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.

1   Introduction

Moved phrases can sometimes leave material behind at an intermediate point in the path of movement, as numerous works have shown. If the syntactic derivation is bounded by *phases* (at least vP and CP), which movement from must successive-cyclically pass through the edge of (Chomsky 2000; 2001; a.o.) then the possibility of such stranding is expected. This is because the intermediate landing sites forced by phases provide positions where, in principle, we predict that stranding might occur. In this paper, I examine the nature 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, stated below:
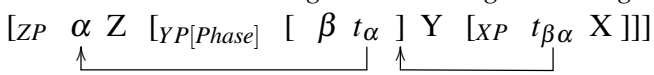
(2)   *Intermediate Stranding Generalization (ISG)*
        Leftward movement of a phrase α can only intermediately strand an element β if β is (or can be) ordered rightward of α before stranding occurs.
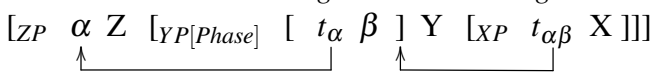
I argue that this generalization stems from a particular proposal concerning the nature of spell-out, along with independent constraints on movement in syntax.

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; 2005b; Ko 2007; 2011; 2014; Sabbagh 2007; Podobryaev 2009; Fanselow & Lenertová 2011; Jenks 2011; 2013; Overfelt 2015; Erlewine 2017; Davis 2019). CL derives successive-cyclic movement (and certain exceptions to it) from the logic of *linearization*, the operation that maps 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, a dialect of Ireland. 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**]$_j$ they'll want to visit t_j]?
   b.   Who$_k$ did Frank tell you [$_{CP}$ [t_k **all**]$_j$ that they were after t_j]?
   c.   What$_k$ do they claim [$_{CP}$ [t_k **all**]$_j$ (that) we did t_j]?

Based on these facts, McCloskey argues that A$'$-movement from CP pauses in the CP edge, and that the punctuated nature of such movement provides an intermediate landing site in the clause edge where this dialect's strandable *all* can be left behind. A clear piece of evidence that such patterns truly involve stranding is the fact that this *all* can only appear in positions within the A$'$-movement path:

(5) *all-stranding in West Ulster English must occur within the movement path*
(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 (that) 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) *Norwegian prepositions cannot be intermediately stranded*
(Henrik Torgersen, p.c.)

    a.   (I) [hvilket rom]$_k$ trodde du [(***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 [(***på**) t_k trollmannen sagde kvinnen
          (on) which table thought you (on) the.wizard sawed the.woman
          i to (på) t_k]?
          in two (on)
          'On which table did you think the wizard sawed the woman in two?'
    c.   (Om) [hvilken bok]$_k$ trodde du [(***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 [(***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) prior to stranding. 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) above, and thus fits the ISG introduced in (2).

(8)   a. *Intermediate stranding impossible*
          for which cat
       b. *Intermediate stranding possible*
          what **all**

In this paper, I maintain that A$'$-movement is indeed generally successive-cyclic when it exits a phase (CP, vP, etc.), 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 stranded in their base position or in a CP edge by *wh*-movement of their host phrase (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**)?

Since these adjuncts are able to be adjoined to the right side of their host phrase,
the possibility of stranding them in a CP edge fits the ISG. The same basic pattern
holds for adjuncts of quantity like *to the nearest pound* in (11) below. Such adjuncts
provide a clearer instance of intermediate 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)]].

Such intermediate adjunct stranding is unacceptable when the host *wh*-phrase
does not move. 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 can only
be derived by stranding under movement of its host:

(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 variety 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.   Torrence (2018, ex. 38a)

        [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?'

    b.   Torrence (2018, ex. 38b)

        [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'

These elements need not necessarily be pied-piped by *wh*-movement, but can also be stranded in situ (14), as well as in the edge of an embedded CP (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.   Torrence (2018, ex. 44d)

        Y-an$_k$ la   Binté 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?'

    b.   Torrence (2018, ex. 45b)

        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?'

