

Complementizer-stranding by phase

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Abstract. We show that restrictions on a variety of hitherto disparately treated A'-movements can be regulated using a single escape hatch mechanism familiar from the GB literature, suitably amended for compatibility with current minimalist frameworks. Our account supplants the theory of Object Shift in Svenonius (2000) which involves adjusting the Phase Impenetrability Condition (Chomsky, 2000) with a process that allows information structure constraints to affect convergence at PF. Svenonius' mechanism, which we discuss in section 2, requires that scrambling (both Object Shift and long-distance) can only occur over phases that are head-final. However, we show that long-distance scrambling does occur in CP head-initial languages. We outline our escape hatch theory and recast it in Minimalist derivational terms. We then apply this kind of analysis to A'-movements over CP in Russian *wh*-questions and Latin long-distance scrambling. We discuss how preposition-stranding in English appears to follow processes analogous to A'-movement from CP. Finally, we discuss the idea that complementizers in long-distance A'-movement are stranded in much the same way as prepositions in preposition-stranding constructions.

Keywords. phases, scrambling, A'-movement, preposition-stranding, minimalism, escape hatches

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1 Introduction

In this paper, we show that restrictions on a variety of hitherto disparately treated A'-movements can be regulated using a single escape hatch mechanism familiar from the GB literature, suitably amended for compatibility with current minimalist frameworks.

This account supplants the theory of Object Shift in Svenonius (2000) which involves adjusting the Phase Impenetrability Condition (Chomsky, 2000) with a process that allows information structure constraints to affect convergence at PF. Svenonius' mechanism, discussed in section 2, requires that scrambling (both Object Shift and long-distance) can only occur over head-final phases. However, we show that long-distance scrambling does occur in CP head-initial languages.

We outline our escape hatch theory and recast it in Minimalist derivational terms in section 3. In section 4, we apply this kind of analysis to A'-movements over CP in Russian *wh*-questions and Latin long-distance scrambling. Then we discuss how preposition-stranding in English appears to follow processes analogous to A'-movement from CP (section 5). Finally, in section 6, we discuss the idea that complementizers in long-distance A'-movement are stranded in much the same way as prepositions in preposition-stranding constructions, and we end with thoughts on future work.

2 Scrambling

2.1 Scrambling as a phenomenon

Here we briefly describe the characteristics of scrambling. Relevant types of scrambling include object shift and long-distance scrambling.

Svenonius (2000) characterizes scrambling as:

- (1) **Interpretation-driven:** Conditioned by interpretive, rather than morphological factors¹.
- (2) **Optional.**

¹We often take “interpretive” to mean discourse-related motivations such as topic and focus.

- (3) **Limited:** scrambled elements do not cross an overt c-commanding head.

Though there may be evidence for exceptions, Svenonius says that these properties hold for most object shift examples. We will focus primarily on the specifics of the object shift phenomenon that we see in languages like Japanese and German, which consists, on the surface, of the object preceding the subject.

2.2 Object shift and phases

Object shift in Norwegian and German, both OV languages, does not cross a c-commanding head. Objects seem to move with verb-raising. This is known as Holmberg's Generalization (Holmberg, 1986). What process could make the movement of an NP dependent on the movement of a verb?

Svenonius cites Chomsky (1999) who claims that there are language-specific discourse conditions that assign special interpretations to the left edge of a given phase—in particular, discourse-related rules. Raising the verb out of *v* moves the edge of the phase leftward. Sometimes the leftmost DP/NP, at that point, may not comply with the discourse interpretation of that phase (it may have the wrong focus feature, for instance).

Svenonius provides this sentence as an example from Norwegian:

- (4) jeg kysste aldri henne
I kissed never her
'I never kissed her.'

This has the following structure, according to Svenonius:

- (5) [_{CP} jeg_s kysste_v [_{TP} t_s t_T [_{XP} aldri [_{vP} t_s t_v [_{VP} t_v henne]]]]]

Let us say that the speaker wants to focus the object pronoun. In Norwegian, this is expressed by moving the pronoun in order to satisfy the information structure requirement. In Svenonius' account, the system accomplishes this by inserting special features in *v* that allow movement of the DP/NP to Spec*vP*. Object shift is thus allowed by the Phase Impenetrability Condition (PIC)².

²After Chomsky (2000), we provide this formal definition:

That is, Spec v P is an escape hatch for object shift. In the example, Norwegian permits *henne* to precede *aldri* to satisfy an information structure with greater emphasis on the pronoun. This passes through v P to reach the XP of *aldri*.

- (7) [_{CP} jeg_s kysste_v [_{TP} t_s t_T [_{XP} henne_o [_{XP} aldri [_{vP} t_s+t_o t_v [_{VP} t_v t_o]]]]]]]

Thus, we get *jeg kysste henne aldri*.

We can extend this model into long-distance scrambling, particularly for cases like that in Japanese where the scrambled element ends up at the beginning of the matrix clause (Nemoto, 1999):

- (8) [Mary-ga John_i-ni okutta tegami]_j-o kare_i-ga [dareka-ga t_j nusumiyomisita to]
 Mary-Nom John-to sent letter-Acc he-Nom someone-Nom took-a-peek-at that
 omotte iru (koto)
 thinking
 ‘The letter Mary wrote to John, he thinks someone took a peek at’

Svenonius notes that Chomsky’s account does not handle the fact that only DPs undergo most of these kind of A’-movements, such as object shift and long-distance scrambling. Why are these objects in particular targeted for movement, and why not VPs and the like? In the next section, we discuss Svenonius’ proposal: that the movement of verbs as phase heads is what allows DPs to travel longer and longer distances.

2.3 Spell Out and scrambling

Given an explanation for scrambling that involves the insertion of features, Svenonius asks what motivates this type of feature insertion.

A relevant issue is that there are instances of scrambling that go all the way into the CP, perhaps in the manner of the articulated CP of Rizzi (1997). An analysis like this motivates the idea that

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- (6) Given HP = [μ [H ν]], take ν to be the domain of H and μ (a hierarchy of one or more Specs) to be its edge. Then, in phase μ with head H, the domain of H is not accessible to operations outside μ , and only H and its edge are accessible to such operations.

a sentence has a Topic-Comment form at LF. Then, using an earliness principle (perhaps that described in Epstein (1992)³), overt movement can be motivated to satisfy this LF requirement. As mentioned for Norwegian and German above, *V in situ* prevents this, because V is a c-commanding head.

Svenonius provides a justification for this: the grammar allows V to go to Spell Out early if all its features have been satisfied—which is, in a sense, the very definition of *V in situ*.

Svenonius notes a major problem with this answer: Object Shift could never happen at all. The grammar would not be able to detect that a strong feature for Topic-Comment structure will be inserted later in the derivation, blocking Spell-Out of the phase and permitting V to move later on. But he has a solution: weaken the PIC with the following:

- (9) If XP (a maximal projection) contains no unvalued features, evaluate XP immediately.
 - a. If XP can be mapped onto a well-formed PF and LF, do so.
 - b. If XP cannot be given a well-formed PF and LF, send it back.

We can call this a “busy waiter” Spell-Out procedure. Its main advantage is that it allows for further PF moves in order to satisfy topic-comment form at LF, even after the phase is technically “completed” by the standard of the original PIC. In other words, the “send back” process allows the waiter to add features to the phase.

It is important to note that his account suggests that Spell Out of the phase is dependent on the status of the phase head—ie, if it can move, the phase cannot be Spelled Out. This is an observation that we exploit in our solution to the same problem, a solution that allows head-initial complementizers.

Svenonius’ answer has considerable advantages. First of all, it captures scrambling in terms of PF-requirements. If a phase can be Spelled Out at PF, any further scrambling is impossible. Secondly, it provides a mechanism for Chomsky’s proposal in which strong features are inserted

³Also see David Pesetsky’s unpublished 1989 handout, “The Earliness Principle.”
<http://web.mit.edu/linguistics/people/faculty/pesetsky/earliness.pdf>

in order to satisfy LF structure.

But it also has some disadvantages. Svenonius claims (as an advantage) that this implies that long-distance scrambling requires head-final complementizers. In languages with head-initial complementizers, the complementizer is already in a c-commanding position, and we expect no further moves to be possible. Unfortunately, languages like Latin that have long-distance scrambling with head-initial complementizers are problematic for this account. We demonstrate the problem with an example in section 2.4.

We now explore the possibility that we can use an analysis analogous to (7) in that the moved NP transits through an escape hatch in order to account for languages like Latin. In order to do that, we must first describe the mechanism by which Svenonius' solution excludes such languages.

2.4 Complementizers on the left and right

The specific problem with the analysis of Svenonius is that his busy-waiter Spell Out procedure implies that movement out of a phase is prevented when the phase head both c-commands and precedes the phase. For example, observe this embedded Latin clause:

- (10) quam tu sis curiosus
 how you-NOM-SG are-SUBJ-PRES-2SG interested-NOM-SG
 'how interested you are'

We sketch a scenario in which *tu* can be extracted. Starting with

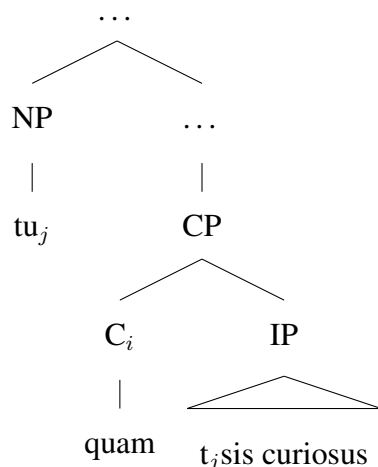
- (11)
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- ```

