Crossing and stranding at edges:
On intermediate stranding and phase theory

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Abstract: This paper investigates the distribution of stranding in intermediate positions under A′-movement, which I show obeys a cross-linguistically robust word order generalization: leftward movement of a phrase α can only intermediately strand an element β if β can be ordered rightward of α before stranding occurs. I argue that this generalization emerges naturally from the Cyclic Linearization theory of spell-out, and its interaction with independently supported constraints on movement in syntax. I go on to consider some reasons why a particular position may or may not be a viable location for stranded material.

Keywords: intermediate stranding, successive-cyclicity, phases, cyclic linearization

1 Introduction

Moved phrases can sometimes leave material behind at intermediate points in the sentence, as a variety of works have shown. If the syntactic derivation is bounded by *phases* (at least vP and CP), which movement must successive-cyclically pass through the edge of (Chomsky, 2000, 2001, a.o.) then the possibility of such patterns is expected. This is because the intermediate landing sites forced by phases provide positions where, in principle, an element might be stranded. In this paper, I examine the properties of such intermediate stranding.

The schema in (1) illustrates the basic form of an intermediate stranding derivation. Here successive-cyclic movement of a phrase α intermediately strands an element β in the edge of the phase YP, in the following way. First, α moves to the YP edge while simultaneously pied-piping β. Second, α moves on alone, leaving β behind in the edge of YP. Thus movement of α through the edge of the phase YP feeds intermediate stranding of β.

(1)   *Intermediate stranding under successive-cyclic movement*
      $[_{ZP}\ \alpha\ \text{Z}\ [_{YP[Phase]}\ [\ t_\alpha\ \beta\ ]\ \text{Y}\ [_{XP}\ t_{\alpha\beta}\ \text{X}\ ]]]$
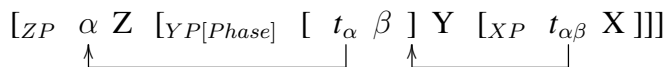
In this paper, I show that such stranding obeys a cross-linguistic generalization about word order:

(2)   *Intermediate Stranding Generalization (ISG)*
      Leftward movement of a phrase α can only intermediately strand an element β if β is (or can be) ordered rightward of α before stranding occurs.
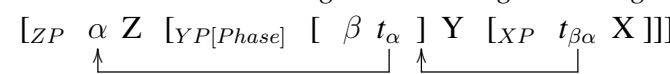
I argue that this generalization stems from a particular proposal concerning the nature of spell-out, along with independent constraints on movement in syntax.
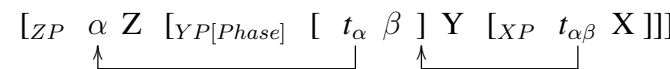
1.1 *Preview of results*

Assuming that intermediate stranding typically occurs in phase edges for the reasons outlined above, I argue that the ISG in (2) holds because only those derivations that obey it avoid a fatal

crossing problem. This problem is illustrated in (3a) below. Here β precedes α before intermediate stranding occurs. In this situation, when α strands β in the edge of the phase YP, movement of α from YP must cross over β. By contrast, in (3b) α originally precedes β. Thus here movement of α will not cross over β when β is stranded at the YP edge. In this paper, I argue for a theory which rules in only non-crossing intermediate stranding derivations like (3b). Since (3b) corresponds to what the ISG describes, the ISG will thus be derived.

(3)   a.   * *Intermediate stranding with crossing at the edge*

$$[_{ZP}\ \alpha\ Z\ [_{YP[Phase]}\ [\ \beta\ t_{\alpha}\ ]\ Y\ [_{XP}\ t_{\beta\alpha}\ X\ ]]]$$

        b.   ✓ *Intermediate stranding without crossing at the edge*

$$[_{ZP}\ \alpha\ Z\ [_{YP[Phase]}\ [\ t_{\alpha}\ \beta\ ]\ Y\ [_{XP}\ t_{\alpha\beta}\ X\ ]]]$$

In particular, I argue that the ISG arises naturally under the *Cyclic Linearization* (CL) theory of phase spell-out (Fox & Pesetsky, 2005a,b; Ko, 2007, 2011, 2014; Sabbagh, 2007; Podobryaev, 2009; Fanselow & Lenertová, 2011; Jenks, 2011, 2013; Overfelt, 2015; Erlewine, 2017; Davis, To appear). CL derives successive-cyclic movement (and certain exceptions to it) from the logic of *linearization*, the mapping of syntactic structures to pronounceable linear strings at spell-out. As we'll see, CL interacts with the impossibility of movement within phrase edges (Ko, 2007, 2014, a.o.) and with anti-locality (Bošković, 1997; Ishii, 1999; Grohmann, 2003; Abels, 2003, 2012; Erlewine, 2016 , a.o.) to constrain intermediate stranding in precisely the way the ISG describes.

1.2   *Road map of the paper*

Next, section 2 provides the empirical basis for the ISG, describing all intermediate stranding patterns that I am currently aware of. Section 3 overviews phase theory and the CL approach, and shows how CL derives the ISG. Section 4 demonstrates how independent constraints on movement interact with CL to accurately rule out various alternative derivations that would violate the ISG. Section 5 goes on to consider some factors that constrain the set of possible landing sites for stranded material. Section 6 compares this paper's approach to that of Bošković (2018), who predicts a result that is similar to the ISG, but different in several details.

2   The cross-linguistic distribution of intermediate stranding

This section provides the empirical motivation for the ISG, reporting all patterns I currently know of that may constitute intermediate stranding. Most of these patterns come from previous literature. While some of these scenarios may indeed be clearer than others, it will nevertheless be evident that a straightforward word order generalization can be stated about patterns of this nature.

2.1   *Stranding in West Ulster English and a puzzle about prepositions*

McCloskey (2000) discusses what is likely the most well-known case of intermediate stranding, involving the post-nominal quantifier *all* in West Ulster English. In this English variety, A′-movement can pied-pipe *all*, strand it in its base position, or strand it in a clause edge:

(4) *West Ulster English* all-*stranding in clause edge*   (McCloskey, 2000, ex. 9)

    a. Where$_k$ do you think [$_{CP}$ t_k **all** they'll want to visit t_k]?

    b. Who$_k$ did Frank tell you [$_{CP}$ t_k **all** that they were after t_k]?

    c. What$_k$ do they claim [$_{CP}$ t_k **all** (that) we did t_k]?

Based on these facts, McCloskey argues that A′-movement from CP pauses in the CP edge, in successive-cyclic fashion. The punctuated nature of such movement provides an intermediate landing site in the clause edge where *all* can be stranded. A piece of evidence that these patterns truly involve stranding is the fact that this *all* can only appear in positions within the A′-movement path:

(5) *No* all-*stranding in positions not crossed by movement*   (McCloskey, 2000, ex. 19)

    a. What$_k$ did she buy t_k **all** in Derry yesterday?

    b. * What$_k$ did she buy t_k in Derry **all** yesterday?

    c. * What$_k$ did she buy t_k in Derry yesterday **all**?

   Decades earlier, Postal (1972, 1974) argued for the opposite of McCloskey's conclusion, based in part on the fact that English prepositions cannot be stranded in clause edges (6). Postal argues that such intermediate P-stranding would be possible if long-distance movement were truly successive-cyclic, given that English prepositions are in principle strandable:

(6) *No intermediate stranding of English prepositions*

    a. (To) [which writer]$_k$ do you think [$_{CP}$ **(*to)** t_k (that) we should send the pen (to) t_k]?

    b. (For) [which dog]$_k$, did they claim [$_{CP}$ **(*for)** t_k (that) I cooked a steak (for) t_k]?

    c. This is the person [(in) [whose pants]$_k$ you said [$_{CP}$ **(*in)** t_k (that) I put eels (in) t_k]]

    d. (With) [this poison]$_k$, I think [$_{CP}$ **(*with)** t_k we should kill the pterodactyls (with) t_k]

The same constraint is found in Norwegian, which like English allows a preposition to be either stranded in its base position or totally pied-piped, but not stranded in a CP edge, as (7) shows:

(7) *No intermediate stranding of Norwegian prepositions*   (Henrik Torgersen, p.c.)

    a. (I) [hvilket rom]$_k$ trodde du [$_{CP}$ **(*i)** t_k jeg satt (i) t_k]?
       (in) which   room thought you   (in)   I   sat (in)
       "In which room did you think I sat?"

    b. (På) [hvilken bord]$_k$ trodde du [$_{CP}$ **(*på)** t_k trollmannen sagde kvinnen   i to
       (on) which   table thought you   (on)   the.wizard sawed the.woman in two
       (på) t_k]?
       (on)
       "On which table did you think the wizard sawed the woman in two?"

    c. (Om) [hvilken bok]$_k$ trodde du [$_{CP}$ **(*om)** t_k jeg snakka (om) t_k]?
       (about) which   book think you   (about) I   spoke (about)
       "About which book did you think I spoke?"

    d. (Om) hvem$_k$ trodde du jeg sa [$_{CP}$ **(*om)** t_k han spurte (om) t_k]?
       (about) whom thought you I   said   (about) he asked (about)
       "About whom did you think I said he asked?"

The theories that the facts in (4) and (6-7) respectively suggest are in conflict: If A′-movement is not successive cyclic, then what allows intermediate *all*-stranding in West Ulster English? If such movement really is successive-cyclic, then why is intermediate preposition stranding banned in Norwegian and English? I argue that word order is the key to this puzzle. Notice that prepositions, which can't be intermediately stranded, precede the phrase they merge to (8a). The West Ulster English strandable *all*, by contrast, follows the associated phrase (8b), and can be intermediately stranded. This contrast parallels the schema in (3), and thus fits the ISG proposed in (2) above.

(8)   a.   *Intermediate stranding impossible*
         <u>For</u> which cat
      b.   *Intermediate stranding possible*
         What <u>all</u>

In this paper, I maintain that A′-movement from a phase is always successive-cyclic, and argue that the ban on intermediate stranding of prepositions, as well as the ISG more broadly, have a linearization explanation. In the remainder of this section, I go on to show the rest of the intermediate stranding patterns that I am aware of, all of which we will see fit the ISG.

