the environment for remnant movement was first created when DO exited the VP by OS, crossing over IO. This movement would constitute a counterexample to an AC account of those cases in which IO does successfully block OS of DO. However, the availability of the initial movement in this context is predicted by the CL account.

The facts are also consistent with a theory that posits AC as an explanation for other phenomena (e.g. the blocking effect of IO in passive), so long as OS is sensitive to a feature that can be present on some DPs and not on others. Thus, for example, in (11), the DO pronoun would be taken to bear a feature not present on IO.[23]

We must still ask, of course, whether we can detect a role for AC in regulating OS, and especially whether IO can be shown to act as an intervener for OS of DO. If OS involves a feature that might be present on DO but not on IO in a given derivation, as (11) seems to indicate, we do not expect to be able find easy evidence that AC might play such a role.[24]

Anagnostopoulou and Bobaljik argue, however, that OS is not sensitive to a feature that might distinguish an IO from a DO. They call attention to an important cross-linguistic correlation discovered by Anagnostopoulou (2003). Anagnostopoulou discovered that the Scandinavian languages and dialects that allow long passive of DO over IO are precisely those languages that allow a similar long instance of OS. She furthermore suggests that this correlation reflects variation in the availability of a landing site for DO lower than the landing sites for OS and passive — i.e. an initial movement step that can reorder IO and DO. If DO undergoes this "short" initial step, it will be closer to the triggers for OS and passivization than IO. If this initial step is unavailable in a language, DO will remain farther from these triggers than IO.

The correlation discovered by Anagnostopoulou is important, and her proposed account in terms of an initial reordering seems to us likely to prove correct. (See Doggett (2004) for other arguments for this reordering.) Note, however, that what is responsible for the correlation is not any claim about the nature of constraints that restrict OS or passive, but rather the fact that the output of the initial reordering feeds these operations. We propose, therefore, to adopt Anagnostopoulou's suggestion, without, however, disrupting in any way our account of (11) and similar facts.

Anagnostopoulou argues that a particular variant of her proposal, if transferred into our overall framework, would require undesirable complications. The variant she considers is one in which initial reordering takes place within a spell-out domain ("Domain A") lower than VP.[25] It

is not necessary, however, to assume that the domain in which initial reordering takes place (in those languages that allow it) is itself a Spell-out domain. Thus, we see no obstacle to adapting Anagnostopoulou's proposal *in toto* within our framework.[26]

4. Superiority: beyond just linearization

In his commentary, Müller notes a certain "order preservation" character to standard Superiority effects in multiple questions, and observes (correctly) that these effects do not follow from our system. *Wh*-movement clearly has the capacity to reverse the order of a *wh*-phrase and its phase-mates. For this reason, we assume that it proceeds successive-cyclically through the edges of Spell-out domains. At the same time, one might view Superiority effects in multiple questions as a case in which *wh*-movement lacks the capacity to reverse order with respect to a particular phase-mate — and thus as an order preservation effect.

In our system, if we observe order preservation between elements X and Y, but not between X and Z or Y and Z, we might suppose that X and Y are contained in a Spell-out domain D that does not contain Z. Thus, the order of X and Y will be fixed within D, and must be maintained thereafter, but X and Y are free to move over Z in a later Spell-out domain. This strategy cannot explain, as Müller notes, the phenomena of Superiority relevant to such contrasts as *Who saw what.* vs. **What did who see*. There is clearly no order preservation effect preventing *what* from moving over the verb, but there is at the same time no plausible domain D that contains *who* and *what* but not the verb. Consequently, in the framework of our paper, we must probably conclude that Superiority facts are not order preservation effects, but arise from some other factor, e.g. AC, discussed above.

Müller points out that this failure of unification could be viewed as a potential argument in favor of the alternative, Optimality Theoretic perspective advanced by Müller (2000), building on ideas of Williams (2003) that are also reflected in Williams' own commentary. In these frameworks, all instances of movement are governed by a very general Order Preservation (Shape Conservation) constraint — which is, however, outranked by certain other constraints that require it to be violated from time to time. One such constraint is the EPP requirement on C that at least one instance of overt *wh*-movement take place in an English interrogative. This requirement will motivate a violation of Order Preservation, allowing (in fact, forcing) a *wh*-phrase to move over such elements as the verb in order to satisfy the EPP requirement. At the same time, the system will pick the derivation that minimizes the violation of Order Preservation. Thus, when there are two *wh*-phrases that in principle could move leftward to satisfy the relevant EPP requirement, picking the leftmost of these phrases will violate Order Preservation with respect to fewer elements than would the choice of the rightmost.[27]

In contrast, Object Shift in Scandinavian is viewed as the product of an EPP requirement on a head other than C (e.g. AgrO) that is ranked lower than Order Preservation. As a consequence, violations of Order Preservation in service of EPP satisfaction will not be found. Instead, EPP satisfaction will be violated in service of Order Preservation. Thus, when OS would violate Order Preservation with respect to the relative position of V and O, it simply does not take place.