graph TD
 CP --> C
 CP --> IP
 C --> quam[quam]
 IP --> VP[]
 IP --> tu_sis[tu sis curiosus]
 VP --> tu[tu]

```

we want to derive,

(12)



Svenonius’ analysis bodes ill for Japanese-style long-distance scrambling in languages with head-initial complementizers such as Latin. In short, Svenonius’ analysis requires that long-distance scrambling only happens in languages where the CP is right-headed. This works for languages like Japanese wherein we can observe a separation between the word carrying the *wh*-feature and the overt C head. Below, we show that no independently-motivated derivation will derive these structures in Latin.

Svenonius’ holds that long-distance scrambling can only happen when there are unvalued features in the propositional complex consisting of the verb and related heads like T and C, what Svenonius calls the “extended word of the verb.”

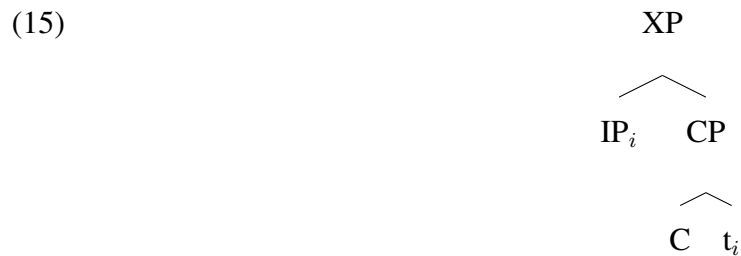
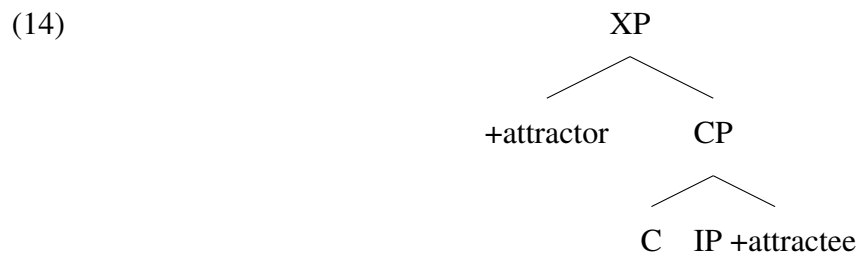
As Svenonius puts it,

- (13) “...the account here makes a prediction which appears to be correct: interclausal scrambling of the type attested in Japanese should not be possible over an overt complementizer to the left; this is because if a complementizer is Merged in C, then there can no longer be any unvalued features in the extended word of the verb, and Spell-Out cannot be delayed any longer.”

In Svenonius’ terms, the Merge of a complementizer gives values to all the uninterpretable features in the extended word of the verb, so there are no unvalued features, and Spell Out can occur unimpeded. Consequently, no reorganization can take place within the phase, including extraction.

The presence of unvalued features, however, permits sufficient delay in order to allow this reorganization. Svenonius then makes use of the idea in Kayne (1995) that head-final structures are produced by movement of the complement to a higher c-commanding position; so c-command implies precedence.

Then if there is something higher than CP that attracts TP or VP, then the CP cannot be spelled out—as TP or VP have uninterpretable features—and TP and VP move to higher c-commanding positions to check their features. (15) displays just such a movement of IP from within the CP in (14).



Thereafter, crucially, Svenonius notes that the phonological features of C are not available until after XP is pronounced, and the extended word of the verb remains unvalued, and extractions from IP remain possible. But if C had continued to precede the IP, then it would have been spelled out, and no extractions from IP could occur. Consequently, c-command and precedence are sufficient to prevent head-initial complementizers from allowing long-distance scrambling, as c-command implies precedence, and when C precedes, it acquires phonological features. This being the case, the absence of phonological features cannot be used to provide the necessary delay in Spell Out for long-distance scrambling to occur. Clearly, this example is not compatible with the claim that



Latin is head initial. We must, however, rule out the option that Latin is underlyingly head-final<sup>4</sup>.

To show this, we make the assumption that Latin is actually a language with head-final complementizers at some point in the derivation, long enough to permit long-distance discourse-motivated scrambling. Consider the Latin clause in (10):

Head-final complementizers could be base-generated or emerge at the initial MERGE of C, under a headedness parameter set towards “right.” In exploring this situation, we relax the relationship between precedence and c-command on which Svenonius depends; even then, his solution does not appear to work.

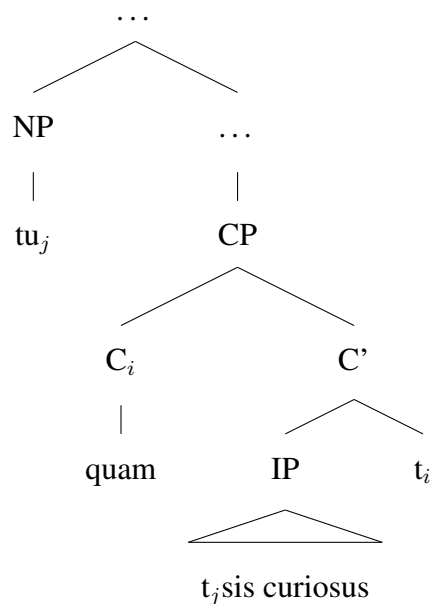


This only permits movement out of the CP if we define phases in such a way that a phase head must not only c-command the phase, it must also precede it. Otherwise no long-distance scrambling would occur in this configuration, because C would still be a blocking c-commanding head. Assuming precedence as part of the definition allows us first to move the NP out of its position in (16) and then to move the C, yielding (17). This allows us to derive languages with surface head-initial complementizers and long-distance scrambling.

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<sup>4</sup>In a footnote, Svenonius admits that there are occasional situations in which a head-initial complementizer has permitted interclausal scrambling. He attributes this to the insertion of discourse features in C to attract elements from inside CP. This appears to contradict his analysis, since C still precedes its phase, and spell out would occur before any material escapes to the matrix clause. Furthermore, it does not account for situations in which such features might be inserted, but the movement still forbidden; we discuss such situations in the next section, where we analyse examples from Russian.

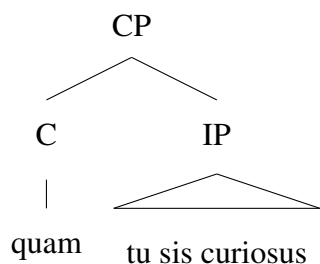
(17)



So the difference between Latin and Japanese (an overtly right-headed language) would be that Latin has an extra movement of C to the left. Unfortunately, unlike Japanese, Latin has subordinate clauses with no residues of right-headed complementizers<sup>5</sup>. Consequently, this analysis for Latin would be *ad hoc*.

An alternate analysis would be to abandon a headedness parameter and say that CP always starts as a left-headed phrase, or that C's status as a c-commander of the phase would place it on the left of the phase in the manner of the Linear Correspondence Axiom of Kayne (1995)—in this, we return to Svenonius' analysis in full. Repeating (11):

(19)



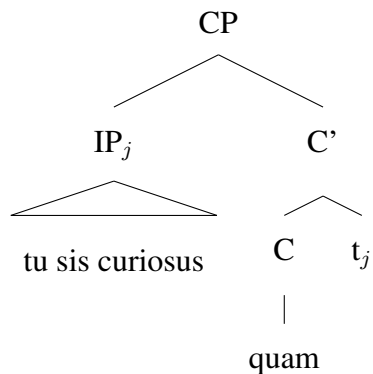

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<sup>5</sup>For example, this:

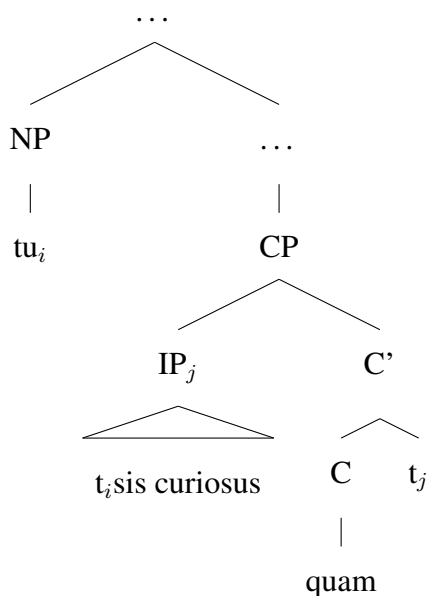
- (18) *illorum*      *vides*      *quam niteat*      *oratio*  
 their-GEN-PL see-IND-PRES-2SG how is-elegant-SUBJ-PRES-3SG speech-NOM-SG  
 'you see how elegant their speech is' (Cic. Fin. 4.3.5)

Then the IP would move to precede C, and the NP, now no longer c-commanded by C, would be free to move to higher phases<sup>6</sup>.

(21)



(22)



However, this does not obviate the original problem for Latin because, in order to get Latin, we need one more unmotivated movement.

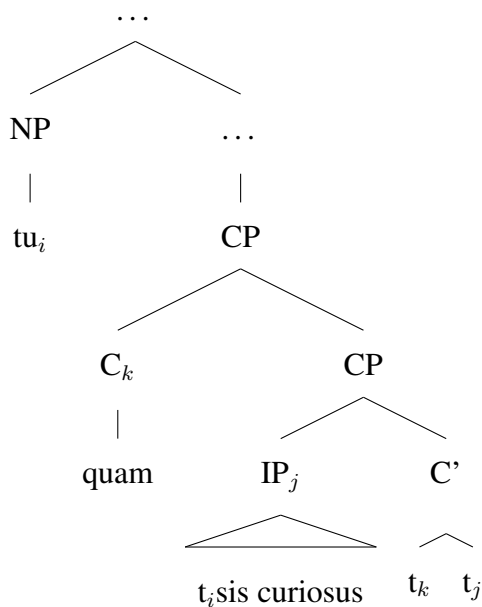
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<sup>6</sup>Japanese provides support for Svenonius' possible analysis in that an *in situ* wh-marker often precedes the question-marker *no* (Nishigauchi, 1999). Nishigauchi provides the following sentence:

- (20) John-ga dare-o ture-te kuru no?  
 John-NOM *who*-ACC bring come *Q*?  
 'Who will John bring?'

*dare-o* and *no* are separated, the *no* presumably residing at the CP level—in Japanese, the position of the interrogative marker is related to scope.

(23)



If our goal is to make head-initial C languages compatible with long distance scrambling and to distinguish left-headed scrambling languages from non-scrambling languages, then this has the same problem as the right-headed base-generation analysis: there is no reason to believe that all Latin complementizers pass through a position on the right. *wh*-words are not broken up the way they are in Japanese. The requirement that complementizer movements be used to license long-distance scrambling is too strong for Latin. In addition, this theory would still be too weak: languages that clearly exploit the strategy of moving a clause to C, as would be necessary to explain the Latin case, *do not* allow long distance scrambling. An example is modern German. Even in modern German, movements of phrases to C are well-attested, but German does not allow long-distance scrambling). From Roberts (2001):

- (24) a. Er sagte, gestern sei er schon angekommen.  
 He said, yesterday have he already arrived
- b. Er sagte, daß er gestern schon angekommen ist.  
 He said, that he yesterday already arrived has.  
 ‘He said he’d already arrived yesterday.’

In Roberts' analysis, in the absence of the complementizer *daß*, the auxiliary verb *sein* can occupy C as *sei*. Otherwise, it must appear in the verb-final position as *ist*<sup>7</sup>.

No such effects are observed in Latin, but Latin allows long-distance scrambling. But German exhibits movements to C, and does not allow long distance scrambling. Thus, complementizer movements cannot thus be used to explain the occurrence of long-distance scrambling, and this type of analysis is thus also too weak.

The conclusion is that a claim that the C appears via right-headed base-generation would be unmotivated except to preserve Svenonius' theory. Svenonius' theory thus does not permit scrambling beyond the left edge of a phase in languages like Latin and Russian<sup>8</sup> because there is no independent evidence for the right-headed base-generation of C<sup>9</sup>. We will return to providing an account of Latin in section 4.1.3.

We propose an escape-hatch account similar to van Riemsdijk (1978), which gives an escape-hatch proposal for English preposition-stranding, as an alternative that will permit extra-clausal A'-movement in Latin as well as in languages that are head-final for CP. This kind of account depends on establishing a parallelism between PP and the phases *v*P and CP, which we proceed to do in the rest of this article.

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<sup>7</sup>And, to be clear, this scrambled sentence would be ungrammatical:

- (25) \*Er Johann<sub>i</sub> sagte, gestern sei t<sub>i</sub> schon angekommen.  
 He Johann<sub>i</sub> said, yesterday have t<sub>i</sub> already arrived.  
 'He said Johann had already arrived yesterday.'

The edge is occupied.

<sup>8</sup>We discuss Russian examples throughout this paper, starting with the next section. However, a Russian CP that would have a problem analogous to Latin using Svenonius' analysis would be

- (26) čtoby Petr pročital knigu  
 that<sub>SUBJ</sub> Peter<sub>NOM</sub> read book<sub>ACC</sub>  
 'that Peter should read the/a book'

A'-movements of *knigu* before *čtoby*, which are allowed in Russian in certain circumstances, would not justify an analysis involving the right-headed base generation of C for the same reason that it is not justified in Latin. This would hold for any language in which movement to C is not attested and no overt residue of right-headed complementizers are observed.

<sup>9</sup>A theory-internal problem with his account is that it also weakens the concept of the phase.

In order to exploit this, we will briefly explain the theory in its GB style incarnation and then show how the same representational ideas can be transformed so as to make them compatible with the essentially derivational nature of minimalism.

## 3 Escape hatches

### 3.1 A'-movement and phases

Movements to A'-positions brought about via preposition-stranding, long-distance scrambling, and *wh*-movement provide evidence relevant to phase spell-out. In the remainder of this paper, we will argue that there are strong parallels between preposition-stranding and A'-movement out of CP.