2.2   *Stranding of adjuncts to wh-phrases in English*

English allows an interrogative *wh*-phrase to be modified by *exactly/precisely* and similar elements, which Zyman (2019b) argues should be considered adjuncts. As is often the case for English adjuncts, these elements can attach on either side of the phrase they merge to:

(9)   *Variable order of* wh-*adjoined* exactly/precisely

      a.   (**Exactly/precisely**) [how many cakes]$_k$ (**exactly/precisely**) did you say that we ate t_k?
      b.   Who said that you ate (**exactly/precisely**) [how many cakes] (**exactly/precisely**)?

Such adjuncts can be pied-piped by *wh*-movement, stranded in their base position, or stranded in a CP edge (Urban, 1999; Stroik, 2009; Zyman, 2019b):

(10)   *Adjunct stranding under* wh-*movement*
       What$_k$ did you suppose t_k (**exactly/precisely**) (that) they wanted t_k (**exactly/precisely**)?

The possibility of stranding such elements in the CP edge fits the ISG, given that they are able to follow their host. The same basic pattern holds for adjuncts of quantity like *to the nearest pound* in (11) below. Such adjuncts provide clearer instances of stranding, since they are not potentially homophonous with adverbs of vP/VP, unlike *exactly/precisely*:

(11)   *Intermediate stranding of quantity adjunct*
       Tell me [$_{CP}$ (to the nearest pound) [**how much flour**]$_k$ (to the nearest pound) you said [$_{CP}$ t_k **(to the nearest pound)** (that) the bakery wants t_k (to the nearest pound)]]

When the *wh*-phrase that the adjunct is construed with does not move, such intermediate adjunct stranding is unacceptable. We see this in (12b/d) below, where the relevant adjunct in the embedded clause periphery is construed with a *wh*-phrase that remains in situ, due to being the lower of two *wh*-phrases in a multiple *wh*-question. The unacceptability of these examples is expected, if this intermediate position of the adjunct cannot be derived without movement of its host *wh*-phrase:

(12) *Intermediate adjunct stranding is parasitic on movement*

    a. [**How much flour**]$_k$ did you say t_k (**to the nearest pound**) (that) they'll deliver t_k?

    b. * Who said (**to the nearest pound**) that they will deliver [**how much flour**]?

    c. [**How many donuts**]$_k$ did you say t_k (**to the nearest dozen**) (that) the bakery will give away t_k?

    d. * [**Which bakery**] reported (**to the nearest dozen**) that the manager will give away [**how many donuts**]?

2.3 *Q-stranding in Wolof*

Torrence (2018) examines a number of elements that appear in the periphery of clauses crossed by *wh*-movement in Wolof (Niger-Congo, Atlantic). Torrence reports that there are at least two morpho-syntactic classes of such elements. He argues that one of these classes, which he terms "Q-like", has a distribution indicative of stranding under movement. According to Torrence, these quantificational elements obligatorily follow the NP they merge with. This fact is evident when they are not stranded by movement, as in (13) below, where total pied-piping occurs:

(13) *Full pied-piping of Q-like element in Wolof*

    a. [Ñ-an **ñ-epp**]$_k$ l-a   Ayda wax ne l-a-a   dóór t_k?
       who every   COP Ayda saw that COP.1SG hit

       "Who all did Ayda say that I hit?"   (Torrence 2018, ex. 38a)

    b. [F-an **f-eeneen**]$_k$ l-a   Ayda wax ne l-a-a   dem t_k?
       Where other   COP Ayda saw that COP.1SG go

       "Where else did Ayda say that I went"   (Torrence 2018, ex. 38b)

These elements can be stranded in situ, as we see in (14), as well as in the edge of an embedded CP, as we see in (15). Since these strandable elements originate to the right of NP, their ability to undergo intermediate stranding in the CP edge corresponds with the ISG.

(14) *Q-stranding in base position in Wolof*

    a. **Y-an**$_k$ la   Bintë waat ne nga   lekk t_k **y-epp**?
       what COP Binta swear that COP.2SG eat   every

       "What all did Binta swear that you ate?"   (Torrence 2018, ex. 44d)

    b. **F-an**$_k$ l-a-ñu   wax ne nga   teg téére bi t_k **f-eneen**?
       where COP.3PL say that COP.2SG put book the   other

       "Where else did they say that you put the book?"   (Torrence 2018, ex. 45b)

(15) *Q-stranding in intermediate clause edge in Wolof*

    a. **F-an**$_k$ l-a-ñu   foog t_k **f-epp** ne la-a   togg-e ceeb t_k?
       where COP.3PL think   every that COP.1SG cook rice

       "Where all do they think that I cooked rice?"   (Torrence 2018, ex. 29a)

    b. **F-an**$_k$ l-a-ñu   foog t_k **f-eeneen** ne la-a   togg-e ceeb t_k?
       where COP.3PL think   other   that COP.1SG cook rice

       "Where else do they think that I cooked rice?"   (Torrence 2018, ex. 29b)

Torrence states that the stranding of these elements is parasitic on A′-movement. It is, for instance, not possible to insert such an element into the edge of a CP that is c-commanded by a relevant noun phrase that did not move from that CP, as we see in (16) below. This is as expected if the appearance of such elements in a clause-peripheral position, as in examples like (15) above, is indeed derived by intermediate stranding.

(16)   *Intermediate stranding impossible without A′-movement of host phrase in Wolof*

    * Xale b-i defe-na **b-oo-b-u**   ne   lekk-na-a ceeb b-i
    child the think   aforementioned that eat.1SG   rice   the

    "The aforementioned child thinks that I eat rice"   (Adapted from Torrence 2018, ex. 31)

2.4 *Stranding in spec-vP in Dutch*

Barbiers (2002) shows that long-distance A′-movement from an embedded clause in Dutch can strand adpositions and various other elements in the matrix spec-vP, as demonstrated below:

(17)   *Stranding in spec-vP in Dutch*   (Barbiers 2002, ex. 6)

    a. Waar$_k$ had jij   dan   [$_{vP}$ t_k **mee** gedacht dat je   de vis t_k zou   moeten snijden]?
        where had you then   with thought that you the fish   would must   cut

        "What had you thought to be forced to cut the fish with?"

    b. Waar$_k$ had jij   dan   [$_{vP}$ t_k **voor bal** gedacht dat Ed t_k zou   kopen]?
        where had you then   for   ball thought that Ed   would buy

        "What kind of ball had you thought that Ed would buy?"

    c. [Een boek]$_k$ had ik [$_{vP}$ **maar** t_k gedacht dat Ed t_k zou   kopen]
        One book   had I   only   thought that Ed   would buy

        "I had thought that Ed would buy only ONE book"

Scrambled phrases in Dutch are generally "frozen" and hence behave like islands (see Corver (2017) and references therein), suggesting that these examples are not derived by first scrambling a phrase into the matrix spec-vP, and then sub-extracting from it. It is conceivable that the freezing effect is circumvented in these examples by first performing sub-extraction, and then scrambling the remnant of that extraction from the embedded clause and into the matrix spec-vP. However, Barbiers shows that long-distance A′-movement cannot normally be combined with long-distance scrambling in Dutch. Barbier's conclusion is that the facts in (17) are best analyzed as stranding under successive-cyclic movement.

Most of the elements that Barbiers shows undergoing such intermediate stranding in spec-vP originate to the right of what strands them, as we see in (17a-b). The exception is (17c), in which movement has stranded *maar* ("only"), which Barbiers shows as originating to the left of the moving element that stranded it. This looks like an exception to the ISG. However, in other work, Barbiers (1995) shows that such configurations where *maar* has a numeral as its focus associate allow *maar* to be either pre- or post-nominal. We see this in (18) below, where *maar* may appear either on the left or the right of the NP containing the numeral *twee* "two" that it focuses:

(18) *Dutch* maar *in pre- or post-nominal position*   (Barbiers 1995, pg. 62, ex. 31c-d)

       [(**Maar**) twee jongens (**maar**)] weten het antwoord
       (only)   TWO boys   (only)   know the answer
       "Only two boys know the answer."

Since *maar* can be ordered rightward of NP in these contexts, (17c) is not an exception to the ISG.

    Further Dutch stranding facts also fit the ISG. In Dutch, inanimate pronouns within PPs take on a special form (termed *R-pronoun*) with which many prepositions are inverted to alternative postpositional forms. While prepositions in Dutch cannot be stranded by A′-movement, their postpositional forms used with R-pronouns can be (van Riemsdijk, 1978):

(19) *No preposition stranding in Dutch*   (Coppe van Urk, p.c.)

    a. Ik snij het brood **met een mes**
        I cut the bread with a   knife

        "I cut the bread with a knife."

    b. * [**Welk mes**]$_k$ snij je   het brood [**met** t_k]?
         which knife cut you the bread with

        "Which knife are you cutting the bread with?"

(20) *Postposition stranded by moved R-pronoun in Dutch*   (Coppe van Urk, p.c.)

    a. Ik snij het brood **daar-mee**   b. **Waar**$_k$ snij je   het brood [t_k **mee**]?
        I cut the bread there-with   where cut you the bread   with

        "I am cutting the bread with that."   "What are you cutting the bread with?"

Importantly, the P "with" in (19-20) above is realized as *met* when it is a preposition, and *mee* when it is a postposition. Example (17a) above from Barbiers showed that the postposition *mee* is capable of intermediate stranding. As expected given the ISG, its prepositional variant *met* cannot be intermediately stranded. Hence an example analogous to (17a) that uses *met* instead of *mee* such as (21) below is unacceptable:

(21) *No preposition stranding in spec-vP in Dutch*   (Coppe van Urk, p.c.)

    * [Welk mes]$_k$ had jij   dan **met** t_k gedacht dat je de vis t_k zou   moeten snijden?
      which knife had you then with   thought that je the fish   would must   cut

    "Which knife did you think then that you would have to cut the fish with?"

2.5 *Afrikaans postposition stranding*

Du Plessis (1977) shows that, like Dutch, Afrikaans cannot strand prepositions under A′-movement:

(22) *No preposition stranding in Afrikaans*   (du Plessis 1977, p. 724)

    a. **Vir wat**$_k$ werk ons nou eintlik t_k? b. * **Waar**$_k$ werk ons nou eintlik **vir** t_k?
        For what work we now actually?   What   work we now actually for?

        "For what do we actually work?"   "For what do we actually work?"