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

    a.   Torrence (2018, ex. 29a)

        F-an$_k$ l-a-ñu   foog [t_k **f-epp**]$_j$ ne la-a   togg-e ceeb t_j?

        where COP.3PL think   every that COP.1SG cook rice

        'Where all do they think that I cooked rice?'

    b.   Torrence (2018, ex. 29b)

        F-an$_k$ l-a-ñu   foog [t_k **f-eeneen**]$_j$ ne la-a   togg-e ceeb t_j?

        where COP.3PL think   other   that COP.1SG cook rice

        'Where else do they think that I cooked rice?'

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 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 in Wolof requires A′-movement of host phrase*
         (Adapted from Torrence 2018, ex. 31)
         * 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'

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**]$_j$ gedacht dat je   de vis t_j zou
              where had you then   with thought that you the fish   would
              moeten snijden]?
              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**]$_j$ gedacht dat Ed t_j zou
              where had you then   for   ball thought that Ed   would
              kopen]?
              buy
              'What kind of ball had you thought that Ed would buy?'
         c.   [Een boek]$_k$ had ik [$_{vP}$ [**maar** t_k]$_j$ gedacht dat Ed t_j zou   kopen].
              One book   had I   only   thought dat 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 in (17a-b). The exception
is (17c), involving a stranded *maar* ('only'), which Barbiers shows as originating to
the left of the moving element that stranded it. This example thus appears to violate

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*
      (Adapted from Barbiers 1995, 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), as exemplified by (19-20) below:

(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**.
          I cut the bread there-with
          'I am cutting the bread with that.'
      b. **Waar**$_k$ snij je   het brood [t_k **mee**]?
          where cut you the bread   with
          '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 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]$_j$ gedacht dat je   de vis t_j zou
           which knife had you then with   thought that you the fish   would
         moeten snijden?
         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 the related Dutch, Afrikaans cannot strand prepositions under A′-movement:

(22)   *No preposition stranding in Afrikaans* (du Plessis 1977: 724)
         a.   **Vir wat**$_k$ werk ons nou eintlik t_k?
              For what work we now actually?
              'For what do we actually work?'
         b.   * **Waar**$_k$ werk ons nou eintlik   **vir** t_k?
                What   work we now actually for?
              'For what do we actually work?'

Also like Dutch, Afrikaans has strandable postpositions that occur with R-pronouns. du Plessis shows that these elements can be stranded at clause edges:

(23)   *Afrikaans postposition stranding*
         (Adapted from du Plessis 1977, ex. 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 die bure   [$_{CP}$ t_k (**oor**)   stry   ons t_k (**oor**)]?
              What   think you 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 also fit the ISG.[1]

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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 elements end up, but only that their word order properties fit the ISG.

2.6   Stranding by left branch extraction in Polish

Wiland (2010) analyzes 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**]$_j$ swojej żonie t_j]?
       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**]$_j$ kupił   swojej żonie t_j]?
       What Pawel   car   bought his   wife
       'What car did Pawel buy his wife?'

    c.   *Intermediate stranding in spec-CP* (Wiland 2010, ex. 5)
       $^?$ **Jaki**$_k$ *pro*   myślisz [$_{CP}$ [t_k **samochód**]$_j$ (*że)   Paweł kupił   swojej
        What (you) think   car   (*that) Pawel bought his
       żonie t_j]?
       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

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[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.

truly involve stranding by *wh*-movement, and 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 in Polish*[4]
         (Wiland 2010, ex. 6)
         % **Jaki**$_k$ Maria [$_{vP}$ [t_k **samochód**]$_j$ myślała [$_{CP}$ że   Paweł kupił   swojej
             What Maria   car   thought   that Pawel bought his
         żonie t_j]]?
         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 stranding configurations fit 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:

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

         a.   **O**   **čem**$_k$ ty   govoriš t_k?
              About what you talk?
              'About what are you talking?'
         b.   * **Čem**$_k$ ty   govoriš **o** t_k?
                What you talk   about?
              'About what are you talking?'