The traditional view of phases starting from Chomsky is that Spell Out of a phase is an operation on the complement of the phase head; that is, if XP is a phase, and YP is the complement of X, then YP is sent to the interfaces. That means that the status of X, the phase head, is not a consideration when XP is spelled out, if we characterize the status of X in terms of uninterpretable features. Chomsky's notion of phase heads as blocking categories is stated in Chomsky (1999):

- (27) To operate without reconstructing the derivation, Spell-Out must apply shortly after the uninterpretable features have been assigned values (if they have not been assigned values at this point, the derivation will crash with uninterpretable features at the interface).

...because of the availability of EPP, the effects of Spell-Out are determined at the next higher *strong* phase: CP or  $v^*P$ . For that reason, a strong-phase HP allows extraction to its outer edge, so the domain of H can be assumed to be inaccessible to extraction under the PIC [Phase Impenetrability Condition]: an element to be extracted can be raised to the edge, and the operations of the phonological component can apply to the domain at once, not waiting for the next phase.

So Spell-Out applies immediately after the uninterpretable features in the phase head have

been assigned values, and extraction can only proceed if the extracted object has been moved to the edge of the phase, avoiding Spell-Out of the domain (complement) of the phase head, now free of unvalued uninterpretable features.

We would argue, however, that the status of the phase head matters at Spell Out. The phase head matters because it is not merely a phase head, but belongs to a larger class of syntactic objects that appear in the head but can also appear as specifiers. Describing the nature of these objects at the phase edge is best done by describing the relations into which they enter amongst themselves. In explaining these relations, we evade some of the problems we described above in analyses like that of Svenonius, because it is via their interactions that escape hatches emerge as a phenomenon.

We explain facts about Russian and Latin long-distance scrambling by generalizing the escape-hatch idea to include those cases, based on structures and processes that appear to be analogous between CP and PP.

In the remaining sections, we describe how an escape hatch opens up in SpecCP: an object that is overt at PF and occupies SpecCP moves to cliticize onto the head of a higher phrase, if a required checking relation can be motivated<sup>10</sup>. This permits items to escape from the phase for discourse reasons by virtue of a SpecCP that has been fully emptied from the perspective of PF. This is analogous to the process of reanalysis that has been proposed to allow preposition-stranding in English (Hornstein & Weinberg, 1981). We will invoke considerations of overt concord to constrain the possibility of preposition-stranding and long-distance scrambling in some cases. Considerations about the linearization of the edge of the phase and the timing of Spell Out are also important for our account.

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<sup>10</sup>This may at first glance appear to be countercyclic. We take the view that while phases individually may be built from the bottom up, the construction of each phase may be instantiated from left to right relative to one another. Section 3.3 describes the overall character of the phenomena under which apparently-countercyclic moves are required.

### 3.2 Phase edges have no order

The notion of escape hatches emerges from a conceptualization of structure familiar in the government and binding theory, which expresses limits on the validity of relations inside a phrase marker in terms of notions like “position.” In GB and earlier theories, certain positions reflected boundaries across which certain structural relations could not be formed, an idea integral to theoretical frameworks such as *Barriers*. However, some systematic exceptions to these structural restrictions required the formulation of conditions under which positions could be made available (by making them vacant) that licensed these otherwise illegal long-distance relations. An escape hatch is a position made available for such a purpose.

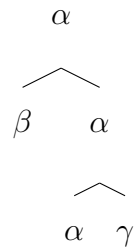
We present evidence in the remainder of this paper for a unified account of escape hatches for phenomena that have largely been studied in GB terms. We must reformulate representational notions from GB in Minimalist terms, because particularly under Phase Theory, these notions must ultimately encode a derivational account of phrase marker formation as a series of operations that *build* the structural relations. For instance, specifiers are defined as such only insofar as they have non-complement relations to heads—they merged with the head in the past. No structure-building operation defined any relationship or order between specifiers. So it is not directly possible to define the notion of an “empty position” in this type of bottom-up derivational framework. The “phase edge”—the complex of specifiers related by merge operations to the head—has no order.

The Phase Impenetrability Condition effectively defines the phase edge as the “region” of the phase through which movement can occur allowing objects to transit into higher phases. If an object in the complement of the phase head can pass into the phase edge via movement, then it can depart the phase.

To illustrate this, we provide these example phrase markers. Let  $\alpha$  be a phrase-type designated as a phase (similar to a bounding maximal projection in GB). In the following,  $\gamma$  cannot depart directly to merge with anything dominating  $\alpha$ .

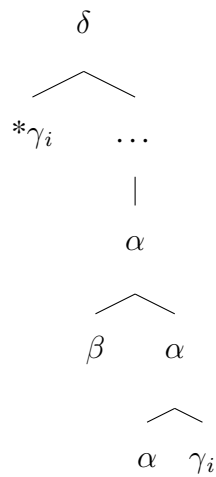


(28)



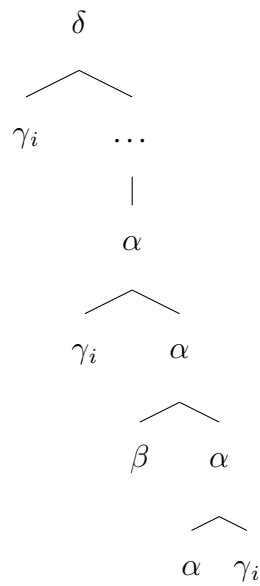
$\gamma$  is the complement of  $\alpha$ , and the PIC prevents movement, so the following is illegal, where  $\gamma$  is a another phase head:

(29)



But if  $\gamma$  has first moved to the maximal  $\alpha$  before  $\gamma$ 's phase has been constructed, then it joins  $\beta$  in the phase edge, and is eventually allowed to depart.

(30)

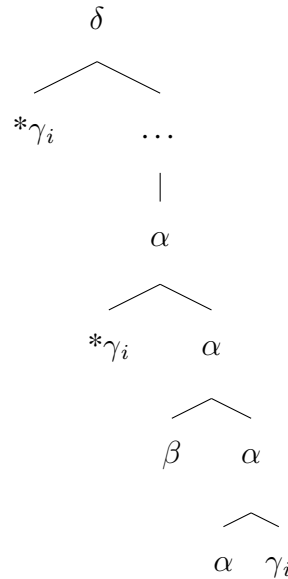


But in no case does the presense of the specifier  $\beta$  have any influence over the  $\gamma$  and the restrictions on its movement in the phrase marker. Either  $\gamma$  can (re-)merge with  $\alpha$  and exist at the phase edge, permitted to move beyond the phase—or it cannot, and its ability to move is unaffected by the other contents of the edge.

### 3.3 Positional descriptions found necessary

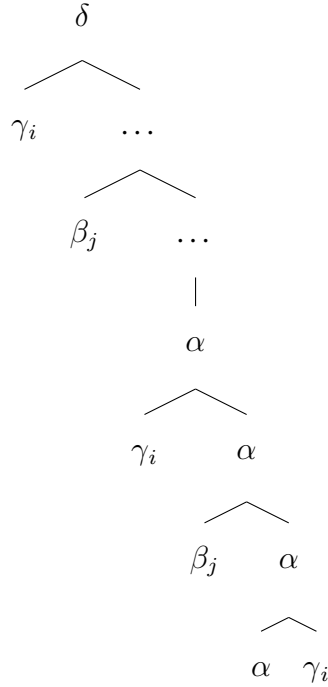
In this paper, however, we describe conditions under which other specifiers in the phase edge *do* matter. The general case looks like:

(31)



In this case, the transit of  $\gamma$  through the phase edge is forbidden, even if we stipulate that  $\alpha$  and  $\gamma$  are compatible for merging. But we allow it in this case:

(32)



In GB terms, we could have said that  $\beta$  is *occupying* the *position*, and we could define mechanisms by which  $\gamma$  can *replace* it when it is gone. But since there is no derivational relationship between  $\beta$  and  $\gamma$ , we cannot say this in minimalist or phasal terms. Nevertheless, some functionally equivalent phasal explanation must exist for these types of phenomena, if such phenomena exist in any systematic manner.

### 3.4 Spell Out at the edge

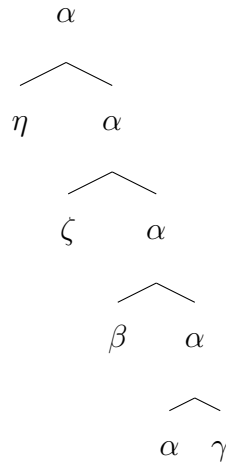
Explaining escape hatches in a phase-based manner requires an explanation of how escape hatches are created by emptying out the specifier and an explanation of how the escape hatch creation can be prevented. Escape hatch creation is relatively simple: if there is nothing preventing an object in the phase complement from moving to the edge, then it can leave. Thus, we can describe the process entirely in terms of the cases where escape hatch creation cannot occur.

As we mention above, the edge is unordered. It is a set of specifiers and a head. The head has a natural order relative to the complement, but nothing in the edge has an order relative to the others.

However, the edge must be linearized. So, an order is imposed on the edge at Spell Out.

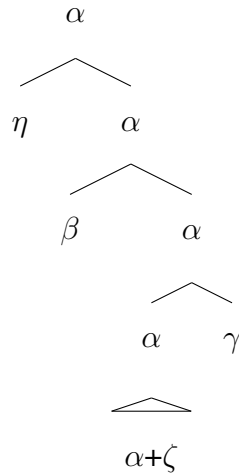
Once again, let  $\alpha$  be a phase head,  $\gamma$  its complement, and  $\beta$ ,  $\zeta$  and  $\eta$  be specifiers.

(33)



To prevent  $\gamma$  or anything inside  $\gamma$  from moving to the phase edge, let us say that  $\zeta$  and  $\alpha$  have some joint phonological realization as a single word. As soon as  $\zeta$  becomes a specifier via merge, our null hypothesis would be that an order is established between it and  $\alpha$  immediately.

(34)

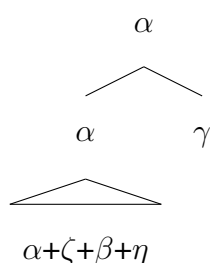


Once we establish arbitrary (sub)orders between members of the phase edge, the number of possible ordering relationships is factorial in the number of objects at the edge, and grows with anything we allow to move to the edge. In other words, if we allow  $\alpha$  and  $\zeta$  to be ordered with respect to one another, then we must allow  $\alpha$  to be ordered with  $\beta$  or any possible combination of any number of specifiers at arbitrary points in the derivation. Furthermore, anything from  $\gamma$  that we

move to the edge further increases the number of possible orderings at each step of the derivation, because whatever comes from  $\gamma$  could potentially be ordered with respect to any other object at the edge.

This motivates the use of a scheme similar to Multiple Spell-Out (Uriagereka, 1999) to prevent combinatorial explosion from happening. That is, when one element at the edge is ordered in relation to another, then *all* of them must be ordered. In other words, the edge must be linearized.

(35)



On linearization, the edge has been converted into a single PF object—the definition of linearization—and its constituents are therefore no longer an eligible target for movement.

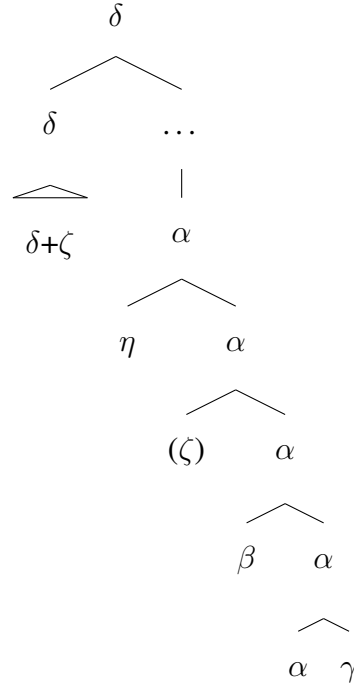
Once again, in order to reduce the number of possible future derivations, we also expect that that the linearization of the edge occurs as soon as there is no other obstacle. The edge is closed, and escape hatch effects are prevented. If this were not the case, then an expanding number of items can arrive at the edge, expanding the number of future possibilities without bound<sup>11</sup>.

But what permits escape hatch events under these conditions? The answer is precisely that there must be an obstacle to linearization. Some force that attracts the specifier  $\zeta$  into a higher phase would prevent the formation of the PF object and the closing of the edge.

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<sup>11</sup>Fox & Pesetsky (2004) define an alternative restriction on movement out of a phase: the preservation of “ordering statements” and the avoidance of “ordering contradictions.” That is, if A precedes B within a phase, then A must precede B forever; if B leaves the phase, then either A is unpronounced or A has departed the phase as well. Fox and Pesetsky use this to explain Holmberg’s Generalization in a manner sufficiently analogous to Svenonius’ explanation that the criticisms in section 2.4 apply to it as well. We instead cast the restrictions on movement out of a phase in terms of avoiding complexity in Spell Out itself. The advantage of this is that it does not hold movement out of a phase entirely hostage to the ordering inside the phase.