In our paper, we argued that Order Preservation (i.e. monotonicity) is irrelevant to phase-internal operations. We implemented this idea with the proposal that Ordering Statements are

produced by the grammar only at the point of Spell-out for each phase (along with the assumption that the Ordering Table has to grow as the derivation proceeds). We could have assumed a slightly more complex implementation in which Ordering Statements are produced at every step of the derivation but could be deleted to resolve contradiction before the next Spell-out takes place. For example, we could imagine a "Provisional Ordering Table" for which monotonicity doesn't hold (i.e. statements can be deleted from the Provisional Ordering Table to resolve contradiction). Phase-finally, the contents of the Provisional Ordering Table are placed on the "Definitive Ordering Table" — a set from which ordering statements are *never* deleted (which renders contradictions fatal and unresolvable).

In this more complex variant of our system, we could now imagine that the syntax, whenever it is faced with a choice among possible next steps — e.g. a choice between moving *who* or *what* in (1) — will make the choice that requires deletion of the fewest Ordering Statements from the Provisional Ordering table to resolve contradiction. This proposal, in turn, if rephrased in OT terms, amounts to the claim that the grammar includes a constraint *forbidding* deletion of Ordering Statements from the Provisional Ordering Table ("NoDelete"). The NoDelete constraint is soft — outranked by another factor (EPP for the *wh*-feature) that requires violations of Order Preservation within the Provisional Ordering Table in certain circumstances. The Definitive Ordering Table, which stands outside this system, is not subject to deletion of the sort just described, and is uninterpretable if it contains contradictions.

This variant of Müller's proposal leaves unchanged the fundamental properties of our system, since it continues to assume that Ordering Statements are sent to the (Definitive) Ordering Table as each phase is spelled-out, with the consequences suggested in our paper. Thus, this variant preserves our account of the IHE, which relies on the observation that long-distance movement with a particular set of predicted properties proceeds successive-cyclically through the edge.

Williams, discussing Superiority Effects in his commentary, presents an interesting challenge to even this aspect of our approach — in particular, the idea that there are Ordering Statements that reflect intermediate positions occupied in the course of successive-cyclic movement. He notes (correctly) that we predict that orders established when any given domain is spelled out will be inherited by later domains. He offers as a possible counterexample the behavior of multiple *wh*-movement in Serbo-Croatian. Specifically, he offers examples of short-distance *wh*-movement in which Superiority is apparently violated, and then notes that Superiority may not be violated in long-distance questions, even when both *wh*-phrases started as phase-mates.

This is problematic for our approach, Williams argues, in that a local instance of multiple *wh*-movement that violates Superiority (e.g. his (6b)) should be able to serve as input to further *wh*-movement. This would incorrectly permit apparent Superiority violations in long-distance *wh*-movement — inherited from violations first incurred in an earlier Spell-out domain. That is, the acceptability of his (6b) should entail the acceptability of his (7b).

It is not clear, however, that this contrast poses a problem for our approach. Williams' discussion presupposes that the relevant distinction between cases in which Superiority can be violated in Serbo-Croatian and cases in which it cannot is the distinction between local and long-distance *wh*-movement. If Bošković (1997) is correct, however, the relevant distinction is not between local and long-distance *wh*-movement, but between *wh*-movement in matrix vs.

embedded clauses. Bošković notes that the possibility of violating Superiority (as in Williams' (6b)) is in fact limited to matrix questions. In embedded questions (and in multiple-*wh* corelatives), Superiority effects resurface:

(12) a. Jovan i Marko ne znaju [ko je koga istukao].
Jovan and Marko not know who AUX whom beaten
'Jovan and Marko do not know who beat whom.'

b. ?*Jovan i Marko ne znaju [koga je ko istukao].
Jovan and Marko not know whom AUX who beaten
(Bošković (1997), example (12))

If the possibility of violating Superiority is limited to matrix clauses, we do not expect to find any legal Superiority violations in an embedded clause, and thus such violations should not be inherited by higher clauses. Thus, we do not, in fact, predict examples like (7b) to be acceptable. Williams' (6b) is not expected to serve as input to further *wh*-movement, and there is no special problem for our overall approach. Of course, we must hope that the correct account of the matrix/subordinate asymmetry will not conflict with this line of reasoning. For example, it will be profitable to ask whether Bošković's own account of these phenomena (and related constructions in French and other languages) is consistent — or can be made consistent — with our approach.