However, Russian also has what Podobryaev terms 'ambivalent Ps', which can follow or precede their complement NP:

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

         a.   **navstreču** Pete
              towards   Petya

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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.

      b.   Pete **navstreču**
           Petya towards

      c.   **nazlo** tebe
           to.spite you

      d.   tebe **nazlo**
           you to.spite

Podobryaev shows that these ambivalent Ps may be stranded:

(29)   *Pied-piping and stranding of Russian 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?'

Intermediate stranding of these adpositions at a clause edge is also possible:[5]

(30)   *Intermediate stranding of Russian ambivalent Ps*
       (Tanya Bondarenko, Anton Kukhto, Mitya Privoznov, p.c.)

      a. $^?$Komu$_k$ Vasja xotel [t_k **navstreču**]$_j$ čtoby Petja nobežal t_j ?
          Who   Vasya want   towards   that Petja run
          'Toward whom did Vasya want that Petja would run?'

      b. $^?$Komu$_k$ Lena xotela [t_k **nazlo**]$_j$ čtoby Maša pobedila t_j ?
          Who   Lena wanted   to.spite that Masha win
          'In spite of whom did Lena want that Masha would win?'

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

---

[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 complementizer (*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, as (i) below shows. 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 effect on interpretation, the fact that this semantic effect is absent from examples like (30) suggests that (30) does not involve scrambling of PP, but rather mere pied-piping of PP along with an independent movement chain.

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 facts fit the ISG, repeated below:

(31)   *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.

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.

(i)   *Non-pied-piping adposition movement in Russian*
      (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 **towards** Masha (not any other direction)'

    b.   Lena xotela **nazlo**$_k$ čtoby Maša pobedila Naste t_k.
           Lena wanted to.spite that Masha win   to Nastya
           'Lena wanted that Masha would win **in spite of** Nastya (not for her benefit)'

[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 in Korean* (Ko 2011, ex. 24)
       Kong-ul$_k$ amato   [$_{vP}$ [t_k **sey-kay**]$_j$ haksayng-tul-i t_j patassulkesita].
       Ball-ACC probably   3-thing   student-PL-NOM   received
       'The students probably received three balls'

Similar strings are possible in Japanese (Shigeru Miyagawa, Takashi Morita, p.c.), whose syntax is highly similar to that of Korean. 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 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. Chomsky hypothesizes that when the operation *spell-out* performs this mapping, the content of the spelled-out constituent becomes inaccessible to the rest of the syntactic derivation. Chomsky argues that spell-out applies to only the complement of phase heads. Consequently, this theory predicts that 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 is predicted to allow further movement from the phase (32b).

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

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

   b.   ✓ $[_{ZP}\ \alpha\ Z\ [_{YP[Phase]}\ t\ Y\ [_{XP}\ t\ ]]]$

In this way, Chomsky's theory of phases predicts that moving phrases must pass successive-cyclically through the specifier of each phase crossed, in order to avoid being prematurely trapped by spell-out.

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. In reality, 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. This fact is described 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)*
         $[_{ZP}\ \alpha\ Z\ [_{YP[Phase]}\ [\ \beta\ t_\alpha\ ]\ Y\ [_{XP}\ t_{\beta\alpha}\ X\ ]]]$

---

[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.

b.   *Intermediate stranding without crossing at the edge (ISG-obeying)*
$[_{ZP}$ α Z $[_{YP[Phase]}$ [t_α β] 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 entire phases, not just their complements. 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 in this situation spell-out of vP generates the following ordering information:

(35)   *Ordering in vP without successive-cyclic movement*
        give < the cat < what   (α < β means 'α linearly precedes β')[9]