Like Dutch, Afrikaans also has postpositions that occur with R-pronouns. Du Plessis shows that these postpositions can be stranded in their origination position, or at a clause edge:

(23) *Afrikaans postposition stranding*　　　　(Adapted from du Plessis 1977, exs. 5, 12, 13)

　　a. Waar$_k$(voor) dink julle [$_{CP}$ t_k **(voor)** werk ons t_k **(voor)**]?
　　　 where(for)　think you [　　(for)　work we　　(for)　]?
　　　 "For what do you think that we work?"

　　b. Wat/waar$_k$ dink julle dink die bure　　[$_{CP}$ t_k **(oor)**　stry　ons t_k **(oor)**]?
　　　 What　　think you think the neighbors [　　(about) argue we　　(about)]?
　　　 "What do you think the neighbors think we are arguing about?"

The elements that can undergo such intermediate stranding in Afrikaans are, as postpositions, ordered to the right of what strands them by leftward movement. Hence these facts fit the ISG.[1]

2.6 *Stranding by left branch extraction in Polish*

Wiland (2010) argues for intermediate NP stranding under *wh*-movement in Polish. Generally, Polish *wh*-movement permits pied-piping of the entire nominal phrase containing a *wh*-element, as well as left branch extraction of the minimal *wh*-element, stranding NP below:

(24) *Pied-piping versus left branch extraction in Polish*　　　　(Wiland 2010, ex. 1-2)
　　 Jaki$_k$ (**samochód**) Paweł kupił　swojej żonie t_k (**samochód**)?
　　 What car　　　　Pawel bought his　　wife　car
　　 "What car did Pawel buy his wife?"

Wiland shows that such left branch extraction can strand NP at various intermediate points in the sentence, as we see in (25) below. Assuming that Polish V moves to v, Wiland argues that the stranding positions shown in (25) are the specifiers of VP, vP, and CP. Wiland thus assumes that these three phrases are all phases,[2] which movement must pass through the edges of:

(25) *Intermediate stranding of NP under left branch extraction in Polish*

　　a. *Intermediate stranding in spec-VP*　　　　　　　　　(Wiland 2010, ex. 3)
　　　 Jaki$_k$ Paweł kupił　[$_{VP}$ t_k **samochód** swojej żonie t_k]?
　　　 What Pawel bought　　　car　　　his　wife
　　　 "What car did Pawel buy his wife?"

　　b. *Intermediate stranding in spec-vP*　　　　　　　　　(Wiland 2010, ex. 4)
　　　 Jaki$_k$ Paweł [$_{vP}$ t_k **samochód** kupił　swojej żonie t_k]?
　　　 What Pawel　　　car　　　bought his　wife
　　　 "What car did Pawel buy his wife?"

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[1]Rackowski & Richards (2005) and Den Dikken (2009) both argue that this Afrikaans pattern actually involves stranding in a clause-medial position. What matters for the present paper is not where exactly these stranded elements end up, but only that their word order fits the ISG, as we see here.

[2]Wiland's assumption that VP is a phase is not shared by most work on phase theory, but this concept has some precedent, as discussed in section 5.3 of this paper (particularly footnote 23). For the most part, the present paper assumes with Chomsky (2000, 2001, a.o.) that CP and vP are phases.

c. *Intermediate stranding in spec-CP* (Wiland 2010, ex. 5)

$^?$ **Jaki**$_k$ *pro* myślisz [$_{CP}$ t_k **samochód** (* że) Paweł kupił swojej żonie t_k]?

What (you) think car (* that) Pawel bought his wife

"What car do you think that Pawel bought his wife?"

Wiland notes that there is no prima facie argument against analyzing these examples as scrambling followed by sub-extraction of the *wh*-element from the scrambled phrase. However, Wiland goes on to show that unlike *wh*-movement, Polish scrambling is clause-bounded. From this, he argues that (25c) above and (26) below must truly involve stranding by *wh*-movement, not a scrambling derivation, since in these examples NP is stranded outside of the clause where it originates.[3]

(26) *Long-distance* wh-*movement with stranding in matrix spec-vP*[4] (Wiland 2010, ex. 6)

$^\%$ **Jaki**$_k$ Maria [$_{vP}$ t_k **samochód** myślała że Paweł kupił swojej żonie t_k]?

What Maria car thought that Pawel bought his wife

'What car did Maria think Pawel bought his wife?'

Since the Polish NP is ordered to the right of the *wh*-element undergoing sub-extraction in the above examples, these configurations are in correspondence with the ISG.

2.7 *Strandable ambivalent adpositions in Russian*

Podobryaev (2009) compares two types of adpositions in Russian. First Podobryaev shows that, as is well known, prepositions in Russian cannot be stranded by A$'$-movement:

(27) *No preposition stranding in Russian* (Podobryaev 2009, ex. 1)

a. **O čem**$_k$ ty govoriš t_k?   b. * **Čem**$_k$ ty govoriš **o** t_k?

About what you talk?   What you talk about?

"About what are you talking?"   "About what are you talking?"

However, Russian also has what Podobryaev terms "ambivalent Ps", which can follow or precede their complement NP (28). Podobryaev shows that these ambivalent Ps may be stranded (29).

(28) *Variable word order of ambivalent Ps* (Podobryaev 2009, ex. 15-16)

a. **navstreču** Pete   c. **nazlo** tebe

    towards Petya   to.spite you

b. Pete **navstreču**   d. tebe **nazlo**

    Petya towards   you to.spite

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[3]In particular, Wiland shows that clause-internal scrambling to the clause periphery in Polish lands in a position below C. Wiland argues that the stranded NP in (25c) sits in spec-CP (with C obligatorily null due to the Doubly Filled Comp Filter) since placing the complementizer left of the stranded NP in this example is unacceptable. Importantly, this word order should be permitted if (25c) were derived by scrambling. Thus Wiland argues that this example must involve not scrambling, but stranding in the clause's periphery under successive-cyclic movement.

[4]As the marking "%" on example (26) encodes, such a configuration is not acceptable for all speakers. Wiland does not offer an explanation for this fact.

(29)   *Pied-piping and stranding of ambivalent Ps*   (Podobryaev 2009, ex. 18-19)

    a. (Navstreču) **komu**$_k$ (navstreču) ty   bežal t_k (**navstreču**)?
       (Towards)   whom (towards) you ran   (towards)?

       "Towards whom did you run?"

    b. (Nazlo) **komu**$_k$ (nazlo) ty èto sdelal t_k (**nazlo**)?
       (To.spite) who   (to.spite) you this did   (to.spite)?

       "To spite whom have you done it?"

Additionally, intermediate stranding of these ambivalent Ps at clause edges is also possible:[5]

(30)   *Intermediate stranding of ambivalent Ps*

    a. $^?$Komu$_k$ Vasja xotel t_k **navstreču** čtoby Petja nobežal t_k ?
       Who   Vasya want   towards   that Petja run

       "Toward whom did Vasya want that Petja would run?"

    b. $^?$Komu$_k$ Lena xotela t_k **nazlo** čtoby Maša   pobedila t_k ?
       Who   Lena wanted   to.spite that   Masha win

       "In spite of whom did Lena want that Masha would win?"

                     (Tanya Bondarenko, Anton Kukhto, Mitya Privoznov, p.c.)

Since these ambivalent adpositions can be ordered to the right of what strands them in an intermediate position, such stranding fits the ISG.[6]

2.8   *Interim summary*

In this section I have reported all instances of intermediate stranding that my research so far has uncovered. All of these fit the ISG, repeated below:

---

[5]This observation was made by Tanya Bondarenko and Mitya Privoznov, who confirmed that such sentences are possible, though subject to inter-speaker variation. The examples in (30) use a subjunctive embedded clause because these are easier to extract from in Russian (Bailyn, 2012). Speakers who permit extraction from finite clauses with an overt C (*čto*) allow similar examples with movement from a finite clause.

[6]It is also possible for the adposition to end up in this same inter-clausal position, even when there is no *wh*-movement to strand it there. Such examples require the moved adposition to receive a focused interpretation, however:

   i. *Non-pied-piping adposition movement*   (Tanya Bondarenko, Anton Kukhto, p.c.)

     a. Vasja xotel **navstreču**$_k$ čtoby Petja nobežal Maše t_k ?
        Vasya want towards   that Petja ran   Masha

        "Vasya wanted that Petja would run <u>towards</u> Masha (not any other direction)"

     b. Lena xotela **nazlo**$_k$ čtoby Maša pobedila Naste t_k ?
        Lena wanted to.spite that Masha win   Nastya.DAT

        "Lena wanted that Masha would win <u>in spite of</u> Nastya (not for her benefit)"

I argue that (30) shows true intermediate stranding under A′-movement, whereas (i) involves remnant scrambling of a PP that has been evacuated by NP. While such PP scrambling evidently has a concomitant result on interpretation, the fact that this semantic effect is absent in examples like (30) suggests that (30) does not involve independent scrambling of PP, but rather mere pied-piping of PP that is parasitic on *wh*-movement.

(31)   *Intermediate Stranding Generalization (ISG)*   [=(2)]

   Leftward movement of a phrase α can only intermediately strand an element β if β is (or can be) ordered rightward of α before stranding occurs.

The remainder of this paper focuses on demonstrating how CL, plus certain independently proposed constraints on movement, straightforwardly derives the ISG.[7]

3   Two phase theories and their predictions

This section compares the predictions about intermediate stranding made by the phase theory in Chomsky (2000, 2001, a.o.) against those of Cyclic Linearization (CL). I will argue that the latter theory is better equipped to account for the word order generalization about intermediate stranding illustrated in the previous section.

3.1   *Phases in Chomsky (2000, 2001)*

Chomsky argues that syntactic derivations are mapped to phonology (PF) and interpretation (LF) incrementally, phase by phase. Minimally, vP and CP are phases. When the operation *spell-out* performs this mapping, the content of the spelled-out constituent by hypothesis becomes inaccessible to the rest of the syntactic derivation. Chomsky argues that spell-out applies to only the complement of phase heads. Consequently, moving from a phase directly from its complement isn't possible, since the material in the phase's complement will undergo spell-out before such movement can apply (32a). However, movement to the edge (specifier) of the phase before its complement spells-out allows further movement from the phase (32b).

(32)   **Must exit phase complement via the phase edge**

   a.   * $[_{ZP}$ α Z $[_{YP[Phase]}$ Y $[_{XP}$ t]]]

   b.   ✓ $[_{ZP}$ α Z $[_{YP[Phase]}$ t Y $[_{XP}$ t]]]
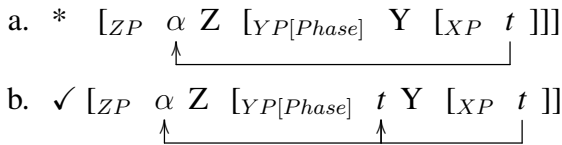
In this way, Chomsky's proposal predicts that movement must pass successive-cyclically through the specifier of each phase crossed, in order to avoid being prematurely trapped by spell-out.