We thus see again, as we has seen throughout this reply, that evaluation of our proposal can only be made in the context of the syntax whose results are being linearized. This is a complex task, of course, and many relevant questions remain open. In this reply, we have attempted to clarify a few of the most important issues raised by our commentators in this connection.

NOTES

[1] Our reply to the commentaries on our paper is, of necessity, very far from comprehensive — given the wide range of topics, ideas and criticisms raised in the ten commentaries to which we respond here. We have chosen to focus most of our attention on those concerns that appear to be shared by several commentators — in particular because this set of concerns has a clear internal coherence to it, as we discuss below. Unfortunately, a number of other important issues could not be addressed here. We hope to return to them in future work.

[2] We thus disagree with Svenonius's claim that the overall architecture of our proposal is particularly novel. One might ask whether this is a positive result. Possible evidence that the phonology does indeed send information back to the syntax might come from the observation that weak pronouns in Mainland Scandinavian seem to undergo Object Shift obligatorily when possible, but are allowed to stay in situ (at least in the overt syntax) when Object Shift would violate Holmberg's Generalization. If we are correct that the effects of Holmberg's Generalization arise from linearization contradictions, this might be a case in which the obligatoriness of an overt syntactic process is conditioned by the actions of the phonology. See Bobaljik (2002), however, for a "mainstream" approach that could be adapted to our system with minor modifications.

[3] Sells also presents an apparent problem for Ko's IHE, which we do not have the space to discuss. The issue is discussed at length by Ko (2004).

[4] Diesing responds to this example with an alternative view of part of our IHE paradigm — a proposal similar to one that we (following Jónsson (1994)) argued against in note 26 of our paper. Diesing suggests that it is not the case that when the verb raises, a quantificational DO may not undergo QM. Rather, when the verb raises, an IO can and must undergo OS. This in turn removes the order-reversing possibility for QM. Thus in Diesing's (10), we see both OS and QM, under Diesing's analysis.

Diesing argues that her (9b) (an example of the IHE for us) is excluded because the indirect object *Svein* does not undergo OS. Thus (10), with IO-DO order, is acceptable, and alleged shows OS of *Sveini* and QM of *ekkert* coexisting with V-to-C movement. Diesing's suggestion raises many interesting questions and possibilities, which we lack the space to address here. (Her proposals are uniformally consistent with our system in the variant discussed as "Alternative 2" below.) It is, however, worth noting that our account extends to cases where the considerations raised by Diesing are irrelevant, e.g. cases in which QM — if it could occur — would cross an element that cannot itself undergo OS. See also discussion of this point in connection with QM stranding prepositions by Svenonius (2000).

[5] In footnote 22 of our paper we accepted assumption A, which would force us to reject B, as in Alternative 2 below. But we know of no actually reason to prefer this choice.

[6] Kayne's (1998) alternative development of Christensen's proposal arises in part from a commitment to claim A, and thus would require us to adopt the view discussed below that maintains A.

[7] The phenomenon of "scope splitting" (discussed by Jacobs (1980), Potts (2000),Penka (2001), Kratzer (1995) and Swart (2000) — among others) provides independent arguments for the latter approach (and certain versions of the former). Scope splitting is a situation in which a quantifier takes scope between the *not* and *any* components of a NegQP.

[8] If NegQPs are morphologically composed under adjacency, the result will not be unacceptable, but will yield an overt *not... any* rather than a NegQP (See Sells example (11c).

[9] This view of the variation internal to Scandinavian invokes none of the "complications" seen by Nilsen in his discussion of how our proposal might handle the syntax of Norwegian NegQPs.

[10] This is the pattern that many of our commentators thought we were committed to, as a description of Scandinavian more generally (because of their assumption that we were committed to both Claim A and Claim B).