---

[9]The notation '<' encodes the relative linear order of two elements, not strict adjacency. Thus the establishment of an ordering $[\alpha < \beta]$ is compatible with α moving on, with the result that other material ultimately intervenes between α and β, as in $[\alpha \ \gamma \ \beta]$.
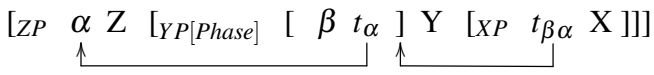
Later, *what* moves in one step to spec-CP. Spell-out of CP produces the ordering information shown in (36):

(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 that is not at the linear edge, hence crossing over some material in the phase on the way out, incoherent ordering information is generated.[10]

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[10]However, later movement of material that is crossed over by a phase exit from a non-edge position is predicted to be able 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 this paper argues for:

(40)   *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.

The ISG is an automatic consequence of CL only permitting 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*
                 $[_{ZP}$ α Z $[_{YP[Phase]}$ $[$ β t_α $]$ Y $[_{XP}$ $t_{\beta\alpha}$ X $]]]$

         b.   ✓ *Intermediate stranding without crossing at the edge*
                 $[_{ZP}$ α Z $[_{YP[Phase]}$ $[$ t_α β $]$ 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 of 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.

4   The role of locality constraints on movement

In this section, I argue that CL interacts with 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) 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.). Thus 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 configuration is illustrated with pied-piping *wh*-movement of a prepositional phrase

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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.
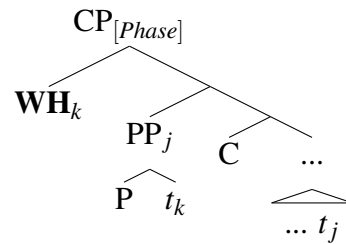
into spec-CP (43a), followed by extraction of the *wh*-phrase from the complement of the prepositional phrase and into a higher specifier of the same CP (43b):

(43)   *Hypothetical edge-internal movement after pied-piping*

   a.   *Step 1: Pied-piping into phase edge*

$$CP_{[Phase]}$$

$$PP_j \quad C \quad ...$$

$$P \quad \textbf{WH}$$

$$... \; t_j$$
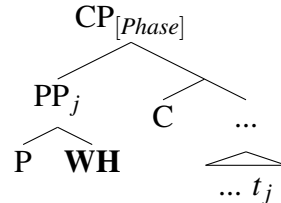
   b.   *Step 2: Extraction to second specifier of the same phase*

$$CP_{[Phase]}$$

$$\textbf{WH}_k$$

$$PP_j \quad C \quad ...$$

$$P \quad t_k$$

$$... \; t_j$$

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, such ISG-violating stranding is not possible in reality. However, if following Ko the edge-internal movement required for this hypothetical derivation is independently ruled out, then we correctly avoid predicting the possibility of such derivations.[12]

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 also bans movement of a head's complement to its specifier. I adopt this constraint on movement as well, since it correctly rules out the possibility of deriving certain ISG-violating configurations via movement within the pied-piped constituent.

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[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 to the same position, the possibility of such a derivation is likely 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 discussion of similar considerations.

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*

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

$$\text{PP}_j \qquad \text{C} \quad \ldots$$

$$\textbf{WH}_k \quad \text{P} \quad t_k \qquad \ldots t_j$$
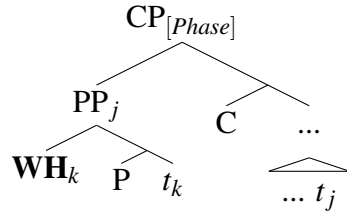
After these movements occur, the *wh*-phrase could be extracted from CP without crossing over P on the way out, thus undesirably deriving intermediate stranding of the preposition. However, since the required movement from complement to specifier of PP is banned by anti-locality, a configuration like (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 move-

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[13]Any PP-internal movement occurs before PP moves, not after, if syntactic derivations are governed by 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 here raises a question about *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). This paper does not allow swiping to be derived by movement of the *wh*-phrase within PP, or from PP to a second specifier of the embedded CP. Since the inversion characteristic of swiping is not possible 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**.