(36)



If  $\zeta$  is the object that forms a single PF object with  $\alpha$ , in the above configuration, it is not available for linearization: it has been moved to a higher phase. Assuming that  $\beta$  and  $\eta$  are not required to form a single object with  $\alpha$ , the edge consequently no longer needs to be linearized immediately. This is the “escape” configuration in (32).

## 4 Extraposition from CP

### 4.1 CP and its escape hatch

#### 4.1.1 Motivation

We suggest that for Latin, a language with a CP that allows long-distance scrambling, we can show that the edge is unlinearized at the time that the scrambled element moves through it. The phase edge already has an overt complementizer element. It then happens that cliticization causes the complementizer to be vacated from the edge before spelling the edge out. Once that cliticization occurs, linearization of the edge is not required until later, and it can be used to transport material

out of the clause before convergence with PF.

Independent justification for such a cliticization process can be found in long-distance *wh*-movement in Russian, which displays this process overtly. In the following two sections, we illustrate this process in Russian and then extend it to Latin long-distance scrambling.

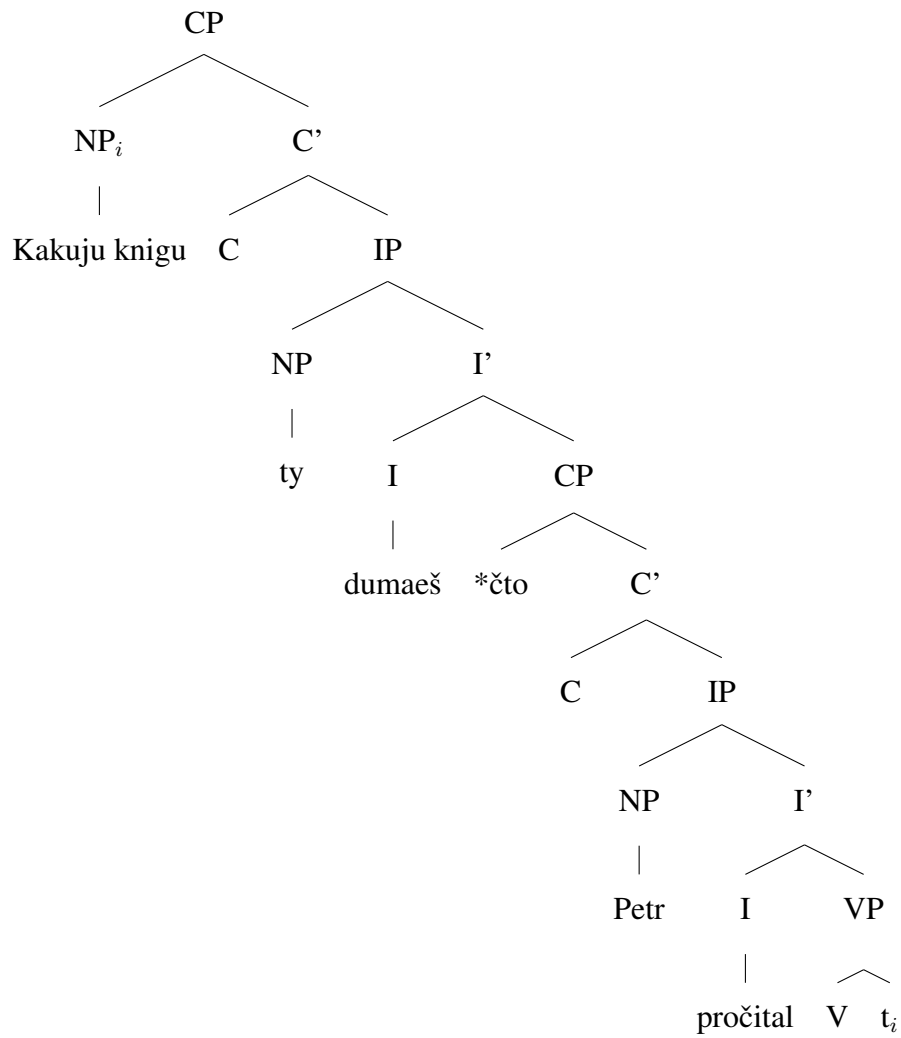
#### 4.1.2 *wh*-movement in Russian

Glushan (2006) notes from Müller & Sternefeld (2003) that *wh*-movement past an indicative complementizer is forbidden in Russian, but the same does not hold for a subjunctive complementizer.

- (37) a. \*[Kakuju knigu]<sub>i</sub> ty dumaeš čto Petr pročitaj t<sub>i</sub>?  
 which book<sub>ACC</sub> you<sub>NOM</sub> believe that<sub>IND</sub> Peter<sub>NOM</sub> read t<sub>i</sub>?  
 b. [Kakuju knigu]<sub>i</sub> ty dumaeš čtoby Petr pročitaj t<sub>i</sub>?  
 which book<sub>ACC</sub> you<sub>NOM</sub> believe that<sub>SUBJ</sub> Peter<sub>NOM</sub> read t<sub>i</sub>?  
 ‘Which book do you believe that Peter should read?’

We propose that *čto* occupies the GB-notional position of an escape hatch, and that this position is the specifier of CP. We thus suggest that Russian is a Spec-marking language in the sense of Koopman (1996). This is the structure we propose for (37a):

(38)



Movement over *čto* (37a) is ungrammatical here, but if we were to replace it with *čtoby* (37b),



movement is allowed. *čtoby* must thus ultimately not be located<sup>12</sup> in the specifier of CP<sup>13</sup>.

We now show that the relationship between a matrix verb and the embedded clause can be

<sup>12</sup>Koopman provides us a representational manner of identifying the location of the overt complementizer in the following manner.

Koopman notes that these sentences are ungrammatical in English:

- (39) a. \* I wonder [who that/if] left  
b. \* the man [who that John saw]

*who that* would fill both the specifier and the head of CP, the former with *who* and the latter with *that*. This observation—that, in many languages, both C and SpecCP cannot be simultaneously be filled with overt elements—is known as the Doubly Filled Comp Filter.

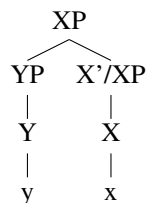
Koopman explains the Doubly-Filled Comp Filter observation via a modified Linear Correspondence Axiom:

- (40) Segments participate in c-command.

*Modified LCA*: the linear order of overt terminal elements corresponds to asymmetric c-command.

To make things explicit, “segments” refers to the “intermediate” maximal projections caused by multiple specifiers or adjuncts. Koopman’s motivation comes from prior work on the theory of head-movement (Koopman, 1994): she needed to include segments as c-commanders in her theory, while Kayne (1995) prohibited this in his version of the LCA in order to preserve asymmetry in this kind of situation:

- (41)



In this situation, if we permit intermediate projections and segments to be c-commanders for purposes of the LCA, then the terminal elements *x* and *y* are in a symmetric relationship with one another, and they precede each other. But there are situations, such as the Doubly-Filled Comp Filter, in which we want to prohibit this configuration, rather than allow it as Kayne’s LCA does.

Koopman’s version of the LCA instead restricts the application of the asymmetric c-command requirement to overt terminal elements. Then a phrase cannot have more than one overt terminal element, one in the specifier and one in the head. This prohibits XP above, but only if *x* and *y* are both overt. This allows us to preserve structures like XP, but not in Doubly-Filled Comp Filter situations. (There are apparent exceptions to the Doubly-Filled Comp Filter even in English, such as “What did they buy?” *what* and *did* both apparently occupy positions in CP. Koopman devotes some space to analyzing these situations and concludes that they can be explained by postulating further independently-supported structure, such as CPs that have been broken up into multiple phrases. Then these situations are not really violations of the Doubly-Filled Comp Filter)

This predicts in a representational context that some phrases will have overt heads (“head-marking”) and some will have overt specifiers (“spec-marking”). Koopman notes that a language can display any combination of head- and spec-marking so long as a phrase only contains one overt terminal.

<sup>13</sup>This kind of syntactic asymmetry between embedded indicative and subjunctive CP has been observed for phenomena across various languages. For example, Progovac (1994) cites evidence that subjunctive embedded clauses extend the binding domain of negative polarity items (NPIs) to the matrix clause in Italian and French. She then uses the idea that subjunctive—but not indicative—mood is anaphoric on the matrix clause to explain the difference between languages that have NPI domain extension and those that do not.

According to Progovac, to say that subjunctive mood is anaphoric is to say that INFL is deleted at LF in subjunctive clauses. Deletion of INFL means that tense is acquired from the matrix clause at LF. Progovac holds that this produces a kind of “clause union” effect, whereby certain phenomena—such as NPIs—are shared across the clause boundaries.

indicated by movement or insertion to a cliticized position from the complement. Surface evidence for the imposition of subjunctive characteristics on embedded phrases by matrix phrase verbs is not only found in Russian but also in other languages—French comes immediately to mind. Verbs like *believe* often display this property in certain contexts. The French verb *craindre* (“to fear”) even forces a *ne* clitic on its otherwise non-negated subordinate clause complement.

- (42) Je crains qu’il ne le fasse.  
 I fear that-he SUBJ-CLITIC it<sub>ACC</sub> does<sub>SUBJ</sub>.  
 ‘I fear that he does it.’

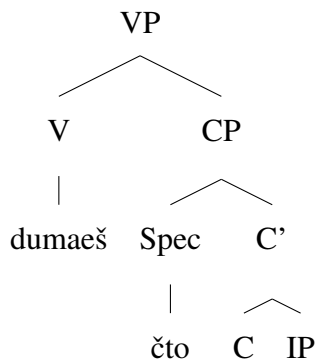
This suggests that certain subjunctive clitics can be selected via subcategorization. Verbs that subcategorize for clauses with subjunctive mood often induce overt structural differences between subjunctive and indicative embedded clauses (Progovac, 1994). In the case of Russian, we can say that *dumaeš* in some contexts can force a *-by* clitic on the subordinate clause’s complementizer—in order, for instance, to form a question in which the tense of the subordinate clause is anaphorically dependent on the tense of the matrix verb, which is how Progovac interprets subcategorized subjunctive mood. Then *čto* would move from the subordinate CP to acquire the *-by* clitic provided by the matrix clause. The escape hatch is created in the subordinate CP.

The indicative situation looks like this:

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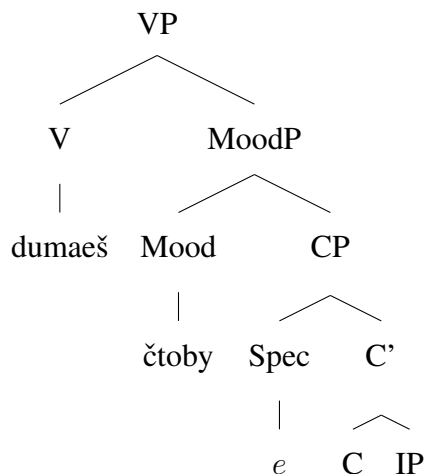
Russian is one of the languages that does not have NPI domain extension from subjunctive embedded clauses. Other languages include Polish and Romanian. For Russian, Progovac attributes this effect precisely to the distinction between *čto* and *čtoby*. The existence of an overt subjunctive particle *-by* makes it impossible to delete INFL at LF. Then NPIs must remain local. In our case, if subjunctives are anaphoric but indicatives are not, and if the anaphoricity of subjunctive mood in Russian is overtly expressed with the *-by* particle, we would expect the *-by* particle likewise to have syntactic effects that would not appear in indicative embedded clauses.

(43)



But the subjunctive situation looks like this:

(44)



In the subjunctive situation, SpecCP is free as an escape hatch for material in the IP<sup>14</sup>. The edge is not linearized, and it is hence still free for movement out of CP.

This idea accounts for the situations in which A'-movement is allowed in Russian: when something rests above CP (in our example, a subjunctive mood clitic), it attracts the spec-appearing complementizer up towards it. But it does not quite account for the situations in which it is not allowed. As long as the edge is unlinearized, A'-movement is possible <sup>15</sup>.

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<sup>14</sup>We take *e* to mean the empty string. In other words, *e* is not merely a gap representing a trace, it is a string that is completely void from the perspective of PF. The mechanics by which SpecCP is freed by movement is discussed in section 6.1

<sup>15</sup>From this account, we can see an equivalence between Koopman's terms and our derivational explanation. Koopman's notion of spec-marking allows a representational framework to describe conditions under which the escape hatch cannot be opened for movement. This is equivalent to edge-linearization in a derivational context, which is the process that we propose that holds the escape hatch shut.

### 4.1.3 Long-distance scrambling

One may now be tempted to ask whether it is legitimate to consider Russian a language in which the presence of the specifier in CP *can* close the escape hatch at the edge, at least in the case of *čto*. Certainly, the very fact that *čto* in (37) prevents *wh*-movement suggests that it must promote edge-linearization<sup>16</sup>.

We must, however, reconcile this analysis with the other kind of extracausal A'-movement: long-distance scrambling. Russian long-distance scrambling happens regardless of the status of *čto*. But there is a solution in Glushan's analysis of long-distance scrambling: that it "applies freely out of structures where finite complements are embedded under verbs of perception," and that long-distance scrambling is more restricted for other types of structures. Without the benefit of an overt subjunctive morpheme, we can still see the parallel: a null morpheme causes movement of the material in Spec and vacates the Spec, thus allowing further movement through the now-empty position in CP.