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[7]An additional potential instance of intermediate stranding comes from Korean and Japanese. Ko (2011) argues that in Korean, object scrambling with the subject in situ allows stranding of a numeral quantifier in spec-vP:

ii.   *Intermediate stranding of numeral quantifier by object scrambling in Korean*   (Ko 2011, ex. 24)

Kong-ul$_k$ amato $[_{vP}$ t_k **sey-kay** haksayng-tul-i t_k patassulkesita]
Ball-ACC probably   3-thing   student-PL-NOM   received

"The students probably received three balls"

Similar strings are possible in Japanese, whose syntax is highly similar to that of Korean (Shigeru Miyagawa, Takashi Morita, p.c.). Ko shows that the numeral quantifier constructions in Korean/Japanese that allow stranding involve the numeral quantifier being ordered rightward of NP. Thus if examples like (ii) are indeed instances of intermediate stranding, they fit the ISG. A reviewer points out that the great productivity of scrambling in Korean/Japanese makes it difficult to determine whether such examples actually constitute intermediate stranding rather than a more complex derivation involving something like remnant movement, however.

3.1.1 *Predictions for intermediate stranding*

Under the phase theory described above, anything which is in (or can reach) a complement-external position within a phase should, in principle, be available for further movement. Word order should not be at issue here, only structure. Therefore unless more is added to this theory, it predicts that both of the hypothetical intermediate stranding scenarios in (33) below should be licit.[8] These two scenarios are structurally comparable, but differ in word order. We've seen that in all attested intermediate stranding patterns, the stranded material originally was (or could have been) ordered to the right of what stranded it, a constraint met by only the ISG-matching schema in (33b):

(33)   *Two structurally comparable hypothetical forms of intermediate stranding*

    a. *Intermediate stranding with crossing at the edge (ISG-violating)*

$$[_{ZP} \;\; \alpha \; Z \; [_{YP[Phase]} \;\; [\;\; \beta \; t_\alpha \;] \; Y \; [_{XP} \;\; t_{\beta\alpha} \; X \;]]]$$

    b. *Intermediate stranding without crossing at the edge (ISG-obeying)*

$$[_{ZP} \;\; \alpha \; Z \; [_{YP[Phase]} \;\; [\;\; t_\alpha \; \beta \;] \; Y \; [_{XP} \;\; t_{\alpha\beta} \; X \;]]]$$

The linear nature of the ISG is thus not captured by a theory of movement cast purely in structural terms. As we'll see, the connection between linear word order and the availability of intermediate stranding emerges naturally under CL, for which syntactic movement is constrained by the linear ordering information that phase-by-phase spell-out generates.

3.2 *Cyclic Linearization (CL)*

CL proposes that successive-cyclic movement, and related effects, emerge as a consequence of the information-preserving nature of spell-out. For CL, spell-out applies to the entire phase, not just its complement. A phase spells-out as soon as it is done being built up by successive applications of (internal and external) Merge. Since for this theory phase-level spell-out applies to everything within the phase, not even elements in the phase edge escape spell-out. Therefore in order to avoid predicting the absence of movement from phases, CL hypothesizes that spelled-out material remains accessible for the entire syntactic derivation. Since this hypothesis is incompatible with the explanation for successive-cyclic movement in Chomsky's work, CL proposes an alternative. In particular, CL argues that successive-cyclic movement is necessary to ensure that the ordering information generated by phase-by-phase spell-out remains consistent throughout the derivation.

    To understand the logic of CL, first consider a derivation like (34) below, where the moving phrase *what* moves to spec-CP without passing through the edge of vP:

(34)   *Hypothetical non-successive-cyclic movement from vP*

    $[_{CP}$ What did Mary $[_{vP}$ give the cat ~~what~~]]]?

In this derivation, *what* had not moved to the edge of vP at the time when this vP was completed and spelled-out. Therefore spell-out of this vP generates the following ordering information:

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[8]Bošković (2018) extends Chomsky's theory to an account of movement from moved phrases which predicts something resembling (but distinct from) the ISG. See section 6 below for discussion.
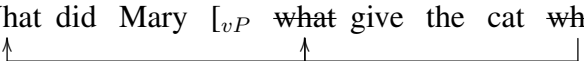
(35) *Ordering in vP without successive-cyclic movement*
     give < the cat < what   ($\alpha < \beta$ means "α linearly precedes β")[9]

Later, *what* moves in one step to spec-CP. Spell-out of CP produces the ordering in (36):

(36) *Ordering in CP*
     what < did < Mary < [content of vP]

Notice that in (35), *what* was determined to follow everything in vP. However, in (36) *what* was established to precede everything in CP, and thus to ultimately precede everything in vP. Here we have a contradiction: this derivation has established that the moved phrase *what* must simultaneously follow and precede the content of vP. CL posits that such contradictory results yield a derivation that is deviant at PF.

    Importantly, successive-cyclic movement through the linear edge of vP, as in (37), prevents such an ordering contradiction from arising.

(37) *Successive-cyclic movement through the linear edge of vP*
     [$_{CP}$ What did Mary [$_{vP}$ ~~what~~ give the cat ~~what~~]]]?

Spell-out of the vP in (37) generates the ordering information in (38):

(38) *Ordering in vP with successive-cyclic movement*
     what < give < the cat

The ordering of this vP doesn't contradict the linearization later produced at CP (36), because the orderings generated at both of these phases encode that *what* precedes the rest of their contents:

(39) a. *Ordering in CP*
       ***what** < did < Mary <* [content of vP]
    b. *Ordering in vP with successive-cyclic movement*
       ***what** < give < the cat*

This result is consistent with *what* being pronounced at the left edge of the sentence, preceding the content of both phases in this derivation.

    The grammaticality of this sample derivation depends on the moving phrase reaching (and thus being linearized at) the left linear edge of the intermediate phase before moving on. In this way, CL predicts that movement from any phase must successive-cyclically pass through its linear edge. This is because if movement exits a phase from a position not at the linear edge, hence crossing over some material in the phase on the way out, incoherent ordering information is generated.[10]

---

[9]The notation "<" encodes the relative linear order of two elements, not strict adjacency. So an ordering [$\alpha < \beta$] generated at an intermediate phase of the derivation is compatible with α moving later on, with the result that other material ultimately intervenes between α and β, as in [$\alpha \ \gamma \ \beta$].

[10]However, later movement of material crossed over by a phase exit from a non-edge position is predicted to rescue the derivation, as I discuss further in section 5.1 below.
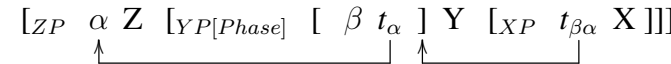
3.2.1 *Why CL predicts the ISG*

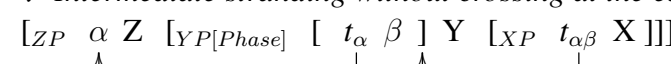Recall the generalization about intermediate stranding that was illustrated in section 2 above:

(40) *Intermediate Stranding Generalization (ISG)*   [=(2)]
      Leftward movement of a phrase α can only intermediately strand an element β if β is (or can be) ordered rightward of α before stranding occurs.

The ISG emerges from the fact that CL only permits movement from a phase via its linear edge. If a successive-cyclically moving phrase intermediately strands material that precedes it, then that phrase illegally crosses over the material it strands in the edge as it moves on into the next phase (41a). In contrast, if the material being stranded at the edge follows the phrase that strands it by moving on (41b), then such problematic crossing at the phase edge doesn't occur:

(41) a. ** Intermediate stranding with crossing at the edge*
          $[_{ZP}\ \alpha\ Z\ [_{YP[Phase]}\ [\ \beta\ t_{\alpha}\ ]\ Y\ [_{XP}\ t_{\beta\alpha}\ X\ ]]]$

      b. *✓ Intermediate stranding without crossing at the edge*
          $[_{ZP}\ \alpha\ Z\ [_{YP[Phase]}\ [\ t_{\alpha}\ \beta\ ]\ Y\ [_{XP}\ t_{\alpha\beta}\ X\ ]]]$

To see concretely why this is so, compare the ordering information generated in the derivation of (41a) with that of (41b). In (41a), the constituent $\beta\alpha$ first moves to the edge of the phase YP. In this situation, when YP undergoes spell-out, the result is the ordering $\beta < \alpha < Y < X$. Next, the element α is extracted into spec-ZP. Spell-out of ZP then generates the ordering information $\alpha < Z < YP$. Here a contradiction arises: within YP, it was previously established that β precedes α. However, after movement of α from YP, α is linearized as preceding the content of YP, including the element β which YP contains. Because α cannot both precede and follow β, this configuration is not pronounceable. In contrast, this linearization problem does not arise in (41b). Since in this derivation α precedes β in the first place, no contradiction is caused by extraction of α from YP after α pied-pipes β to the YP edge: α simply precedes β for the entire derivation. In this way, CL accurately permits only non-crossing intermediate stranding derivations like (41b), which corresponds to what the ISG describes. Importantly, the crossing problem that derives the ISG applies only at phase edges. Thus base position preposition stranding in languages like English and Norwegian, for instance, is correctly permitted.

To my knowledge, the closest analogue to this proposal in preceding work comes from the examination of quantifier float in Jenks (2011, 2013), who focuses on numeral classifiers in East Asian languages. Jenks argues that quantifier float is (at least in some languages like Thai) derived by rightward extraposition of the quantifier, which he argues obeys the following generalization:

(42) *Quantifier Float Generalization (paraphrased from Jenks)*
      Rightward float of a (numeral) quantifier/classifier is only attested in languages which allow the DP-internal order $N < \#/Q$.

Jenks argues that this generalization may in fact apply to all rightward extraposition, and proposes that this result is a consequence CL. While Jenks' generalization differs from the one proposed in the present paper since it is not about intermediate stranding per se, Jenks' findings are convergent with this paper in that they show how independent word order facts constrain movement. This is precisely as expected, if CL limits the set of licit movement configurations.

14

4 The role of locality constraints on movement

In this section, I argue that CL interacts with certain independently proposed locality constraints on movement in a way that correctly rules out several potential ISG-violating derivations. This section will also clarify why the ISG contains the disjunction that if β is or can be ordered rightward of α, then α can intermediately strand β.