[11] It would be useful in this connection to have an independent way of diagnosing movement through the edge of VP. If Nissenbaum (2000) is correct, the licensing of parasitic gaps by a moved element should provide such a test. In this context, it will be interesting to examine Svenonius's (2000) argument that parasitic gap licensing requires QP>V order, though the judgments are controversial (Jónsson (1994)). See also Svenonius (this issue). As examples (3)-(5) in Nilsen's commentary make clear, the distribution of parasitic gaps might diagnose movement through the edge of VP even in environments in which OS takes place — in particular under the analysis attributed Nilsen to Norvin Richards (personal communication). As Nilsen points out, the data can be interpreted as indicating that whenever linearization considerations would need movement through the edge, parasitic gaps are obligatory in adjuncts, in obedience to what Nissenbaum called Larson's Generalization (Larson (1988)).

The main problem raised by Nilsen for this analysis is the need to posit a Heavy NP Shift-type rule applying to a weak pronoun that usually would not undergo such a process. (A similar objection is made by Holmberg, in connection with his example (3).) We might suggest, however, (as Richards points out to us) that the heaviness requirement otherwise found with Heavy NP Shift might be a by-product of a particular phonological configuration disrupted in Nilsen's examples by remnant VP fronting.

[12] For example, Bobaljik suggests that the grammar might impose an ordering requirement on the output of a given phase that would in turn force phase-internal movement to take place. He points out that if we take V2 to be a requirement of this sort, imposed when CP is spelled out, cyclic linearization might account for the special strength of *wh*-island effects in V2 languages. The proposal is ingenious and we hope to return to it in future work. If Bobaljik is correct, the "larger theory" mentioned in the text will be diverse.

[13] As Bobaljik (1995) points out, in the OV Germanic languages (German and Dutch), OS-like fronting can apply in the absence of verb movement to C. This observation, however, does not necessarily provide us with examples of OS through the edge of VP, since (as Bobaljik argued), the OV character of the languages itself predicts this pattern of data if (as Bobaljik argued, like us) linear order is relevant to HG.

[14] Note that these considerations would require us to assume that all QPs move through the edge of VP in all languages. In particular, in Norwegian (and whenever a QP is pronounced in situ), we would posit covert movement through the edge of VP. The linearization consequences of covert movement are, of course, the same as the consequences of failure to move in the first place. See Fox and Pesetsky (forthcoming) for a theory of covert movement, based on ideas of Nissenbaum (2000), consistent with our approach to Spell-out.

[15] In Fox and Pesetsky (in preparation), we actually argue that Spell-out domains do not vary across languages, but that external merge (basic phrase structure building) may occur before or after spellout, i.e. overtly or covertly. In a language in which *v*P appears not to be a Spell-out domain, specifiers and adjuncts of *v*P are merged after Spell-out of *v*P. As a consequence, they do not figure in the ordering statements supplied when *v*P is spelled out. In order to be linearized under the algorithm offered in the appendix to our paper, the subject will have to raise further.

[16] Ko (2004) notes that certain apparent floated quantifiers in Korean — principally those that have case markers suffixed to them — do not show the effects that argue for *v*P (and VP) as a Spell-out domain. The existence of such elements in Korean raises a caution concerning the proper interpretation of the Scandinavian data cited by Anagnostopoulou. We must determine whether the failure of Scandinavian floated quantifiers to show the effects found in Korean is due to periodicity differences or whether the Scandinavian quantifiers are actually counterparts of the Korean quantifiers that also fail to show the relevant effects. Anagnostopoulou suggests that there are arguments that settle the matter in favor of her interpretation of the data.

[17] Svenonius' and Bentzen's arguments rest on the following premises: (1) that the subject may occur to the right of adverbs like *usually;* (2) that short V-movement may apply over the same set of adverbs; and (3) that these adverbs have a fixed position. The fact that the order V-*usually*-Subject is not possible is thus a surprise, which Svenonius suggests may indicate that Subject-V order is fixed within a lower Spell-out domain. Note, however, that premise (3) might be questioned, in which case premise (1) would not necessarily argue that the subject may remain internal to the *v*P. If the subject must raise in Northern Norwegian, the impossible V-*usually*-Subject order could be explained straightforwardly as a consequence of the non-application of obligatory subject raising. Bentzen's observations also suggest that the denial of premise (3) might have to be extended to negation, which behaves like *usually* in this paradigm. That might be a problematic move.