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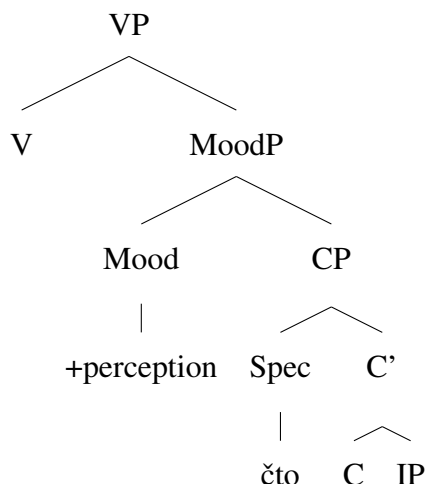
<sup>16</sup>Aside from that, other uses of *čto* also suggest that it is closer to a *wh*-word than to a complementizer like "that" in English (Grebenyova, 2007; Szpakowicz, 2007).

- (45) *čelovek čto smotrel*  
man who looked  
'The man who looked.'

- (46) *čelovek čto ya yego videl*  
man who I him saw  
'The man whom I saw.'

In (45), *čto* acts as a relative pronoun in SpecCP rather than as a straight-up complementizer in C. In (46), the relative pronoun is separated from its accusative case-assigning position, which is filled by *yego* over which it scopes. These facts suggest that *čto* causes the edge to be linearized and the escape hatch to shut.

(47)



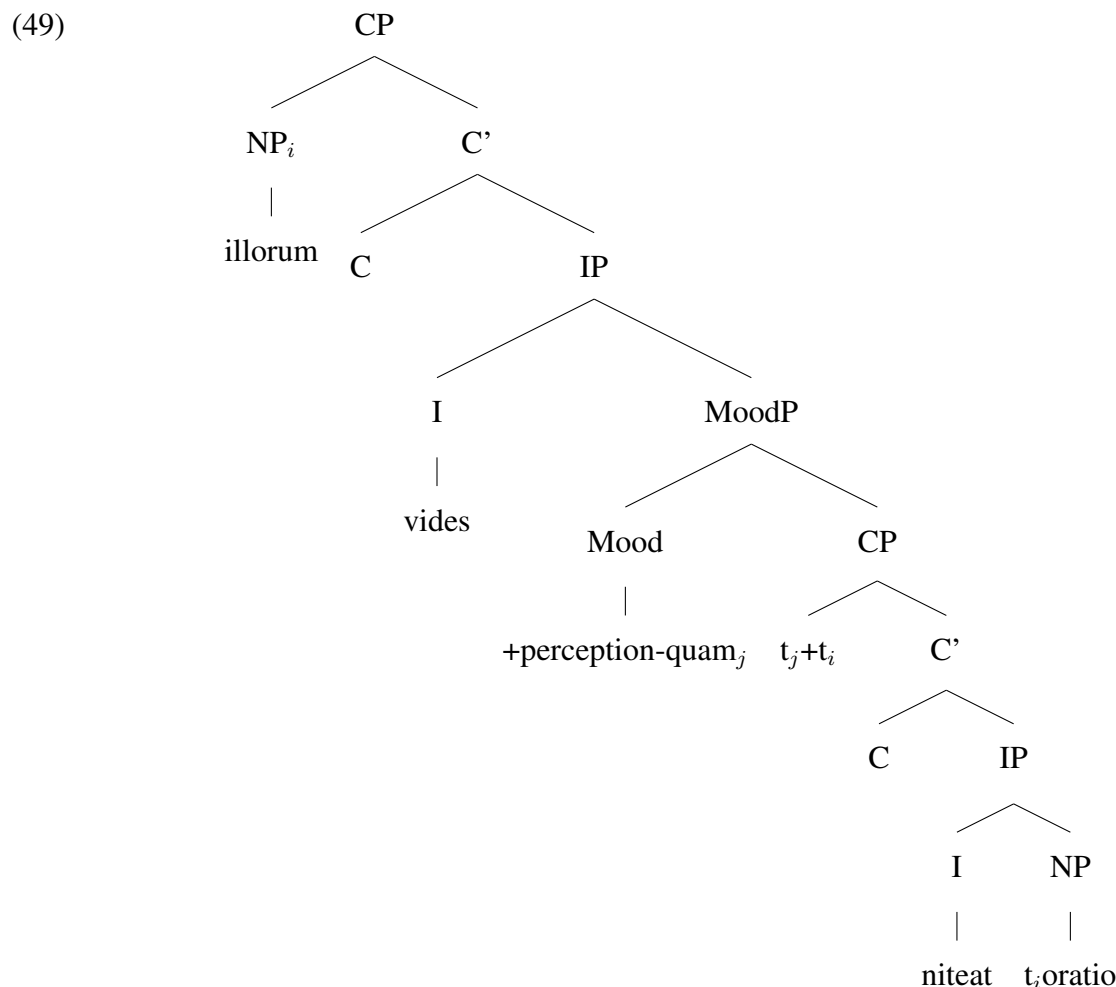
This configuration would permit material inside the IP to move out of CP into the higher VP or above, as *čto* and the phonologically null perception morpheme would cliticize together.

Now we return to Latin where we can apply a very similar analysis. It follows the same pattern as Russian. The process of cliticization between the perception morpheme and the verb complement allows long-distance scrambling to occur in Latin, motivated by the process that holds overtly for subjunctives in Russian. This permits the escape hatch to remain open.

Kessler (1995) provides several examples of long-distance scrambling from Cicero's speeches:

- (48) a. *Tametsi tu scio quam sis*  
 Although you-NOM-SG know-IND-PRES-1SG how are-SUBJ-PRES-2SG  
*curiosus*  
 interested-NOM-SG  
 'Although I know how interested you are' (Caelius at Cicero, Fam 8.1.1)
- b. *illorum vides quam niteat*  
 their-GEN-PL see-IND-PRES-2SG how is-elegant-SUBJ-PRES-3SG  
*oratio*  
 speech-NOM-SG  
 'you see how elegant their speech is' (Cic. Fin. 4.3.5)

The other examples provided by Kessler all involve verbs of knowledge and perception, and they suggest that Glushan's claim about verbs of perception can be applied in the same way to Latin. If so, we can apply our analysis in (47) to (48b):



*quam* has been moved to adjoin to the null Mood head, freeing the edge of CP as a PF escape hatch for material within the clause<sup>17</sup>.

Now that we have come up with a hypothesis for escape hatches and their emergence in CP, we can demonstrate the mechanics of escape hatches using other, less opaque facts from preposition-stranding. In particular, we use facts about preposition-stranding to provide evidence for the process that closes escape hatches.

<sup>17</sup>There are independent reasons to think that the structure of perception is different from mere epistemics. For instance, observe this contrast in English:

- (50) a. Jill saw the boat was empty, but that wasn't strictly true.  
 b. ??Jill saw that the boat was empty, but that wasn't strictly true.

The *saw that* case has only an epistemic interpretation, and is decidedly odd when paired with a contradictory statement. Not so *saw* by itself.

## 5 Preposition-stranding and escape hatches

We looked at A'-movement out of CP in Russian and suggested that Russian provides evidence for an escape-hatch analysis of scrambling which could then be applied to Latin, a language which is much less transparent about the conditions under which extractions could be licensed.

The escape-hatch story, however, is not complete. We provided the mechanism by which SpecCP might be vacated in Russian and Latin: by cliticization onto an object in the higher VP. But there are languages wherein verbs can impose selectional requirements on complement clauses—for instance, subjunctives in French, German, and a variety of other languages—which still do not permit long-distance scrambling. German has object shift motivated by interpretive constraints, which might mean that discourse features are inserted into the derivations, but long-distance scrambling is still not permitted. So we need to find out what might prevent the escape hatch from being created, even if the other prerequisites of interclausal A'-movement have been satisfied.

One place that escape hatch analyses have been employed for some time is preposition-stranding. We now use facts about preposition stranding to explain the reason why, in certain cases, the cliticization process does not occur.

### 5.1 Standing and object shift as PF phenomena

Similar to Fox & Pesetsky (2004), Svenonius' account of Object Shift requires that it be a PF phenomenon, because the busy waiter returns a phase with the wrong information structure at Spell Out, requiring the act of scrambling. It appears to be the case, however, that preposition-stranding is also a PF phenomenon, as evidenced by Brazilian Portuguese as shown in (51) and (52) (Almeida, 2005).

- (51) A Maria dançou com alguém, mas eu não lembro com quem.

The Maria danced with someone, but I NEG remember with whom.

(52) A Maria dançou com alguém, mas eu não lembro quem.

The Maria danced with someone, but I NEG remember who (she danced *with*).

Brazilian Portuguese<sup>18</sup>, like other Romance languages, lacks preposition-stranding, but under sluicing, preposition-stranding reappears. The deleted component is not spelled out at PF, and thus its preposition, a c-commanding head, may be crossed by the *wh*-word<sup>19</sup>.

Another interesting situation is again that of Latin. Latin has NP discontinuous constituency, except over a preposition. Once the preposition is emitted, it c-commands the NP. We thus expect it to prevent movement. In its absence, information structure requirements can remove material from the NP, even as Svenonius suggests for Object Shift from *v*P.

- (55) a. pater            laetus            filium    laetum    amat  
          father-NOM happy-NOM son-ACC happy-ACC loves
- b. laetum            pater            laetus    filium    amat  
          happy-ACC father-NOM son-NOM filium-ACC loves  
          ‘The happy father loves the happy son.’
- c. pater            laetus            a filio    laeto    amat  
          father-NOM happy-NOM by son-ABL happy-ABL leave
- d. \*laeto            pater            laetus    a filio    amat  
          happy-ABL father-NOM happy-NOM by son-ABL amat  
          ‘The happy father is loved by the happy son.’

In this example, the passive form of the sentence introduces a preposition whose complement is prevented from undergoing movement to separate the accusative adjective from its noun. In Latin, the PP headed by *a* is spelled out before any movement can take place.

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<sup>18</sup>For contrast, we provide after Almeida the non-sluiced clauses in (53) and (54) wherein preposition-stranding is unacceptable.

(53) Com quem<sub>i</sub> que a Maria dançou t<sub>i</sub>  
       with whom that the Maria danced t<sub>i</sub>

(54) \* Quem<sub>i</sub> que a Maria dançou com t<sub>i</sub>  
       \* who<sub>i</sub> that the Maria danced with t<sub>i</sub>

<sup>19</sup>This is not the case for other Romance languages; we further discuss the significance of Brazilian Portuguese in section 5.4.



But it happens that there are cases in Latin in which an overt phase head appears on the left but the structure is spelled out only after a scrambling operation has occurred: long-distance scrambling. We provided examples of this in (48). There are also languages, such as Old English, that have scrambling out of overt PP.

From Kroch (2007):

(56) & seofon ærendra can he him hæfde to asend (ACS Parker, 905)

and seven messengers he *him* had *to* sent

So under some conditions, even when a preposition is overt, discourse requirements can still allow the preposition to be stranded, unlike in Latin. If this is so, it becomes more difficult to use PF convergence requirements—in particular, restrictions on Spell Out—to explain how discourse-motivated scrambling and related A'-movements occur.

We will now show that independently motivated typological differences between languages and elaboration on the structure of the escape hatch plus a PF analysis of scrambling can account for the differences between Brazilian Portuguese, Latin, and Old English.

## 5.2 Cliticization and stranding

There is a class of languages that always seems to forbid preposition-stranding: languages where the preposition cliticizes onto an agreeing determiner. German, a non-preposition-stranding language, has several of these. A few:

(57) a. *in* + *dem*<sub>DAT</sub> = *im*

b. *in* + *das*<sub>ACC</sub> = *ins*

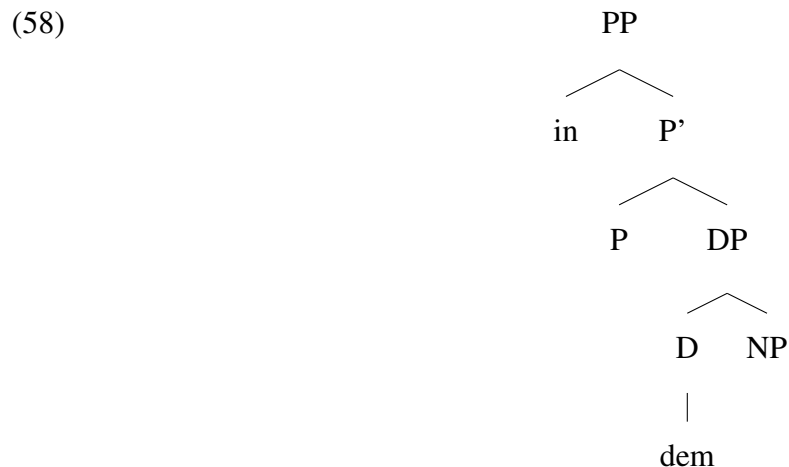
c. *von* + *dem*<sub>DAT</sub> = *vom*

French has a similar effect, with preposition-determiner compounds like *du* and *au*. Unlike German, French does not have case agreement, but, like German, it retains the  $\phi$ -feature concord that is propagated throughout the determiner phrase, including adjectival modifiers.

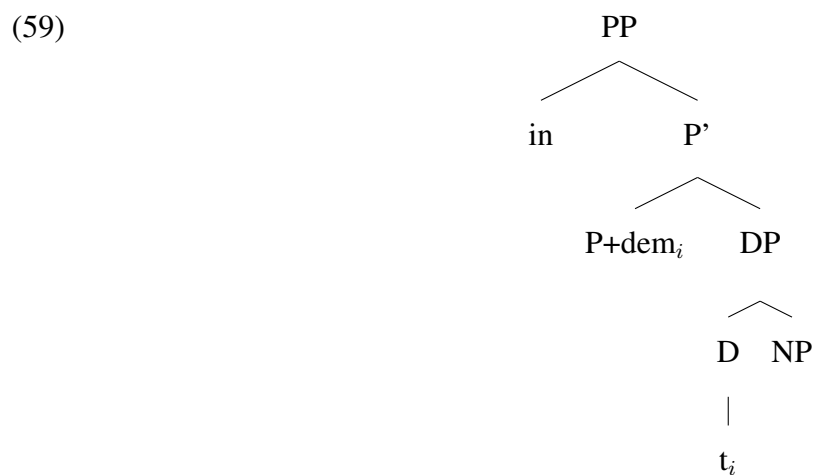
This requires that there be some form of PF cliticization process that fuses the preposition onto the determiner. And this requires that the two objects be local at some point.

In order to do this, we return to the framework from Koopman (1996) that we outlined in section 4.1. We propose that PPs are spec-marked in languages like French and German, and furthermore, that the specifier is marked via a cliticization process where P is attached to a D that moves into SpecPP as the “cap” of a concord chain that connects the case delivered by agreement with P to the  $\phi$  features attached to D and its corresponding NP.

This is shown in (58) for German, with *in* in the specifier for spec-marking:



But the determiner must acquire morphological case. This can happen via a spec-head agreement relationship between *in* and *dem*.



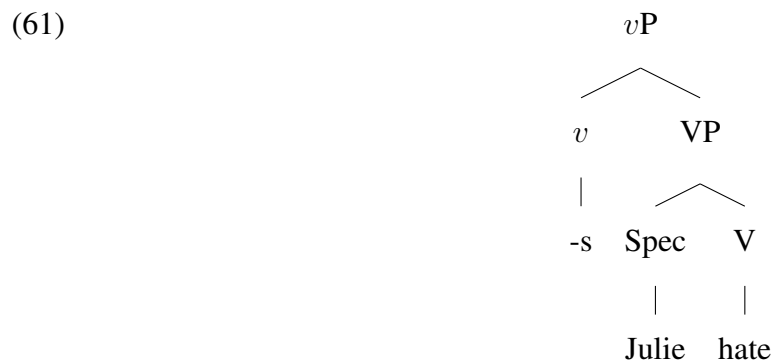
With Koopman’s LCA, we can only pronounce one of the items now in PP at PF; by the definition of her LCA, only the specifier or the head can be pronounced. Thus, we achieve *im*.

This analysis is also the basis of the “mirror theory” in Brody (1999). In this framework, given two terminal elements *x* and *y*, if *x* is the syntactic complement of *y*, then *x* is the morphological specifier of *y*. Brody proposes this in the service of a theory of clitic-climbing using the implication that arguments to verbs that are not morphologically adjoined to the verb must thus be syntactic specifiers.

Describing the relevance of Brody’s theory more graphically, if we have the sentence *Bill hates Julie*, the VP *hates Julie* has the following (simplified) constituent structure:

(60) [<sub>VP</sub> hates [<sub>DP</sub> Julie]]

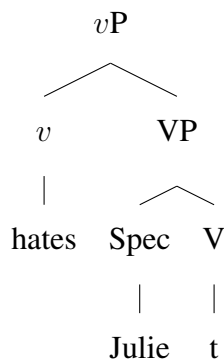
According to Brody, *Julie* is the syntactic complement of *hates*, and thus must therefore have been at some point the “morphological specifier” of *hates*, yielding this unsurprising structure:



But in the same structure, we can see that the morphemes of *hates* have the reverse relationship. *hate* is the complement of *-s*. Constituents in this relationship are generally spelled out as morphological specifiers.