ment of the *wh*-phrase from ZP to the edge of YP does not violate anti-locality, such 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 phase, as (45) shows:

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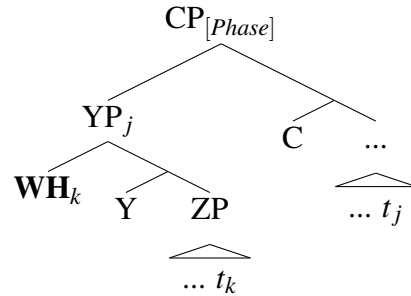
In principle the *wh*-phrase could subsequently move from the CP in (45), intermediately stranding the pied-piped YP in the CP edge. Since the *wh*-phrase would not cross any material as it exits this structure, such stranding is predicted to be licit.

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 provide a means of deriving ISG-obeying intermediate stranding. This expectation is connected to the disjunction in the definition of the ISG 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 from the fact that if a given phrase can move to the left edge of a containing constituent, then such movement should be available to feed later intermediate stranding of that 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 anti-locality bans movement within typical Russian PPs, but that the strandable variably ordered Ps discussed in section 2.6 are more structurally complex, such 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 an adposition 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
```
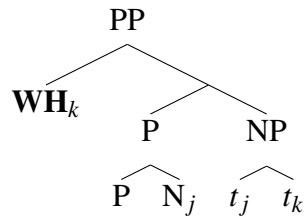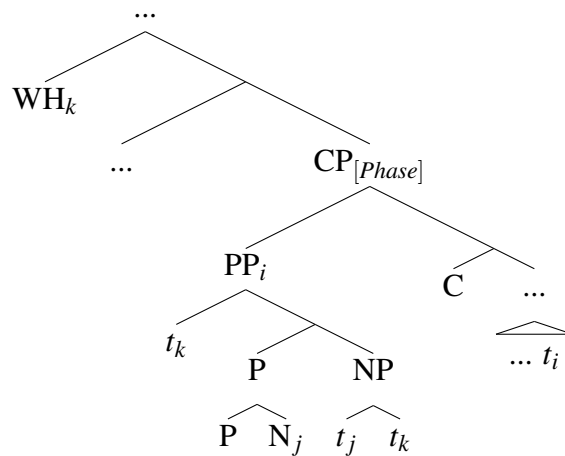
Such movement is predicted to feed intermediate stranding in the following way. After adposition-internal movement of the *wh*-phrase in (46), further *wh*-movement pied-pipes the adposition to a phase edge, as in (47a). Here the *wh*-phrase occupies the linear edge of the adposition and of the containing 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*

```
                    CP_[Phase]
                 /              \
            PP_i                  \
          /      \            C      ...
      WH_k       /  \                 /\
              P      NP            ... t_i
            /  \    /  \
           P   N_j t_j  t_k
```
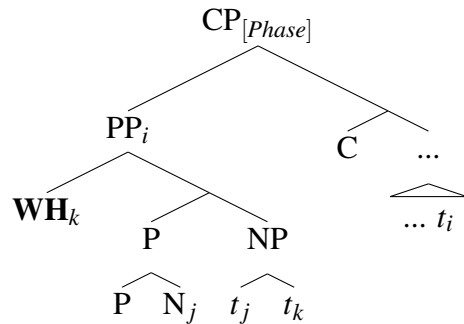
       b.   *Intermediate stranding of complex PP after pied-piping*