I adopt from Ko (2007, 2014, a.o.) the hypothesis that movement from one specifier to another of the same phrase is banned. As Ko points out, such a ban is a direct consequence of the concept that movement to the specifier of a given head requires that head, or more specifically an "edge feature" or EPP feature on that head (Chomsky, 2005), to c-command the goal phrase to be moved (Chomsky 2000, 2001, a.o.). If this is so, then since heads don't c-command their specifiers, it is not possible for a head to target and move a phrase from one of its specifiers to another.[11] The impossibility of such movement correctly rules out circumventing the ISG by re-arranging the content of the phase edge before stranding occurs, as described below.

If intermediate stranding fails when a moving phrase crosses what it strands while exiting the phase, then ISG-violating intermediate stranding should be permitted if the moving phrase can reach a higher position within the phase edge, above any pied-piped material that initially preceded it. In (43) below, this hypothetical configurations is illustrated with pied-piping *wh*-movement of a prepositional phrase into spec-CP (43a), followed by extraction of the *wh*-phrase from the complement of the prepositional phrase and into a higher specifier of the same CP (43b):

(43)   *Hypothetical specifier-to-specifier movement within phase edge*

a. *Step 1*

$\text{CP}_{[Phase]}$

PP_j C   ...

P   **WH**   ... t_j

$\rightarrow\rightarrow\rightarrow$

b. *Step 2*

$\text{CP}_{[Phase]}$

$\textbf{WH}_k$

PP_j C   ...

P t_k ... t_j

Since the edge-internal movement in (43b) brings the *wh*-phrase to a position within CP preceding the pied-piped preposition, then this movement, if available, should allow the *wh*-phrase to subsequently extract from CP without crossing P. Such movement would thus strand the preposition in spec-CP. As we've seen, intermediate preposition stranding is not possible in reality. However, if the edge-internal movement required for this hypothetical ISG-violating derivation is independently ruled out, then we correctly avoid predicting the possibility of such derivations.[12]

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[11]Richards (2004) argues that Bulgarian allows movement of a first *wh*-phrase to spec-CP, followed by extraction of a second *wh*-phrase out of the first, and into a second specifier of the same CP. Since this sort of movement is banned under the approach argued for here, such facts require a different account in the context of this paper. See for instance Frampton (2001) for a compatible analysis which amounts to extraction from the lower copy of the outer *wh*-phrase.

[12]The problematic configuration in (43b) could also be derived by first performing *wh*-movement to spec-CP without pied-piping PP, and then moving the remnant PP from its base position and into a lower specifier of the same CP via tucking-in (Richards, 1997, a.o.). Given that this *wh*-movement and subsequent PP remnant movement would both be A′-movement, the possibility of such a derivation is excluded by the finding of Müller (1998) that it is impossible to extract from a given constituent and also move the resulting remnant, when both the extraction and remnant movement would be movements of the same type. See Takano (1993) and Kitahara (1994) for similar considerations.

A related constraint on movement in syntax is anti-locality, the concept that movement must not be too short (Bošković, 1997; Ishii, 1999; Grohmann, 2003; Abels, 2003, 2012; Erlewine, 2016, a.o.). Many formulations of anti-locality at least partially subsume the ban on phrase-bounded specifier-to-specifier movement just discussed. Additionally, Abels' version of anti-locality bans movement of a head's complement to its specifier. I also adopt this constraint on movement, since it correctly rules out the possibility of deriving certain ISG-violating configurations via movement within the pied-piped constituent.

For instance, a *wh*-phrase complement of a prepositional phrase might conceivably move to spec-PP prior to pied-piping the PP into spec-CP, as diagrammed in (44) below.[13] In the resulting configuration, the *wh*-phrase occupies the left linear edge of PP and of the containing CP.

(44)   *Hypothetical movement internal to pied-piped PP with pied-piping to phase edge*
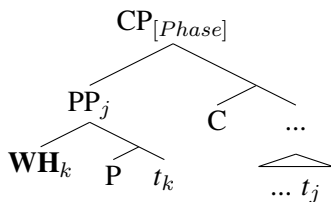
After such movements occur, the *wh*-phrase could be extracted from CP without crossing over P on the way out, thus deriving intermediate stranding of the preposition. However, since the required movement from complement to specifier of PP is banned by anti-locality, a configuration like (44) cannot be derived, and thus cannot serve as the input for an ISG-violating derivation.[14] [15]

This anti-locality constraint is predicted to be irrelevant if the pied-piped constituent is structurally larger, however. For instance, in the schema in (45) below, a *wh*-phrase pied-pipes ZP and the containing phrase YP into a CP edge. Since movement of the *wh*-phrase from ZP to the edge of YP does not violate anti-locality, this movement to the linear edge of this two-layered pied-piped constituent is possible. After such movement as well as pied-piping into the CP edge occur, the *wh*-phrase ultimately occupies the linear edge of the pied-piped phrase and of the containing CP

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[13]Any PP-internal movement occurs before PP moves, not after, given the Strict Cycle Condition (Chomsky, 1973).

[14]The ruling-out of the PP-internal movement in (44) that this paper requires is in correspondence with Abels (2003), who argues that in languages where PP is a phase, P-stranding does not occur because anti-locality prevents the needed movement via spec-PP. In contrast, Abels (2003) hypothesizes that in languages like English P-stranding is available because PP is not a phase, so extraction from PP need not illegally pass through its edge. Abels (2012) seeks to remove the variability in phasehood inherent to Abels (2003) by taking PP to be a phase in all languages, and hypothesizing that in P-stranding languages PP is more structurally complex, such that extraction via the PP edge is possible. Abels (2012) is not compatible with the present paper, for which the possibility of movement to the edge of PP in languages like English would wrongly rule in intermediate preposition stranding. Abels notes that there is not much direct evidence favoring his (2012) approach over his (2003) one. The arguments of the present paper, if correct, can be taken as evidence that Abels (2003) is in fact on the right track.

[15]Abels' anti-locality as applied in this paper raises a question about the derivation of *swiping*, which inverts P and its *wh*-complement under sluicing: *I know John went somewhere, but I don't know **where to*** (Ross, 1969; Merchant, 2002). The present paper does not allow swiping to be derived by syntactic movement of the *wh*-phrase within PP, or from PP to a specifier of the embedded CP. Since the word order of swiping is not possible in comparable sentences without ellipsis, maintaining that such movements are unavailable appears tenable: *I know John went somewhere, but I don't know (to) where (*to) he went*. The fact that swiping is generally exclusive to single-word *wh*-phrases may provide evidence that swiping is derived by a PF process available under ellipsis rather than by usual syntactic movement: **I know John read about a few languages, but I don't know **how many languages about***.

phase, as (45) shows. In principle the *wh*-phrase could subsequently move from this phase, intermediately stranding the pied-piped YP in the CP edge. Since the *wh*-phrase would not cross any material as it exits this structure, such intermediate stranding is predicted to be licit.

(45) *Movement within larger pied-piped constituent (predicted to feed intermediate stranding)*

$$CP_{[Phase]}$$

YP$_j$ — C ...

WH$_k$ Y ZP   ... t_j

... t_k
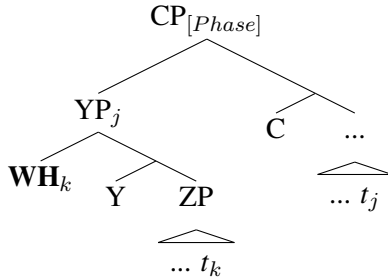
This prediction provides an analysis for intermediate stranding of material that can be ordered on either side of what it merges with, as we saw in section 2 for certain adjuncts of *wh*-phrases in English, *maar* ("only") in Dutch, and ambivalent adpositions in Russian. If the word order variability these elements display stems from the possibility of movement within the relevant constituent, then such movement should indeed provide a means of deriving intermediate stranding. This expectation is connected to the disjunction in the definition of the ISG, which states that if an element β is or can be ordered rightward of α, then α can intermediately strand β. For the account developed here, this aspect of the ISG emerges because if it is possible for a given phrase to move to the left linear edge of a containing constituent, then such movement should be available to feed intermediate stranding of that containing constituent.

To see precisely how the derivation of such an instance of intermediate stranding would proceed, let's consider Russian ambivalent Ps once more. Podobryaev (2009) argues that while anti-locality bans movement within typical Russian PPs, in contrast, the strandable variably ordered Ps discussed in section 2.6 are more structurally complex. Thus he argues that movement within them is possible. Podobryaev suggests, consistent with the diachronic facts, that such PPs are derived from nouns via the N to P incorporation in (46) below. If these adpositions indeed involve two phrasal layers, then anti-locality respecting A$'$-movement to the edge of such adpositions should be licit, as we see with a moved *wh*-phrase in (46):

(46) *Anti-locality respecting movement to edge of complex Russian adposition*

PP

WH$_k$

P NP

P N$_j$ t_j t_k
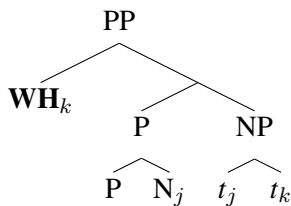
Movement within the complex adposition permits intermediate stranding in the following way: after adposition-internal movement of the *wh*-phrase in (46), further *wh*-movement pied-pipes the adposition to a phase edge, as in (47a). Here the *wh*-phrase occupies the linear edge of the adposition and of the containing phase, thus the *wh*-phrase can move on, stranding the adposition in the phase edge as in (47b).