We get the surface form in (60) because *hates* incorporates into *-s* in order to serve as its morphological specifier.

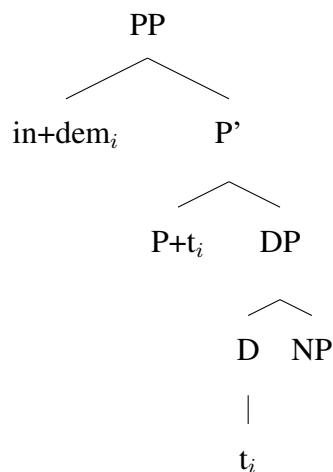
(62)



Then *Julie* is the morphological specifier of a phonologically null object.

We apply this to prepositional compounds in the following manner. In (58), *dem* is a complement of *P*. However, it is capable of head-adjunction to *P* in (59). Thus, it becomes an overt morphological specifier, which follows by mirror theory from its status as a complement. Then Koopman's restriction on the pronunciation of terminal elements in phrases takes hold: only one terminal element can be pronounced<sup>20</sup>. There is already one overt element in the specifier. So *im* is pronounced in *SpecPP*. The structure that is sent to PF looks like:

(63)



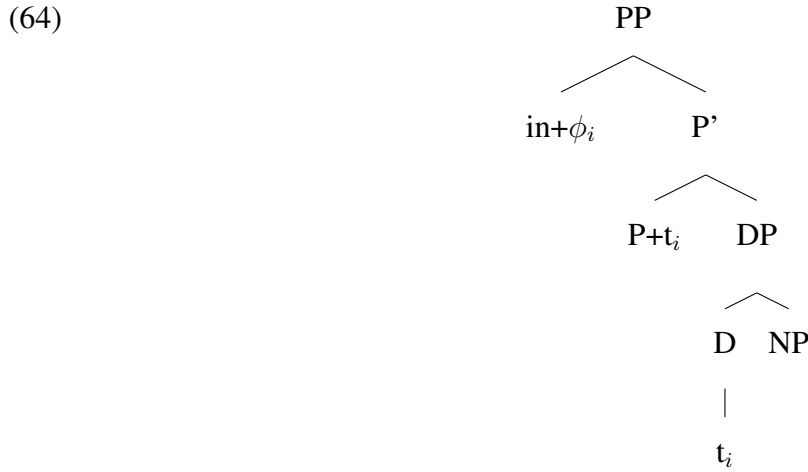
The result of this is a phonologically-occupied *SpecPP*, preventing preposition-stranding in German and French.

We extend this analysis to Latin by claiming that while this language lacks overt determiners at the top of the  $\phi$ -feature chain, we can use the presence of a concord relations to say that Latin

<sup>20</sup>The importance of pronunciation derives from the notion of edge-linearization as in section 3: if an element at the edge must be pronounced, the whole edge must be pronounced.

is only minimally different from German and French: the determiners exist, but they are not overt.

We propose this structure, parallel to the one for German:



Prepositional compounds, however, are in fact found in Latin. Latin has pronoun-preposition compounds like *vobiscum*, consisting of the second-person plural ablative pronoun *vobis* and the preposition *cum*.

(65)  $\text{cum} + \text{vobis}_{ABL} = \text{vobiscum}$

Assuming this analysis, SpecPP is also occupied in Latin at Spell Out, preventing the use of an escape hatch for DPs in preposition-stranding.

One reason that we might expect German and Latin to follow the same pattern, despite German's overt determiners, is a learnability one. We assume that the independently-motivated PIC holds as the default assumption. The learner holds that nothing can cross a phase head under any circumstances, and learns from positive examples when this is not the case. Languages like English and Latin do exhibit the crossing of a phase head under certain conditions. We need to determine how the learner distinguishes between situations in which phase heads can be stranded and when they cannot.

The learner observes that preposition-stranding is blocked in German by the presence of an overt concord chain leading to an agreeing determiner. This determiner sometimes cliticizes onto the P, preventing SpecPP from providing an escape hatch for preposition-stranding. So the learner

knows from the occurrence of the cliticization of concord-bearing objects that stranding is forbidden in PP. How does this work in Latin, which also forbids preposition-stranding? The learner observes the presence of concord, even in the absence of an overt determiner. The presence of concord signals the existence of a null determiner as a concord cap, and by default, agreeing determiners cliticize onto P, once again preventing the escape hatch from forming.

Under the assumption that the PIC holds, if the learner has independent evidence that concord applies locally, then the propositional element must be in the specifier position, and thus it prevents movement. Then there is nothing to learn; movement out of the phase is blocked. Preposition-stranding can only occur when the learner has observed evidence that the element is not in the standard position.

### 5.3 Concord in Dutch

Dutch is a language with gender-agreement in determiners and adjectives. Like French, it also has overt determiners. But it is apparently susceptible to preposition-stranding. We will see that this reinforces the relationship between preposition-stranding and concord that we explored in the previous sections.

van Riemsdijk (1978) shows that preposition-stranding in Dutch is much more limited than in English. Not every NP can be ejected from the PP. According to him, if X and Y are positions, then<sup>21</sup>:

(66) It is impossible to relate X, Y in the structure:

$$\dots X_i \dots [_{PP} \dots [_{P'} \dots Y \dots ]_{P'} \dots ]_{PP} \dots X_j \dots$$

unless

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<sup>21</sup>We have taken the liberty of replacing the P''' of the time with the more modern PP.

- a. Y = genderless *r*-pronoun
- b. Y = modifying clause
- c. Y = motional postposition

This prohibits movement of everything but these limited cases out of the PP. Interestingly, these positions do not create concord chains. Dutch *r*-pronouns are a special class of pronouns that also act as locative adverbs. They are used with prepositions whenever a pronoun is needed to refer to an inanimate object, regardless of grammatical gender—the grammatical gender system is voided in the case of *r*-pronouns. Van Riemsdijk provides examples. This is not allowed in Dutch:

- (67) a. \*Wie<sub>i</sub> heb je [op t<sub>i</sub>] gerekend?  
 Who<sub>i</sub> have you [on t<sub>i</sub>] counted?  
 ‘Who did you count on?’
- b. \*Wie<sub>i</sub> heb je deze plaat [voor t<sub>i</sub>] gekocht?  
 Who<sub>i</sub> have you this record [for t<sub>i</sub>] bought?  
 ‘Who did you buy this record for?’

*Wie* is not an *r*-pronoun. However, *waar* (“Where”) is:

- (68) a. Waar<sub>i</sub> heb je [op t<sub>i</sub>] gerekend?  
 Where<sub>i</sub> have you [on t<sub>i</sub>] counted?  
 ‘What did you count on?’
- b. Waar<sub>i</sub> heb je deze plaat [voor t<sub>i</sub>] gekocht?  
 Where<sub>i</sub> have you this record [for t<sub>i</sub>] bought?  
 ‘What did you buy this record for?’

The answer to a *wie* question would be an NP with grammatical gender. Forming a question from this while stranding the preposition is not allowed. This reinforces our correlation between lack of stranding and concord.

The modifying-clause extraction is not quite the same preposition-stranding as we see in English, either, in that it must leave behind the base noun. From van Riemsdijk:

- (69) a. Ik heb [met de meeste mensen die er waren] gesproken  
 I have with the most people who there were spoken

- b. Ik heb [met de meeste mensen *e*] gesproken die er waren  
 I have with the most people *e* spoken who there were  
 ‘I spoke with most of the people who were there.’

Van Riemsdijk has a solution for this that would be recognized in GB-style terms: that these modifiers (such as *die er waren*) are adjuncts to the NP and are extracted via a successive adjunction to PP. Being adjoined to the maximal projection, they are thus visible for extraction in the way that an actual complement of a PP is not. In minimalist terms, the PIC does not apply—as it would for the base NP *de meeste mensen*, which cannot ever be interpreted as an adjunct to the PP.

Finally, we come to the motional postpositions of Dutch which can be scrambled long-distance in Dutch. Again, from van Riemsdijk:

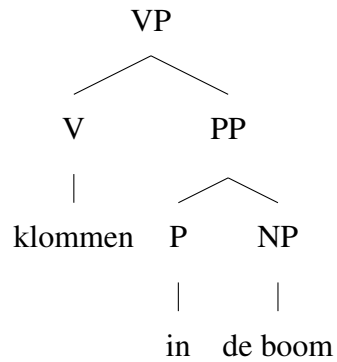
- (70) a. omdat zij de boom op blote voeten in klommen  
 because they the tree on bare feet into climbed  
 b. omdat zij op blote voeten de boom in klommen  
 because they on bare feet the tree into climbed  
 c. \*omdat zij in op bloete voeten de boom klommen  
 because they into on bare feet the tree climbed  
 ‘because they climbed the tree barefoot’

Van Riemsdijk, however, notes that motional prepositions can incorporate into verbs. He then uses a rule to move postpositions away from their complements. In modern terms, we can make use of the incorporation to demonstrate the evacuation of the phase head, permitting the movement of the object of the preposition.

We can derive *de boom in klommen* from (70b) from

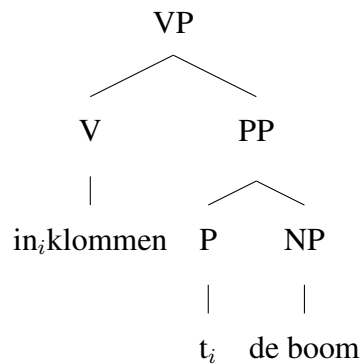


(71)



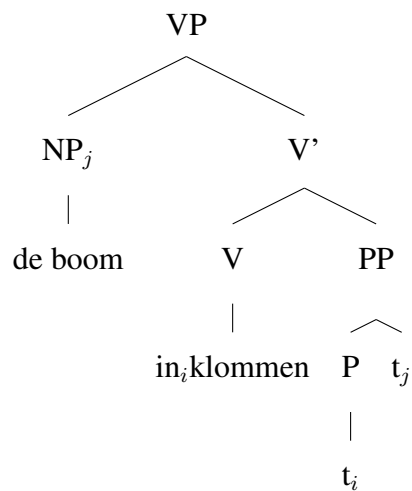
whereupon *in* incorporates into the verb as a motional postposition:

(72)



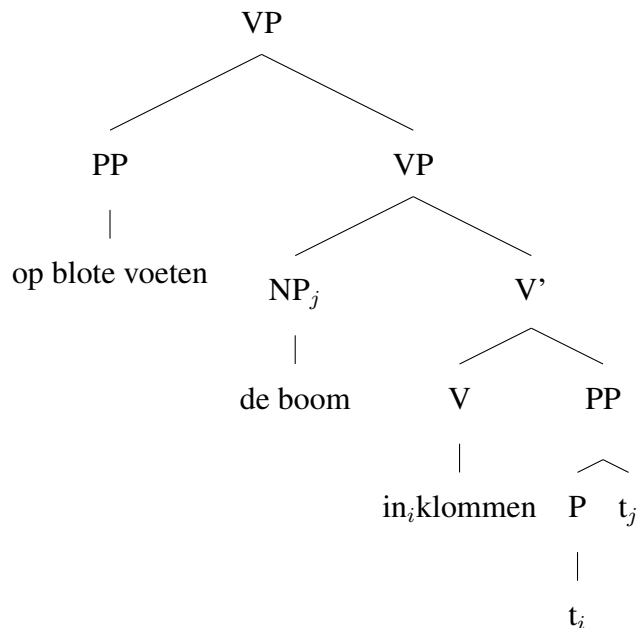
The phase head, having been incorporated into another head, is now absent from the point of view of the Spell Out of the PP. Now there is nothing preventing the movement of the NP to the specifier of the VP.

(73)



Finally, we can derive (70a) by noting that it is merely crossing another adjunct of the VP.

(74)



But (70c) is forbidden for the following reason: to derive (70c), *in* would have to move well above the verb *klommen*. But there is a much shorter move that it can make: to incorporate into the verb. Thus, it cannot move so far beyond the verb.

Each of these Dutch exceptions to the prohibition of preposition-stranding reinforces the relationship between movement and concord by demonstrating a correlation between the existence of an independent relationship between a verb and a downstairs element and the apparent concord restriction on German and French preposition-stranding.

## 5.4 Anti-locality and stranding

Abels (2003) defends a restriction on movement from phases that he calls the Stranding Generalization. In his terms:

(75) Given a phase head  $\alpha^\circ$  and a constituent X in  $\alpha^\circ$ 's c-command domain.

a.  $\Diamond\checkmark[X\dots[\alpha^\circ[\dots t_X\dots]]\dots]$  and

b.  $\neg\Diamond\checkmark[X\dots[\alpha^\circ t_X]\dots]$

In other words, it is possible for a constituent of the complement of the phase head to leave the phase under movement, but it is not possible for the complement of the phase itself to move. However, if  $\alpha$  is not a phase head, then this restriction does not apply.

This has major implications for preposition-stranding in general, and in particular for our analysis of it. The fact that, in many languages, prepositions cannot be stranded suggests that P is a phase head. In fact, Abels builds an analysis of P-stranding around this proposal, a proposal with which we agree. However, what of languages in which prepositions *can* be stranded, such as English? Abels' answer is that it must not be a phase head in those languages; P-stranding is necessarily parameterized under his proposal.

In this paper, we have connected the conditions under which P-stranding is allowed or disallowed to cyclic requirements for convergence at PF. An analysis of this type renders the Stranding Generalization irrelevant: the ban on the movement of the complement of P in some languages is not due to the status of P as a phase head. Indeed, in our approach, P is always a phase head.

Abels rejects the idea that stranding is related to conditions at PF. He cites Merchant (1999) for the reason: many languages that do not allow preposition-stranding in question formation also do not allow preposition-stranding under sluicing. We have presented a counterexample, however, from Brazilian Portuguese (51, 52). The relevance of this counterexample is further elaborated by Almeida & Yoshida (2007), who demonstrate that Brazilian Portuguese contradicts this generalization about stranding made explicit in Merchant (1999) as the Preposition Stranding Generalization (PSG).