[18] A suggestion of this sort would lead to rather different proposals about cross-linguistic variation of the sort studied by Ko and extended by Anagnostopoulou, which we have not yet investigated. At the same time, this type of analysis might eliminate some of the questions noted by Suranyi in his commentary that arise in connection with our proposal in OV languages with Verb Second.

[19] We wish to thank Alevtina Asarina for conducting these investigations under MIT's Undergraduate Research Opportunities Program. This research was made possible by a grant from the Dean's Fund of the School of Humanities, Arts and Social Sciences, MIT.

[20] Holmberg suggests that another relevant configuration might be found in the domain of Icelandic Stylistic Fronting, where (as in remnant VP movement), the main verb of a sentence

may come to precede the auxiliary. In this construction, the auxiliary verb occupies the "second position" relevant to V2 — either C or perhaps I in Icelandic — and the next highest verb moves to the left of the auxiliary. This second instance of V-fronting should license OS in our approach, and possibly permit us to see OS move the direct object over the auxiliary. Unfortunately, since the auxiliary verb has raised to I or C, we only predict the possibility of OS over the auxiliary if there is a landing site for OS that is higher than that usually observed in Icelandic.

[21] The examples tested were:

(i) Jag skulle ha öppnat dörren/den.
I shall have opened the-door/it.

(ii) Öppnat dörren/den skulle jag ha.
Opened the-door/it should I have.

(iii) Öppnat skulle jag ha dörren/den.
Opened should I have the-door/it.

(iv) Öppnat skulle jag dörren/den ha.
Opened should I the-door/it have.

Because of the possibility of various confounds (e.g. causative vs. aspectual uses of 'have'), more careful study will be necessary before we can reach firm conclusions, of course.

[22] Note that this type of overlap is not necessarily an indication of a redundancy. Two constraints can overlap in empirical coverage without either being redundant. See also section 4 below

[23] There are other examples in which DO undergoes OS over IO and a later instance of movement "legalizes" this otherwise impossible instance of IO. For example, if IO undergoes *wh*-movement, OS of DO becomes possible, as noted by Holmberg. Here, one might claim, with Anagnostopoulou (2003), that the trace of *wh*-movement fails to count as an intervener, with Attract Closest considerations determined phase-finally (i.e. after both OS and *wh*-movement have taken place), as proposed in Chomsky (2001a) and Chomsky (2001b). Such a solution is not immediately available for our examples with remnant movement, since the intervening IO has not itself moved (though the containing *v*P has).

[24] If the relevant feature were overtly morphologically marked, then in an example in which both IO and DO bore such a feature, we would expect AC to block movement of DO over IO. We are not aware of such a case.

[25] The main complication that she notes relates to IHE. If DO could be moved to the left of IO within a Spell-out domain lower than VP, we might expect that DO<IO order would be available in the QM paradigm in Icelandic without simultaneously blocking verb movement. That is, we might incorrectly fail to predict certain instances of the IHE.

[26] We inherit, of course, Anagnostopoulou's own unanswered questions, including (a) why initial reordering *must* feed OS or passive, i.e. why ***I gave the book Bill*** is impossible; and (b) why, in

certain dialects of Norwegian and Swedish, initial reordering can proceed across a pronoun, but not a full DP (Anagnostopoulou's (20)-(21)).

[27]If one were to adopt this more complex model, the "tucking in" character of multiple-specifier formation posited by (Richards (1997, 1999)) might also be explained as anticipated in Suranyi's commentary on our paper. A non-tucking in derivation requires deletion of an ordering statement relating the two *wh*-phrases. This deletion can be avoided by the tucking-in derivation which otherwise involves the same amount of deletion.

This suggestion presupposes the countercyclic tucking-in of Richards. Suranyi suggests that our proposal could be adapted to avoid such countercyclic movement entirely. Expanding on his suggestions, one might imagine that the "Laws of Precedence" leave multiple specifiers of relevant categories unordered among themselves -- determining only that specifiers of XP precede non-specifier dependents of XP. The task of ordering multiple specifiers would then fall to statements on the "Provisional Ordering Table" that reflect their earlier positions. This proposal would predict, however, that in a multiple specifier configuration the linear order of the specifiers might not reflect their relative scope (c-command relations) after movement. Evidence against this conclusion is provided by (Nissenbaum (2000, appendix to chapter 3)), who shows that the relative order of *wh*-specifiers in Bulgarian multiple questions does reflect their relative structural prominence for binding and related phenomena. If Nissenbaum is correct, tucking in is simply a fact. If so, the alternative sketched in this paragraph is not viable.

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