```
               ...
            /        \
        WH_k          \
              ...      CP_[Phase]
                    /            \
                PP_i              \
              /     \         C      ...
           t_k     /  \              /\
                 P     NP         ... t_i
               /  \   /  \
              P  N_j t_j  t_k
```

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] [18] In contrast, this account predicts that if the extracting *wh*-phrase here had remained to the right of the rest of the content of the complex adposition by not undergoing movement to its edge, then such intermediate stranding would fail.

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.

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

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 move on into the matrix clause.

[17]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 (or under-specification) of linearization rules. This alternative could be correct for the stranding of the English adjuncts discussed in sub-section 2.2 above: 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.

[18]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.

    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 originally preceded the subject DP, then the subject's A-movement from vP would cross over this stranded quantifier on the way out of vP, as (50) shows:

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

Given the ban on phrase-bounded specifier-to-specifier movement, 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 sentences like (48a) appears to constitute a violation of the ISG, if the right analysis for them is (50).[19]

    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; 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.

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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. If this is so, then such sentences cannot instantiate violations of the ISG.

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

If Fitzpatrick is correct, apparent quantifier stranding / floating under A-movement
in fact never involves sub-extraction, and therefore, cannot instantiate intermediate
stranding of the variety that the present paper examines. 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 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 above, such a scenario is 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 subsequent 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 stranding in spec-vP is expected, given the prediction of CL discussed at the beginning of this section. 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 temporarily land 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 that 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) exemplifies with movement of an object *wh*-phrase:

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

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

However, if this *wh*-movement strands something in that outer spec-vP, then move-
ment 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 could be avoided if it were possible to rearrange the specifiers of
vP before movement from it occurs. 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 cannot be permitted.

   The same concerns lead to a solution for a puzzle from McCloskey (2000), who
notes that if vP is a phase, West Ulster English should allow *all*-stranding in its
edge, contrary to fact, 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 in West Ulster English*
       (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 dis-
cussed, 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. For further examination of how CL
affects movement from and stranding in vP, see Davis (2019).

5.2   Unexpected absences of stranding in spec-CP

The previous subsection analyzed a circumstance under which stranding in spec-vP
is banned. There are also patterns where material that appears to be capable of being

stranded in situ fails to be stranded in the CP edge, even though such stranding would satisfy the ISG. Several such patterns are shown 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
　　　　　How.many of　books believe-you　　of　　books that I　should　read
　　　　　t_k (de livres)?
　　　　　　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
　　　　　Whose　(the book)　said the Yanis　　(**the book**) that the Maria read
　　　　　/ diavase i　　Maria t_k (to　vivlio)
　　　　　/ read　　　the Maria　(the book)?
　　　　　'Whose book did Yanis say that Maria read?'
　　　c.　*How much ... of split*
　　　　　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 these 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.[20]

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

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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)?

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)*

a.

```
              ...
           /      \
       YP_k        ...
       /  \       /   \
   de livres    ...    XP
                      /  \
                combien   t_k
```

b.