Each analysis, then, has separate problems. Abels' analysis offers an explanation of why languages like French do *not* have P-stranding under any circumstances, but languages like English *do*. The analysis, however, rules out the existence of any language that has preposition-stranding under sluicing, like Brazilian Portuguese. Our analysis can explain English and Brazilian Portuguese, but what *prevents* preposition-stranding under sluicing in French remains unexplained. On the other hand, while Abels rules out Brazilian Portuguese, we do *not* rule out the existence of

some other mechanism in French that prevents preposition-stranding out of deleted phrases.

What might prevent stranding in French, regardless of overtness? Almeida and Yoshida suggest that “there are two sources of P-stranding.” One of them is a derivational restriction, such as an anti-locality analysis after Abels. But, in some languages, PF considerations may alternately be blocking stranding. They recognize that there are learnability challenges with such an analysis<sup>22</sup>.

We suggest that there are learnability issues even in admitting a derivational restriction alone, at least of the type that Abels proposes. His proposal depends on a +/- *phase head* parameter on P. However, he does not provide any means of determining how a learner could acquire such a parameter from primary linguistic data.

However, we have a parameter that is based on PF: standing is permitted so long as the edge of the phase is unlinearized. In other words, if the edge is linearized too early, stranding is not possible. There is at least one type of evidence from primary linguistic data that could allow a learner to perceive that the edge of the phase is linearized too early in a given language for stranding to occur: overt  $\phi$ -feature concord through DP. Abels dismisses stranding in Dutch by suggesting that *r*-pronouns are not true DPs, but “locative proforms”; we agree that *r*-pronouns are qualitatively

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<sup>22</sup>This controversy continues with Rodrigues et al. (2008); they propose that Romance languages have multiple sources of sluicing, *wh*-movement with IP-deletion and clefting with IP-deletion, “the latter being the underlying source for P-stranding sluicing.” If this is the case, and *no* Romance languages including Brazilian Portuguese have genuine P-stranding under sluicing, then it remains to explain the difference between Romance and English, which has preposition-stranding with or without sluicing.

The means by which Rodrigues et al. establish their claim that sluicing in Brazilian Portuguese is different from sluicing in English is to suggest that apparent cases of P-stranding under sluicing bear certain characteristics with clefts in Brazilian Portuguese but not in English. For example, the sentence “Harry danced with a young woman, but I don’t know who else it is with whom he danced” would be considered by them to be ungrammatical in English, but its equivalent is grammatical in Brazilian Portuguese. It is possible to delete the cleft in Brazilian Portuguese to arrive at “Harry danced with a young woman, but I don’t know who else,” which would again be ungrammatical in English, according to them. This then suggests that deletion of a cleft is an operation licenced in Brazilian Portuguese that produces stranding-under-sluicing effects, but it is not licenced in English insofar as clefts with “else” are also forbidden in English.

It is not clear to us that this is correct for English, as we do not find either example particularly unacceptable. Even so, what evidence a learner would use to acquire the difference between the false stranding of Brazilian Portuguese and true stranding in English is not clear from their proposal; the closest they come is a suggestion that such cleft-deletion structures are “available in languages that have *pro* subjects for clefts”. English is not one of these languages, but Brazilian Portuguese is. This proposal requires further investigation of other languages that have *pro* subjects for clefts; do they have apparent P-stranding under sluicing as well?

different from personal pronouns, but their ability to strand P matches well, as we discussed in the previous section, with learner-observable facts about concord.

In sum, neither a derivational-constraint explanation based on a phase head parameter nor an explanation based on PF constraints succeeds fully in explaining the preposition-stranding phenomenon across all languages. However, a purely derivational constraint entirely rules out any analysis of Brazilian Portuguese that suggests that preposition-stranding in that language patterns with English, at least under sluicing. This is probably premature. While our PF constraint does not provide a complete explanation either, it does not implicitly rule out the cases it misses—languages that do not have preposition-stranding under sluicing. However, our proposal allows us to identify the evidence—overt  $\phi$ -feature concord—through which a learner might acquire the restriction on overt P-stranding in those languages.

## 5.5 English and stranding

We are thus left with one mystery to answer. We know one situation in which preposition-stranding cannot happen: in the presence of concord, and in particular a concord cap most likely found in D. This explains most situations in German, French, Latin, Russian, and most cases of Dutch. But there are remaining Dutch cases as well as the very liberal preposition-stranding in English that must still be explained.

There is one way of handling these languages, and that can be found in the complement-adjunct asymmetry in English. It turns out that one cannot strand a preposition from an adjunct, but one can from a complement PP.

- (76)
- a. I spoke with that woman.
  - b. Who did you speak with?
  - c. I spoke with great reluctance.
  - d. \*What did you speak with [manner]?

This asymmetry presents a problem for a van Riemsdijkian “escape-hatch” theory of P—why would a complement PP but not an adjunct PP have an escape hatch?

One way of dealing with this problem is to make use of the reanalysis story from Hornstein & Weinberg (1981):

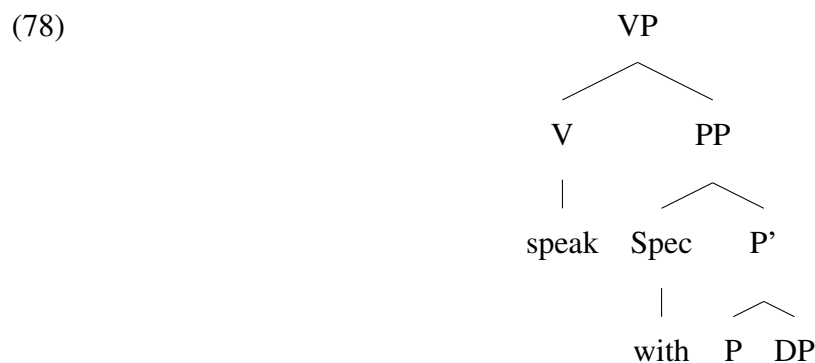
(77)  $[V [PP [P NP]]] \Rightarrow [V+P NP]$

In this story, the head of a complement PP is simply absorbed into the V head. Then there is no escape hatch issue, as there is nothing from which to escape.

There are problems with the reanalysis analysis, some of which have been noted by Martin (2003) and by Baltin & Postal (1996) and others. These include, in particular, multiple PP complements over conjunctions, a situation in which reanalysis seems unlikely. For instance, in the sentence “I spoke with that woman and with those other people,” the second *with* is so far from the verb that it is impossible to analyze it as part of the verb via a PF-reanalysis mechanism. Instead, Martin uses a Cinque-style tree of very many projections to explain the difference between near and far conjoined prepositions instead.

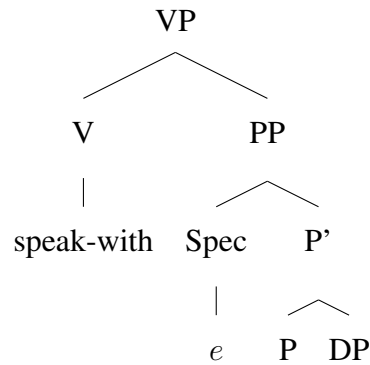
A solution lies in rescuing both approaches together: we use reanalysis by pulling the preposition out of its phrase by “across the board” extraction; this creates an escape hatch that is independent of the distance between the verb and its complement preposition.

So this, in the case of a single PP,



would become

(79)



We handle cases of across-the-board movement in exactly the same way, by noting the following asymmetries:

- (80) a. I should speak with that woman and with those other people.  
b. ??Whom should I speak with and with?  
c. Whom should I speak with?
- (81) a. I should speak for the oppressed and against the powerful.  
b. I should speak for and against the organization.  
c. ?Whom should I speak for and against? (With the answer being a.)  
d. Whom should I speak for and against? (With the answer being b.)

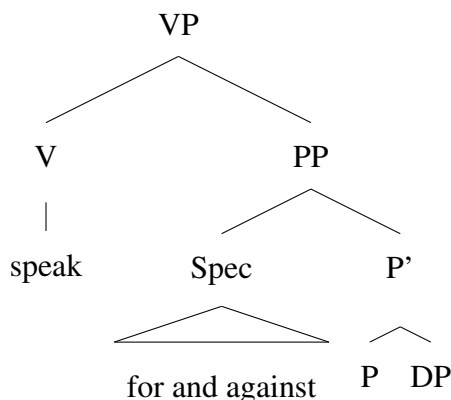
In (80a), we have the same preposition *with* in both PPs. Extracting the NPs into a question usually gives us (80c), not (b). (c) really looks like:

- (82) Whom should I speak with ~~and with~~?

The incorporation is thus the same as 79.

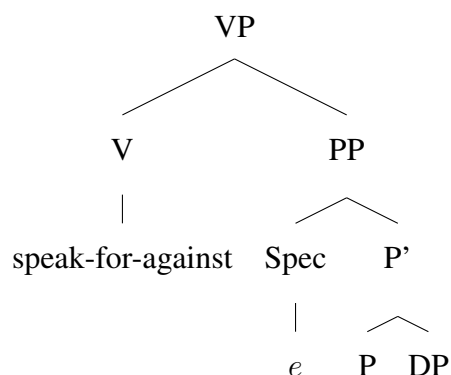
But in (81a), the prepositions are different. If we perform the extraction in the context of (a), then (c) is degraded: it is harder to make *whom* refer to two different objects in different places in the sentence. It is perfectly fine to say (d), where *whom* refers to the same object. In that case, we have this structure to begin with:

(83)



And then, in a similar manner as (79), reanalysis gets us:

(84)



Note that we observe this effect only in the case of preposition-stranding. Other cases of across-the-board extraction (*Whom should I assist and impede? I should assist the Crown and impede the brigands.*) do not display this slight degradation that appears in the preposition-stranding case<sup>23</sup>.

<sup>23</sup> Alternatively, particularly for those who do not experience this contrast, sluicing may account for the differences in (81). The evidence for this is prosodic.

- (85) a. Whom should I speak for RESET and against?  
b. Whom should I speak for-and-against?

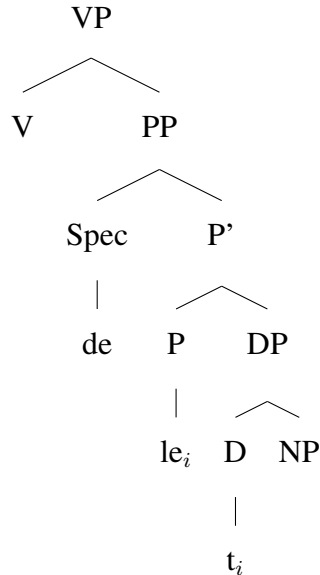
The former could be expanded to “Whom should I speak for and *whom should I speak* against?” With the prosodic reset, it would allow two different coordinated answers. In this case, however, it would also be two separate cases of stranding. The latter is only one case of stranding and is compatible with the analysis in (84). (Thanks are due to Dr. Seth Cable for providing this idea in an in-person meeting.)

Another way of looking at this comes from a recent attempt by Ruys (2008) to update Hornstein and Weinberg’s reanalysis account for stranding in Dutch. According to Ruys, Dutch stranded prepositions are prosodically unstressed, and they can appear far from the verb out of whose VP the stranding takes place, separated by other VP constituents. Moving the PP out of the verb phrase, however, puts stress on P, and prevents stranding. This view allows for a sort of reanalysis to take place across long-distances. We do not specifically depend on the exact form of Hornstein and Weinberg’s reanalysis; any PF-related operation that allows P to be included in the higher phase works for our purposes here.



In a language in which concord invokes the kinds of processes implied by Koopman and by Brody, this kind of reanalysis is unavailable, as the preposition must be spelled out in its current position: as we described in section 5.2, the spec-marked PP has the overt preposition in its specifier, but the D cap of its concord chain is adjoined to the PP's head, as in French:

(86)



The concord cap must be pronounced, and the specifier is pronounced with it (in the above example, as *du*). And the preposition is incapable of vacating SpecPP at PF. And now we have the opportunity to return to our discussion of CP, to which we extend this mechanism.