(47) a. *Pied-piping of complex PP after movement within it*
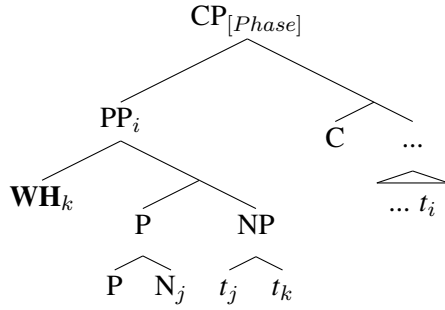
  b. *Intermediate stranding via extraction from complex PP after pied-piping*
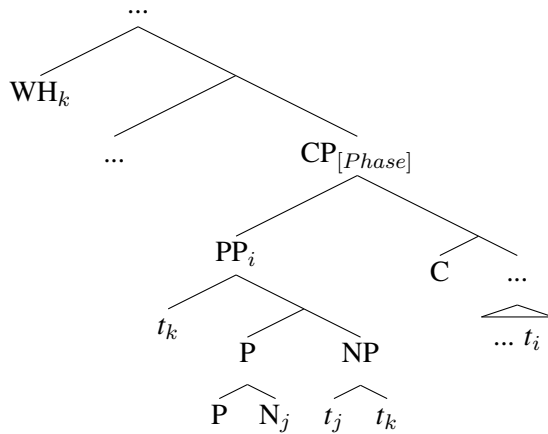
Thus the possibility of moving to the left edge of the complex adposition provides the means for intermediate stranding of this constituent to succeed.[16] [17] By hypothesis, if the extracting phrase here had remained to the right of the complex adposition by not undergoing movement to its edge, then such intermediate stranding would fail.[18]

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[16]The same concerns lead to an understanding of configurations in English involving A′-extraction from a constituent that has undergone topicalization or *wh*-movement to an embedded spec-CP, like (iii) below. Such patterns have been discussed by at least Pesetsky (1982), Chomsky (1986), Lasnik & Saito (1999), and Sauerland (1999).

  iii. $^?$[What student]$_j$ did Ann ask [$_{CP}$ [what picture of t_j]$_k$ to put up t_k]? (Sauerland 1999, 24c)

The present approach can derive (iii), in the following way. First, the inner *wh*-phrase *what student$_j$* moves to the spec-DP of the outer *wh*-phrase *what picture of$_k$*. This movement from the complement of NP to spec-DP does not violate anti-locality. The outer *wh*-phrase then moves to the embedded spec-CP. The inner *wh*-phrase is then the leftmost phrase in the embedded CP since it occupies the specifier of the outer *wh*-phrase, which in turn occupies the specifier of the embedded CP. From this peripheral position, the inner *wh*-phrase can be extracted and land in the matrix clause.

[17]Heck (2009) observes several contexts with so-called secondary *wh*-movement of a *wh*-phrase to the edge of the constituent it pied-pipes, as seen with Tzotzil possessors and French *dont*-relatives, for instance. A reviewer points out that the present paper predicts such secondary *wh*-movement to feed intermediate stranding of the pied-piped phrase. While I do not know if this prediction is correct, if intermediate stranding is impossible in such circumstances, it would not be in conflict with the present paper's arguments to posit that the relevant constituents are independently islands, despite permitting movement to their edge. This is generally true of relative clauses, for instance.

[18]While pied-piping a constituent large enough to permit movement through its edge is one predicted way to yield legal intermediate stranding, the same result is predicted for a constituent whose internal order is simply free due to optionality of linearization rules. This second alternative could be correct for the English adjuncts discussed in subsection 2.2 above, for instance: given that English adjuncts can often be freely ordered either left or right of the phrase they adjoin to, this may simply be a matter of free ordering feeding intermediate stranding.

4.1　*On quantifier float under A-movement*

It is in the context of A′-movement that the type of stranding this paper focuses on emerges most clearly. However, many languages also allow the apparent stranding of quantifiers under A-movement, a phenomenon often referred to as *floating* quantification, exemplified in (48):

(48)　a.　*English*
　　　　The students have **all** had lunch

　　　b.　*French*　　　　　　　　　　　　　　　　　　　　　　(Sportiche, 1988, ex. 2b)
　　　　Les enfants ont　**tous** vu　ce　film
　　　　The kids　　have all　seen this film

Some such patterns may present exceptions to the ISG at first glance, given the ban on movement within phrase edges adopted earlier in this section. To illustrate the potential problem, it will suffice to consider the English example in (48a). Here the subject DP is separated from its associated quantifier *all* by an intervening auxiliary. If *all* was originally merged to the subject which then A-moved to spec-TP, then the fact that *all* cannot follow a DP that has not moved, like the object in (49) below, suggests that *all* originally preceded the subject in (48a) prior to A-movement.

(49)　*Unmoved DP must be preceded by* all
　　　I saw (all) the cats (*all)

Sentences like (48a) have a word order consistent with *all* having been stranded in spec-vP by A-movement of the subject from its θ-position, as illustrated in (50) below. Notice that if *all* really must have originated to the left of the subject DP, then the subject's A-movement here would cross over the stranded quantifier on the way out of vP, as (50) shows. Given the ban on phrase-bounded specifier-to-specifier movement argued for above, it is not possible for the subject to move to a higher spec-vP above the quantifier to avoid this crossing problem. Thus movement of the subject to spec-TP must cross the stranded quantifier in the linear edge of vP. Therefore the possibility of (48a) appears to constitute a violation of the ISG.[19]

(50)　*Stranding analysis of quantifier float by subject movement: Potential ISG violation*
　　　[The students]$_k$ have [$_{vP}$ [all t_k] had lunch]

However, if the floated quantifier in (48a) was not derived by stranding, then this sentence does not constitute an exception to the ISG. A non-stranding approach to quantifier float has been explored by a variety of works (Dowty & Brodie, 1984; Bobaljik, 1995; Doetjes, 1997; Fitzpatrick, 2006; Ko, 2014, a.o.). Fitzpatrick (2006) in particular follows preceding works in taking quantifier float under A-movement to be essentially adverbial, involving an adjunct containing the quantifier and a *pro* co-indexed with the A-moved phrase (51). Importantly for the present paper, Fitzpatrick goes on to argue that while stranding under A′-movement is genuine sub-extraction, apparent stranding under A-movement is always adverbial in this way.

(51)　*Adverbial analysis of floated quantifier: No stranding, no ISG violation*
　　　[The students]$_k$ have [$_{vP}$ t_k [all pro_k] had lunch]

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[19]However, if Bošković (2004) is right that floated quantifiers do not appear in θ-positions, then the quantifier in (48a) must occupy a position other than spec-vP, in which case there would be no issue for the ISG.

If Fitzpatrick is correct, apparent stranding/floating under A-movement in fact never constitutes a case of sub-extraction, and therefore, cannot instantiate intermediate stranding of the variety that the present paper focuses on. From this perspective, quantifier float poses no challenge to the ISG.
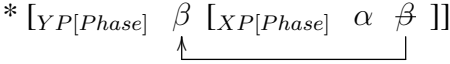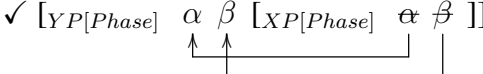
5   On when an edge is available for stranding

So far, this paper has focused on understanding what sorts of elements can be stranded in intermediate positions. Another relevant topic in this domain is the question of what positions are, in principle, available to be stranded in. While the present paper cannot provide a full understanding of this issue, this section will discuss several relevant predictions and possibilities.

5.1   *Stranding in spec-vP by A′-movement is blocked by A-movement*

As described in section 3, CL derives successive-cyclic movement through phase edges from the logic of non-contradiction in linearization: movement through the linear edge of each phase crossed ensures the coherence of the orderings that phase-by-phase spell-out generates. As we'll now see, the same logic also predicts that certain exceptions to successive-cyclicity are possible, as long as additional movements occur that keep linearization coherent. In (52) below, we see a schema for such non-successive-cyclic movement and its repair. In (52a), the element α initially precedes β within the phase XP. β then moves from XP without stopping in its edge, thus crossing α on the way out. As discussed, such scenarios are predicted to result in a linearization contradiction. This is because such crossing of α by movement of β creates an ordering which requires pronouncing β both before and after α. CL predicts that this problem is avoided, however, if α also moves into the next phase, to a position above β, as in (52b). The result of this movement is that α precedes β within the second phase just as it did within the first.

(52)   a. *Illicit crossing at the edge...*
        * [$_{YP[Phase]}$ β [$_{XP[Phase]}$ α β]]

    b. *...repaired by restoring original order*
        ✓ [$_{YP[Phase]}$ α β [$_{XP[Phase]}$ α β]]

This prediction, which Fox & Pesetsky (2005a,b) originally defended in the context of object shift in Scandinavian, leads us to expect that any phase edge crossed over by such non-successive-cyclic movement should not be a viable position for intermediate stranding. Rather, we expect that such positions must be vacated.

We find a verification of this prediction in the distribution of *exactly* and other adjuncts to *wh*-phrases in English, which as introduced in section 2.2 above, can be stranded at clause edges:

(53)   *Adjunct stranding at clause edge by* wh-*movement*
        a. **What**$_k$ did you suppose t_k (**exactly/precisely**) (that) they wanted t_k?
        b. **How much saffron**$_k$ did the chef say t_k (**to the closest gram**) (that) we need t_k?

If vP is a phase in addition to CP, then we also in principle expect these adjuncts to be able to be stranded in spec-vP, and thus appear in a position between the subject and verb. However, this linear position is also a possible location for adverbs. For this reason I focus on strandable adjuncts like that in (53b), which can't be parsed as adverbs. Example (54) below attempts to strand such an adjunct in spec-vP, which proves to be unacceptable:

(54) *No adjunct stranding in spec-vP*

    a. How much flour (to the nearest pound) did you [$_{vP}$ (**to the nearest pound**) tell me [$_{CP}$ (to the nearest pound) that the bakery [$_{vP}$ (**to the nearest pound**) asked you for (to the nearest pound)]]]?

    b. Tell me [$_{CP}$ how many grams of tranquilizer (to the third decimal place) the researchers [$_{vP}$ (**to the third decimal place**) reported [$_{CP}$ (to the third decimal place) that they [$_{vP}$ (**to the third decimal place**) used to sedate the tiger (to the third decimal place)]]]]

The impossibility of such examples is expected by the prediction of CL just discussed. To see why, consider the interaction of successive-cyclic A′-movement with A-movement of the subject. CL requires an A′-moving non-subject argument to stop in the most peripheral position of the vP phase on its way to spec-CP. This will be a spec-vP above the external argument (EA) in situ in its θ-position. No linearization problem arises when the subject later A-moves to spec-TP across that outer spec-vP formed by successive-cyclic A′-movement, provided that the content of the outer specifier moves to spec-CP. After such movements, the relative order of the moved phrases established in vP and CP is the same, yielding a coherent linearization, as (55) shows:

(55) *WH < EA order maintained in vP and CP*

    [$_{CP}$ WH C EA T [$_{vP}$ ~~WH~~ EA v-V ~~WH~~]]

However, if such *wh*-movement strands something in that outer spec-vP, then movement of the subject across that position encounters a crossing problem. This is shown in (56), where we see that while there is no issue if the moving *wh*-phrase pied-pipes the element α to spec-CP, there is a problem if α is stranded in vP and is thus crossed by A-movement of EA:

(56) *Conflict between EA movement and stranding in the vP edge*

    [$_{CP}$ WH-($\checkmark\alpha$) C EA T [$_{vP}$ ~~WH~~-(*α) ~~EA~~ v-V ~~WH~~-($\checkmark\alpha$)]]

This problem would be avoidable if it were possible to rearrange the specifiers of vP before further movement from it. However, given the ban on phrase-bounded specifier-to-specifier movement discussed in section 4, this is not an option. Thus stranding in spec-vP is impossible (54).