```
                 ...
              /      \
          XP_j        ...
          /  \       /    \
    combien  t_k   ...     ...
                          /   \
                       YP_k    ...
                       /  \
                  de livres  ...  t_j
```
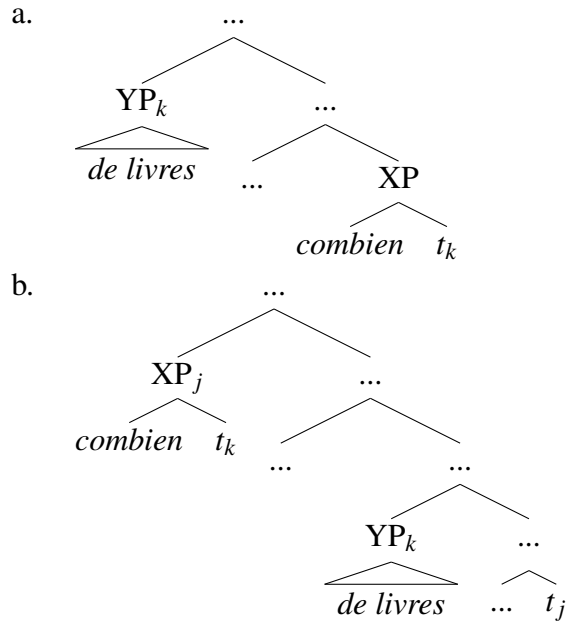
The displaced elements in (58) are plausibly non-constituents, or perhaps left branches that should be immobile under the Left Branch Condition (Ross 1967; a.o.). Since French generally obeys the Left Branch Condition, a remnant movement derivation is precisely what we would expect to be responsible 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.

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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.

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 the analyses I have offered may apply to some such patterns, they are unlikely to be correct for 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 dialects. For instance, 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.   Henry (2012, ex. 25)
        What$_k$ did he [t_k **all**]$_j$ do t_j on holiday?
   b.   Henry (2012, ex. 29)
        Where$_k$ does she [t_k **all**]$_j$ see her students t_j?

(61)   *Spec-vP intermediate stranding in East Derry English*
   a.   Henry (2012, ex. 52)
        What$_k$ did he [t_k **all**]$_j$ do t_j in Derry?
   b.   Henry (2012, ex. 56)
        Who$_k$ did he [t_k **all**]$_j$ say was elected t_j in the council elections?

If the syntax of these varieties is basically the same as that of the one studied by McCloskey and of mainstream English, then the analysis of subsection 5.1 above incorrectly rules out such stranding. This problem also extends to the examples of spec-vP intermediate stranding we have seen above in Dutch (17) and Polish (25). Further variation within West Ulster English presents yet more puzzles. According to Henry, South Derry English allows base position *all*-stranding in addition to spec-vP *all*-stranding, but does not permit *all*-stranding in the CP edge. The Strabane variety is evidently even more restrictive, permitting *all*-stranding in only the base position. The least restrictive is East Derry English, which Henry shows allows *all*-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 embedded 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 2005a; Wiland 2010; Ko 2011), Asp(ect)P (Bobaljik & Wurmbrand 2013; Bošković 2014; Harwood 2015), and TP (Deal 2016; 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] pursuing 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

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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 prosodic differences between dialects could also be responsible for some of the variation discussed here. More generally, it is possible that some of the cross-linguistic variation in intermediate stranding 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 phase heads (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 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, following the arguments of section 5.1 above.

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, they 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, based on which the mother of XP and YP is 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 phrases, when combined with two assumptions: that only phases may move (Rackowski & Richards 2005; Legate 2014; Harwood 2015; 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 ...]]

In general for this approach, successive-cyclic movement to the edge of any phase
effectively de-labels it, preventing it from moving and thus automatically precluding
the possibility of deriving movement from a moved phase. Bošković (2018) argues
that for this reason, movement from moved constituents cannot usually occur.

While specifiers formed by successive-cyclic movement yield the labeling prob-
lem just discussed, this issue should be irrelevant for specifiers that agree with
the head of the phrase they merge to: such 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 was able to be initially linearized leftward of what it strands. The ISG and (65) differ in several respects, however.

6.2   Comparison

One 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) *Intermediate postposition stranding in Dutch*
      Waar$_j$ had jij   dan [$_{vP}$ [t_j **mee**]$_k$ gedacht dat je   de vis t_k zou   moeten
      where had you then   with   thought that you the fish   would must
      snijden]?
      cut
      'What had you thought to be forced to cut the fish with?'

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 in such Dutch configurations. 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 2.4 that this Dutch pattern 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. Unlike the ISG, Bošković's proposal requires claiming that these examples of stranding also involve agreement, which there is no independent evidence for.

This issue also arises for 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 in Serbo-Croatian*
         (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 adjectival phrase should be impossible. Bošković notes that the intensifier can remain in situ in the adjectival phrase, which in the context of the labeling theory, 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. 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.).

7 Conclusion

This paper has proposed a generalization about word order in configurations with stranding in an intermediate position, and argued that this generalization emerges from the CL theory of phases, in combination with several independently supported constraints on the locality of movement.

(68)   *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.

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

Abbreviations

ACC = accusative, COP = copula, NOM = nominative, PL = plural, SG = singular.

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Competing interests

The author has no competing interests to declare.

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