## 6 Complementizer-stranding

We spent the previous section analyzing why preposition-stranding is mostly prohibited in several languages but enabled in at least one, and we did so mostly in terms of requirements on PF. Processes of cliticization—including those involving phonologically null objects—appear to prevent the preposition, realized in the specifier of PP<sup>24</sup>, from being pulled up by reanalysis into a higher phrase. In languages in which such PF processes do not occur—like English—it is possible to create the escape hatch by reanalysis, since the preposition is not fixed in place by the incorporation of

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<sup>24</sup>We return to this issue later.

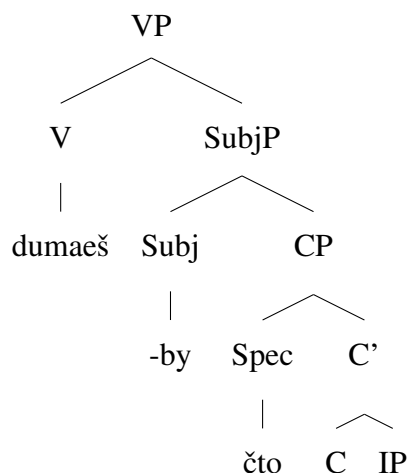
a  $\phi$ -feature complex into its head, and this then permits preposition-stranding. If incorporation of any  $\phi$ -bearing object into PP were to occur in English, preposition-stranding would be impossible, by the processes we described in the previous section.

We discussed preposition-stranding in order to motivate our solution to the problems we raised regarding Svenonius' explanation for scrambling and Object Shift in terms of a modification on phase theory; in particular, we discussed its difficulties in handling long-distance scrambling in languages with complementizers on the left, like Latin and Russian. Specifically, Svenonius' account would require movements of complementizers from rightward positions for which no evidence exists.

## 6.1 Allowing the stranding

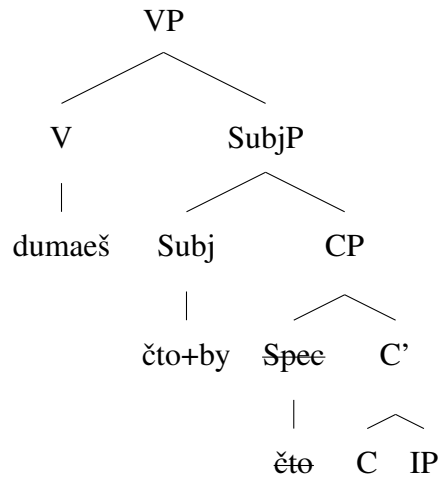
We can repair Svenonius' account in these instances by using a preposition-stranding analysis in the case of complementizers, given Russian *wh*-movement as in 37. We use a reanalysis account to describe how *čto* acquires a *-by* clitic when extracted from a subjunctive subordinate clause:

(87)



which becomes

(88)

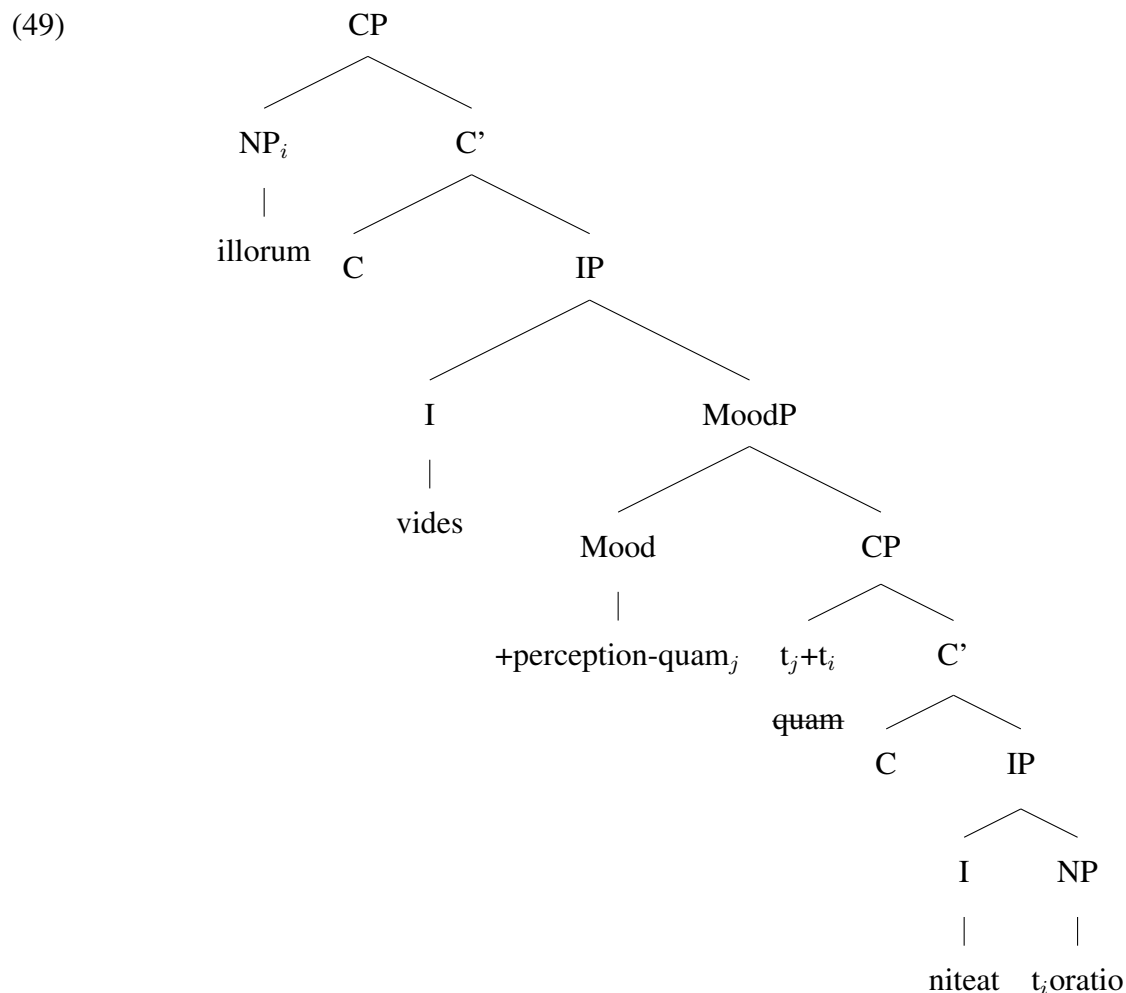


and the escape hatch is created—from the perspective of PF, the specifier is made completely void through reanalysis and, being now void, an item bearing phonological features can transit through the specifier unimpeded<sup>25</sup>.

Then in the long-distance scrambling instance, which also tends to be selected by the verb, we use a null morpheme in much the way that we used a null determiner (or concord cap) that we used to prevent Latin preposition-stranding. This is the structure that we gave in (49), which we repeat here:

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<sup>25</sup>In other words, the specifier is now the empty string, *e*.



## 6.2 Preventing the stranding

What, then, stops long-distance scrambling? The answer is to say that the motivator of long-distance scrambling, ultimately, is the presence of discourse-related features that can attract lower material. In some languages, like English, this kind of discourse option is not utilized<sup>26</sup>. However, we did have a story for situations in German, French, and Latin in which preposition-stranding was

<sup>26</sup>Topicalization in English can look superficially like this kind of movement:

(89) Jane, I know John loves.

However, the example in (49) involves the extraposition of *illorum*, which is a genitive pronoun. That would be equivalent to

(90) \*Jane's<sub>i</sub>, I know John loves t<sub>i</sub> sister.

forbidden by the relationship between PP and DP. It is not unreasonable to wonder whether such a story might apply to the complementizer-stranding situation.

Glushan has an example contrast involving Russian *kak* (“how”), which acts as a complementizer and as a *wh*-element with different effects in each case. *Kak* is ambiguous, but a similar phrase, *kakim obrazon* (“in what way”), is unambiguously a *wh*-element that forms an indirect question.

Glushan provides this contrast:

- (91) Vy posylku videli kak/\*kakim obrazon kto-nibud’ upakovyval?  
 You parcel<sub>ACC</sub> saw how/in what way anybody packed?  
 ‘Did you see anybody packing the parcel?’

In general, *kak* can be read both ways: with a *wh*-element reading and with a “yes/no” reading. *Kakim obrazon* provides only a *wh*-element reading, which is ungrammatical. But with *kak* in this specific context, only a “yes/no” answer is acceptable—the *wh*-element reading is ungrammatical in the same way that *kakim obrazon* is ungrammatical. If the respondent answers with “with the tape”, that would be ungrammatical, as the *wh*-reading for the *kak* does not permit these kinds of extractions. So in the specific context of a direct question, *kak* can only have a reading that does not replicate a *wh*-extraction in the possible answers.

A further Russian example from Glushan is this one:

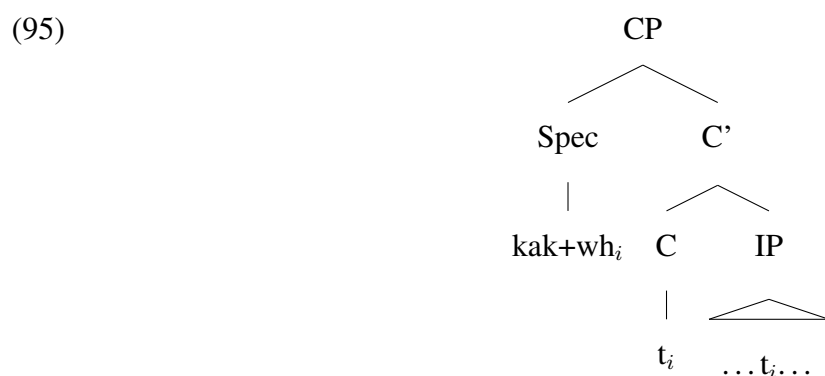
- (92) My ne znaem kak rebjenok kupil sigarety  
 We not know how child bought cigarettes
- (93) ??My ne rebjenok<sub>i</sub> znaem kak t<sub>i</sub> kupil sigarety  
 We not children<sub>i</sub> know how t<sub>i</sub> bought cigarettes  
 ‘We don’t know how the child bought cigarettes.’

*Kak* unambiguously indicates a question in the above example, although an indirect question, and consequently there is a weak island effect seen when it is crossed.

Note, however, that when *kak* does not introduce an indirect question but just acts as a complementizer, extraction is fully grammatical:

- (94) Vy posylku<sub>i</sub> videli kak zapakovali t<sub>i</sub>  
 You parcel<sub>i</sub> saw how packed t<sub>i</sub>  
 ‘You saw how they packed the parcel.’

This is analogous to the PP-concord relation in that there is also a further relation between material outside the embedded clause and material inside the clause. The fact that *wh*-readings of *kak* become islands for extraction in direct and indirect questions, but extraction is licensed under non-question readings suggests an asymmetry analogous to that of *čto* and *čtoby*. We propose that *kak* is held in place by cliticization onto a silent question-marker.



This is analogous to the the silent concord situation in Latin prepositional phrases which prevents preposition-stranding in Latin.

Thus, indirect questions appear to have a further relationship to an item inside the clause whose properties propagate up to C, making cliticization onto the higher clause impossible in the same manner that overt concord makes reanalysis impossible in languages that do not allow preposition-stranding. In derivational terms, this relationship results in the linearization of the edge.

## 7 Final remarks

### 7.1 Conclusions

In this work, we have taken another look at long-distance A'-movements, such as long-distance scrambling and preposition-stranding to A'-positions. We have taken one prior proposal for ex-

plaining the mechanisms behind object shift and long-distance scrambling—that of Svenonius (2000)—and demonstrated that it precludes Japanese-style long-distance scrambling in languages with overt complementizers on the left. We retained Svenonius’ idea that movement can be motivated by discourse features, however. We then showed a process by which overtly left-headed CPs *can* allow long-distance scrambling in some languages: via escape hatches in SpecCP. After that, we used the details of preposition-stranding to demonstrate the means by which escape hatches are created in PPs. We found that the applicability of anti-locality analyses such as that of Abels (2003) to preposition-stranding phenomena is as yet unclear. Then we were able to exploit the parallelism between PP and CP to show how escape hatches are allowed in some languages in CP. Finally, having grounded our analysis in a framework that still included some GB assumptions, we were able to take this analysis to a fully derivational and minimalist paradigm.

In conclusion, the ubiquity and systematic nature of certain kinds of A’-movements provides us further evidence to identify CP and PP as phasal categories, and furthermore, allows us to identify the timing and conditions under which spell out occurs within a phase, given the evidence for escape hatches which we have described. It turns out that what prevents escape hatch phenomena from occurring is the fusion by linearization of the objects at the edge; some objects trigger this linearization, and these are the ones that prevent escape hatches from forming. Otherwise, features in the higher clause attract those objects that would otherwise be triggers for edge-linearization, preventing long-distance A’-movement and preposition-stranding.

## 7.2 Open questions and future work

We discussed a process by which the linearization of the edge of the phase may be the point at which escape hatches are created, but we remained agnostic on how a preposition may actually reach the edge of the phase, and what makes PP and CP susceptible to having phasal characteristics. Furthermore, the mechanism by which categories become phasal will provide an alternative motivation for the cliticization that prevents preposition-stranding, reasons to do with case-assignment

that are different from those of Brody and those of Koopman.

One way to do this is to ground the parallelism between PP and CP in their behaviour as phases with specifier escape hatches. We can use a recent attempt by Uriagereka (2008) to predict which categories are phasal. This attempt would make use of generalizations about the distribution of case inside clauses. There is a relationship between case assignment and the position of the assignee in the phase. Uriagereka analyzes case assignment as happening always by agreement with a preposition, and he holds that prepositions emerge from more fundamental interactions in the grammar, some of which can be explained in phasal terms. If we ground phases in predications, then the facts about CP, PP, and *v*P as phases fall out of the actual roles played by overt prepositions and complementizers. Soltan (2004) also has an argument for identifying PP as a phase based on locative inversion constructions.

There are many avenues remaining for future work. One such avenue is in developing a more clear extension of the notion of concord chains in DP, as we have used them in this work, to IP, in order to further exploit the parallelism between PP and CP. As we observed in Russian, a *wh*-feature appears to prevent the creation of a SpecCP escape hatch. That  $\phi$ -feature concord appears to prevent the formation of an escape hatch in PP suggests a parallel between  $\phi$ -feature concord and the generation of *wh*-features.

Another area for work is in accounting for preposition-stranding to non-A'-positions. SpecCP and SpecPP appear generally to be A'-positions. Chain uniformity thus dictates that items that move through SpecPP must continue moving to A'-positions. However, English displays preposition-stranding to A-positions: *The building was broken into*. This kind of A-movement preposition-stranding must either have the displaced item move through some other escape hatch, or SpecPP must not be an A'-position in these cases. If the latter, future research will have to show how such a SpecPP is case-marked. However, if escape-hatch phenomena are indeed merely artifacts of the timing of edge linearization, then issues of chain uniformity may not be so important or relevant.



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