    The same concerns lead to a solution for a puzzle from McCloskey (2000), who pointed out that if vP is a phase, West Ulster English should allow *all*-stranding in its edge. However, McCloskey found that this is not possible, as we see in (57) below. McCloskey's analysis of West Ulster English suggests that V moves to a head above vP, thus his examples showing this gap in the stranding paradigm attempt *all*-stranding after V:

(57) *No* all-*stranding in spec-vP*   (McCloskey 2000, ex. 14e)
    What$_k$ did he **tell**$_j$ [$_{vP}$ t_k (* **all**) t_j his friends [$_{CP}$ t_k (all) that he wanted t_k?]]

The impossibility of such stranding follows directly from the concerns just discussed, given A-movement of the subject from vP. The movement of V from vP that McCloskey posits for West Ulster English provides a second reason why such stranding should be banned: there is no position in vP where V can precede the specifiers of vP. Hence movement of V from vP will necessarily cross over any specifiers of vP, forcing them to be evacuated. See Davis (To appear) for further examination of how CL affects movement from vP.

5.2 *Unexpected absences of stranding in spec-CP*

The previous subsection analyzed a circumstance under which stranding in spec-vP is predicted to be banned. There also exist patterns where material that appears to be capable of being stranded in situ fails to be stranded in the CP edge, despite the fact that such stranding would satisfy the ISG. Several such patterns are illustrated below:

(58)   *Base position stranding but no intermediate stranding at clause edge*

a. Combien *split in French* (Vincent Rouillard, p.c.)

Combien$_k$ (de lirves) crois-tu t_k (***de livres**) que je devrais lire t_k (de livres)?
How.many of books believe-you   of   books that I should read   of books

"How many books do you believe that I should read?"

b. *Possessor extraction in Greek* (Sabine Iatridou, p.c.)

Pianou$_k$ (to vivlio) ipe o   Yanis t_k (***to vivlio**) oti i   Maria diavase / diavase i
Whose (the book) said the Yanis   (**the book**) that the Maria read   / read   the
Maria t_k (to   vivlio)
Maria   (the book)?

"Whose book did Yanis say that Maria read?"

c. How much ... of *split*[20]
How much (of the chocolate cake) did you say (***of the chocolate cake**) that I ate (of the chocolate cake)?

d. ago-*stranding*
How long (ago) did you say ($^{??}$/***ago**) that you went to France ($^?$ago)?

There is no additional movement across the CP edge in such examples that should force spec-CP to be evacuated in the way that we have just seen for vP. Thus these examples present a puzzle. Note that such patterns are a puzzle not only for the CL theory defended in the present paper, but also for any theory that takes intermediate stranding to be derived by movement through phase edges.

Kayne (2002) suggests that French examples like (58a) do not in fact involve extraction of *combien* ("how many"), but rather movement of a constituent that has been evacuated by everything

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[20]A reviewer points out that the *of*-phrase in examples like (58c) seems to need to be rightmost (iv). This fact is consistent with the displaced *of*-phrase having been derived by PP extraposition. This analysis provides a possible way for (58c) to be accounted for: if the *of*-phrase was never in fact stranded by movement because it can only be displaced by extraposition, then there is no expectation that stranding in spec-CP should be possible for this phrase.

iv.   How much did you put (*of the chocolate cake) in the fridge (of the chocolate cake)?

except for *combien*. (See Corver (2007) for more on such remnant movement derivations.) Under this analysis, apparent base position stranding of *de livres* ("of books") in (58a) actually is derived by movement of *de livres* to a low position in the clause (59a). Subsequent A′-movement of the phrase that *de livres* once occupied creates the appearance of *combien* having extracted (59b):[21]

(59)   *Movement of* de livres *(a) followed by wh-movement of the remnant (b)*
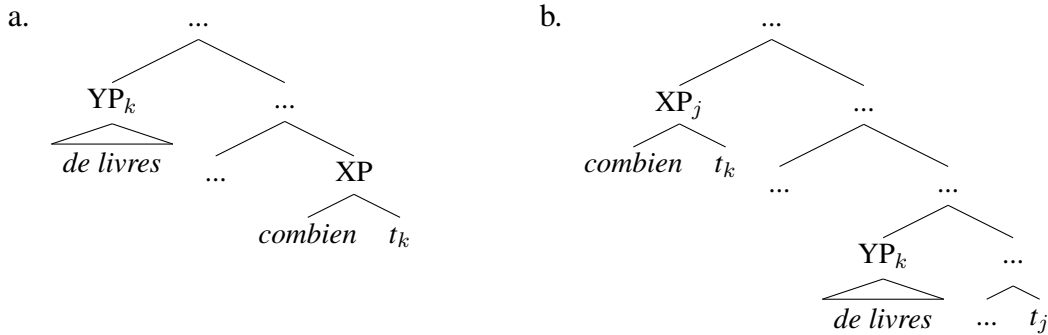
The displaced elements in (58) are plausibly non-constituents, or perhaps left branches that should be immobile under the Left Branch Condition (Ross, 1967, a.o.). Since French generally obeys the Left Branch Condition, a remnant movement derivation is precisely what we would expect to be responsible for the exceptional displacement of *combien*, which is the only element in French for which the Left Branch Condition appears to be inapplicable. If a derivation along such lines is plausible for the examples in (58), a lack of intermediate stranding in spec-CP is expected of these patterns: under the remnant movement analysis, an element that appears to have been stranded in its base position in fact was not. Rather, it evacuated the moving phrase at an earlier point. Since stranding is not involved in such a derivation, there is no pied-piping/stranding at issue in the first place, and hence, no expectation that stranding in spec-CP should be possible.

5.3   *On possible landing/stranding sites and phase theory*

The previous two subsections have discussed scenarios where stranding in a particular edge fails. While those analyses may be correct for some patterns, they are unlikely to be applicable to all, since the cross-linguistic variance in intermediate stranding patterns is quite rich. For instance, recall that in West Ulster English as reported by McCloskey (2000), *wh*-adjoined *all* can be stranded in spec-CP, but not spec-vP. Henry (2012) corroborates the existence of such a variety, which she terms West Derry City English. However, Henry shows that there is in fact great variation within West Ulster English. Henry shows that two other varieties, which she refers to as South Derry English and East Derry English, permit what appears to be *all*-stranding in spec-vP:

(60)   *Spec-vP intermediate stranding in South Derry English*

    a.   What$_k$ did he t_k **all** do t_k on holiday?   (Henry 2012, ex. 25)

    b.   Where$_k$ does she t_k **all** see her students t_k?   (Ex. 29)

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[21]Note that the derivation in (59) does not violate CL, provided that these movements occur within the same phase (presumably vP here). Prior to (59a), *combien* precedes *de livres*. The movement of *de livres* over *combien* in (59a) reverses their order, but the next movement in (59b) restores the original ordering of these elements, such that there is no basis for an ordering contradiction.

(61)   *Spec-vP intermediate stranding in East Derry English*

    a. What$_k$ did he t_k **all** do t_k in Derry?   (Ex. 52)

    b. Who $_k$ did he t_k **all** say was elected t_k in the council elections?   (Ex. 56)

If the syntax of these varieties is basically the same as that of the one studied by McCloskey and of mainstream English, then the concepts implemented in section 5.1 above incorrectly rule out such stranding. The same is true of the examples of spec-vP intermediate stranding we saw above in Dutch (17) and Polish (25). Henry shows that the variation within West Ulster English is yet more complex. According to her, South Derry English allows base position stranding in addition to spec-vP stranding, but does not permit stranding in the CP edge. The Strabane variety is even more restrictive, permitting stranding in only the base position. The least restrictive is East Derry English, which Henry shows allows stranding in the base position, spec-vP, and spec-CP. In response to these diverse facts, Henry argues that the set of positions in which a language permits stranding is simply a matter of choice. That is, while the syntactic principles endowed by Universal Grammar determine a consistent set of landing sites through which successive-cyclic movement passes, languages may opt to permit stranding in only some of them. While this could ultimately be the correct understanding, a more predictive theory is desirable if possible.[22]

A different strategy is taken by Barbiers (2002), who analyzes stranding in a position consistent with spec-vP in Dutch, as described in section 2.4 above. As Barbiers shows, this stranding pattern is highly restricted: only stranding in the matrix spec-vP in a long-distance movement derivation is permitted. Stranding in the embedded spec-vP is banned, as is stranding in the CP edge. Part of Barbiers' approach to these facts is to connect the distribution of stranding to the distribution of phases: if a constituent is not a phase, it is not a domain for successive-cyclic movement, and hence not a possible location for intermediate stranding. In general, relating the distribution of intermediate stranding and of phases in this way has the potential to lead to a more predictive theory of whether or not a given language will permit stranding in a particular position.

A difficulty for this analytic direction is that it likely depends on positing considerable cross-linguistic variation in the set of phases. This is a complex issue, since the current literature offers numerous proposals about where phases can be found. As Ko (2014) points out, beyond the original phases vP and CP, most constituents in the clause have been taken to be a phase at some point, including VP (Fox & Pesetsky, 2005b; Wiland, 2010; Ko, 2011), AspP (Bobaljik & Wurmbrand, 2013; Bošković, 2014; Harwood, 2015), and TP (Deal, 2016 (on relative clauses), Zyman, 2019a). Further, some works argue that phasehood can change during a derivation, for instance, in response to movement of a phase head (Den Dikken, 2007; Gallego, 2010; Alexiadou et al., 2014). While these possibilities can accommodate many different patterns of intermediate stranding,[23] pursu-

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[22]McCloskey (2000) suggests that prosodic differences between West Ulster English and mainstream English can predict the fact that the latter does not permit *all*-stranding under A′-movement. If this is correct, it is conceivable that similar prosodic differences between dialects could also be responsible for some of the variation discussed here. More generally, it is possible that some of the variation in intermediate stranding cross-linguistically is due to interface factors of this sort: if a particular instance of syntactically licit stranding violates an independent phonological/prosodic constraint, that instance of stranding is expected to be blocked.

[23]For example, a way of approaching the cross-linguistic variance of intermediate stranding in the verbal domain would be to enrich the set of phases here. Legate (2014) argues for a voiceP distinct from vP, and that voiceP is a phase instead of vP. However, if work in Distributed Morphology (Halle & Marantz, 1993, a.o.) is right that categorizing heads (v, n, a, etc.) are cyclic nodes (Marvin, 2003; Marantz, 2007; Embick & Marantz, 2008), then vP should be considered a phase as well. Furthermore, as just mentioned, several works propose that VP is a phase. If VP, vP, and

ing a phase-centric approach to the cross-linguistic variance in stranding will require case-by-case analysis of each pattern and the language in which it is situated. Such a task is beyond the scope of this paper. Regardless, the present paper predicts that any instance of intermediate stranding must obey the ISG, an expectation that is confirmed by the known facts.

6 Comparison with Bošković (2018) on movement from moved phrases and labeling

As analyzed in this paper, intermediate stranding is a particular instantiation of movement from a moved phrase: a first step of successive-cyclic movement pied-pipes material into a phase edge prior to a second step of movement stranding it there. As Bošković (2018) notes, movement from moved phrases has been shown to be quite restricted by many works. While such sub-extraction is largely banned in many languages, others permit it to some extent. Working within the phase theory in Chomsky (2000, 2001) and the labeling framework of Chomsky (2013), Bošković (2018) makes a prediction about when movement from moved phrases is allowed. While his results partially overlap with the ISG, the two predictions differ in several details, as we'll see next.

6.1 *Labeling, phases, and movement from moved phrases*

For Chomsky (2013), when a phrase XP is merged with another phrase YP, XP must move away unless Y agrees with XP such that the two share a common feature. That shared feature permits the mother of XP and YP to be labeled. For this theory, successive-cyclic movement does not involve agreement and hence does not feed labeling, which is in part why successive-cyclically moving phrases must keep moving until an appropriate landing site is found. Bošković (2018) argues that this system predicts a desirably restricted distribution of movement from moved elements, when combined with two assumptions: that only phases may move (Rackowski & Richards, 2005; Harwood, 2015; Legate, 2014, a.o.), and that un-labeled constituents cannot move. To illustrate how these concepts ban movement from moved phrases in some situations, let's first examine the ban on extraction from subjects in languages such as English:

(62) *No sub-extraction from subject*
      ?* I wonder [who$_k$ [friends of t_k] hired Mary]

Assuming that DPs are phases, and that the subject originates vP-internally, the unacceptability of (62) is derived as follows: First, prior to A-movement of the subject, the *wh*-phrase *who* does a first step of successive-cyclic movement to the edge of the subject DP that contains it. Because successive-cyclic movement does not feed labeling, this movement effectively de-labels the subject DP. This prevents it from moving to spec-TP, and hence the derivation fails:

(63) *Successive-cyclic movement within subject bleeds movement to spec-TP*

      [$_{TP}$ * [$_{vP}$ [$_{??P}$ *who* [$_{D'}$ friends of ~~who~~]] v-V ...]]

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voiceP are all potential phases, then there are several possible landing sites in the verbal domain based on which a variety of different stranding patterns might be derived. Movement within or from this domain could further restrict stranding in some cases, given the arguments of section 5.1 above.

Generally, successive-cyclic movement to the edge of any phase effectively de-labels it, preventing it from moving. Hence movement of a phrase that will later be sub-extracted from is blocked. Bošković (2018) argues that for this reason, movement from moved phrases is usually banned.

While specifiers formed by successive-cyclic movement encounter the labeling issue just discussed, this issue should be irrelevant for specifiers that agree with the head of the phrase they merge to: that agreement should trigger labeling, and allow movement of the containing phrase. Bošković argues that this is correct. In particular, he argues that the ban on movement from moved phrases dissolves for specifiers that are externally merged in, and can remain in, the edge of a phase. This is because in the context of the labeling theory, any specifier that is able to remain in situ must have undergone agreement, or else it would have to move away.

Much of Bošković's supporting evidence for this claim comes from Serbo-Croatian. In this language the specifiers of the nominal phrase (and adjuncts, which Bošković assumes to be structurally equivalent to specifiers) agree with N in case and ϕ-features. Indeed, these elements can be extracted, as exemplified below with possessor extraction from a subject:

(64) *Possessor extraction from subject in Serbo-Croatian*   (Bošković 2018, ex. 25c)

Jovanov$_i$ je [$_{NP}$ t_i **prijatelj**]$_j$ vjerovatno t_j otpustio Mariju
John's.NOM is   friend.NOM probably   fired   Mary.ACC

"John's friend probably fired Maria"

In general, Bošković (2018) makes the following prediction:

(65) *Prediction for movement from moved phrases in Bošković (2018)*
Movement from a moved phrase is possible only for a specifier that has agreed with the containing moved phrase.

Since specifiers are (at least in the basic case) linearized left of their sister, (65) predicts that left-adjoined phrases will be those that we see successfully extracting in scenarios of movement from a moved phrase. This prediction is thus partially overlapping with the ISG, since the ISG states that intermediate stranding is only possible when the extracted phrase is (or could have been) linearized leftward of what it strands. The ISG and (65) differ on several points, however.

6.2 *Comparison*

A superficial difference between (65) and the ISG is that the former is concerned only with extraction of specifiers, whereas the ISG is only concerned with extraction of leftward-linearized elements. Many of the scenarios discussed in section 2 above do not, prima facie, involve extraction of specifiers. Since mere word order is all that the ISG is defined in terms of, it thus describes the facts with less analytical commitments than (65).

More significantly, (65) predicts that movement from a moved phrase requires the extracted and stranded phrases to have an agreement relationship, while the ISG does not require this. Importantly, many of the intermediate stranding scenarios shown in section 2 do not involve any surface-evident agreement between the extracted phrase and stranded material, though it happens that some do, like quantifier stranding in Wolof. The ISG has a strong advantage on this issue if Preminger (2019) is right that there can be no agreement which is systematically morpho-phonologically null

across its entire paradigm. The ISG is fully compatible with Preminger's results, since it has nothing to do with agreement. In contrast, Bošković (2018) frequently posits agreement where there is no independent evidence for it, given that the labeling theory requires it. This issue is relevant, for instance, to the examples of intermediate stranding in spec-vP in Dutch from Barbiers (2002), several of which we saw in section 2.4, exemplified once more below:

(66) Waar$_j$ had jij dan [$_{vP}$ [t_j **mee**]$_k$ gedacht dat je de vis t_k zou   moeten snijden]?
      where had you then   with thought that you the fish   would must   cut
      "What had you thought to be forced to cut the fish with?"   [=(17a)]

Here an adposition that was inverted in the context of an R-pronoun is intermediately stranded. Bošković suggests that since R-pronouns and their concomitant P-inversion occur with a restricted set of elements, some agreement relationship must be involved. Bošković cites van Riemsdijk (1997) for a notion of *R-feature* that might be applicable, but it is not obvious whether such a feature can really be equated with agreement. We also saw in section 2 that this pattern from Barbiers is not exclusive to postpositions like *mee* in (66). For instance, in (17b) above the phrase *voor ball* ("for ball") is stranded, and in (17c) *maar* ("only") is stranded. Bošković's proposal requires that these examples of stranding also involve agreement, without independent evidence.

This issue also arises in the examination of Serbo-Croatian. Bošković shows that this language allows an intensifier to be extracted from a scrambled adjective, as in (67) below:

(67) *Intensifier extraction from scrambled adjective*   (Bošković 2018, ex. 30)
      Izuzetno$_i$ su [$_{AP}$ t_i skup]$_j$ kupili [t_j automobil]
      Extremely are   expensive bought   car
      "They bought an extremely expensive car"

The prediction in (65) requires Bošković to assume that there is agreement between the intensifier and adjective, since otherwise, this movement from the moved adjectival phrase should have been impossible. As supporting evidence Bošković notes that the intensifier can remain in situ in the adjectival phrase: in the context of the labeling theory, this implies that label-facilitating agreement occurred. There is, however, no direct evidence for such agreement in Serbo-Croatian. In contrast, notice that (67) obeys the ISG, given that the intensifier's base position is leftward of the adjective that it strands (though this example is of multiple scrambling rather than stranding per se).

Finally, it is unclear how Bošković (2018) would account for the movement from a moved phrase in spec-CP shown in footnote 16 above. Bošković briefly discusses such examples and assumes that they are ungrammatical, but as this footnote mentions, there are multiple works reporting the possibility of such sentences. As described above, such examples are correctly predicted to be possible under the proposals of the present paper.[24]

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[24]A similar potential counterexample to Bošković (2018) comes from Zyman (2019a), who reports that extraction from subjects in languages like English and French is not altogether banned, but becomes improved when the right sort of material intervenes between the subject and extracted element. If correct, such facts also favor the present paper over Bošković (2018), since only the latter predicts an outright ban on extraction from subjects.

The difficulty of extraction from subjects is often interpreted as an instance of freezing by movement (Corver, 2017, a.o.). Unlike Bošković (2018), the present paper doesn't make a claim about freezing in general: CL by itself does not make any commitments about the cause of freezing, but the present paper argues that CL does capture a particular instance of freezing (of non-ISG-obeying constituents) when combined with independent constraints on movement.

7 Conclusion

This paper has proposed a word order generalization about stranding in intermediate positions, and argued that this generalization arises naturally under the CL theory of phases, along with several independently supported constraints on the locality of movement.

(68)   *Intermediate Stranding Generalization (ISG)*   [=(2)]
       Leftward movement of a phrase α can only intermediately strand an element β if β is (or can be) ordered rightward of α before stranding occurs.

Secondarily, this paper has considered how the set of positions available for intermediate stranding might be restricted, though predicting the cross-linguistic variance in where such stranding can occur is a puzzle that remains open for future investigation. This concern is related to but logically separate from the ISG, however, which has so far proven to be robust.

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Competing interests

The author has no competing interests to declare.

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Overall, the approach taken in this paper expects effects like freezing to emerge not from phase theory itself, but rather from the interaction of phase theory with independent syntactic constraints. The freezing effect of criterial positions is another independent factor that may be responsible for the island-hood of some moved phrases (Epstein, 1992; Rizzi, 2006; Corver, 2017, a.o.).

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