The Syntax of Stranding at Edges

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1. Introduction

Moving constituents can sometimes leave material behind in phase edges they pass through, a phenomenon I term *intermediate stranding* (IS). IS under A′-movement[1] is subject to restrictions, which in this work I argue have something to teach us about a few fundamental concepts in the theory of movement and locality. The schema in (1) illustrates the IS scenarios that I focus on. In (1), α successive-cyclically A′-moves in two steps, pied-piping β to the edge of an intermediate phase YP with the first step of movement, and then stranding β at the YP edge with the second movement step.

(1)   **A schema for IS under A′-movement**
$$[_{ZP} \quad \alpha \quad [_{YP[Phase]} \quad \alpha\beta \quad [_{XP} \quad \alpha\beta \quad]]]$$

While IS isn't common, it is attested.[2] The cases of IS that I am aware of are collected in this paper. I'll show that IS follows a cross-linguistic generalization about word order, stated in (2).

(2)   **Intermediate Stranding Generalization**
IS is only possible when the stranded material is, or can be, to the right of the material that continues to move leftward

In this paper, I argue that (2) suggests a particular understanding of the locality conditions on movement operations, and why movement from certain domains ('*phases*') is successive-cyclic.

1.1. Conclusions in preview

I argue that (2) holds because IS of an element that precedes the phrase that strands it requires the phrase that moves on to illicitly cross over what it strands at the phase edge, as (3) shows:

(3)   a.   ***Crossing at the edge**
$$[_{ZP} \quad \alpha \quad [_{YP[Phase]} \quad \beta\alpha \quad [_{XP} \quad \beta\alpha \quad]]]$$

b.   **Crossing avoided at the edge**
$$[_{ZP} \quad \alpha \quad [_{YP[Phase]} \quad \alpha\beta \quad [_{XP} \quad \alpha\beta \quad]]]$$

In (3a), β precedes α before movement. In order for movement of α to strand β in the edge of the YP phase, α must cross over β when β is stranded at the YP edge. In contrast, in (3b) α precedes β before movement. Thus movement of α will not cross over β when β is stranded at the YP edge. If it can be ensured that only non-crossing IS derivations like (3b) succeed, then (2) is derived.

[1]Space constraints prevent me from discussing A-movement. A-movement should show the same constraints as A′-movement as far as IS in phase edges is concerned (and conversely, those constraints should disappear for IS outside of phase edges). The distribution of stranding under A- versus A′-movement appears to have independent differences that are beyond the scope of this work (i.e. the different P-stranding possibilities for pseudopassives vs. A′-extraction, and the strandability of *all* and similar elements under A- but not A′-movement in standard English).

[2]If IS really is rare, why might this be? Consider that not many languages seem have stranding of the relevant sort in the first place, which is a puzzle in of itself. If the QP theory of pied-piping in Cable (2010) is correct, IS should probably not exist at all, as it is not obvious how QP could drop off one of its sub-constituents partway along the movement path. IS may be reconciled with QP theory by recursive embedded Qs, or scattered deletion.

I argue that the combination of two ideas in syntactic theory derives (2). The first is the The Cyclic Linearization (CL) theory (Fox & Pesetsky (2005a,b); Podobryaev (2007); Sabbagh (2007); Ko (2011, 2014)). This theory derives successive-cyclic movement (and certain exceptions to it) from the logic of non-contradiction in *linearization*, the phase-by-phase mapping of hierarchical syntactic structures to pronounceable linear strings at spellout. The second concept is a theory of movement as parasitic on Agree (Chomsky (1995, 2001); Ko (2014); van Urk (2015)), which predicts constraints on movement within ph(r)ase edges, preventing certain exceptions to (2) that CL alone does not rule out.

1.2. Roadmap

In section 2 I provide more background on IS and support the generalization proposed above. In section 3 I outline and compare the predictions of the theory of phases in Chomsky (2000, 2001) versus CL, arguing in favor of the latter. Section 4 argues for the importance of Agree-driven movement. The appendix discusses some predictions about the interaction of A-movement and head movement with IS.

2. Examining IS cross-linguistically
2.1. West Ulster English and an old puzzle

McCloskey (2000) discusses what is likely the most well-known case of IS, involving the strandable postnominal quantifier *all* in West Ulster English. West Ulster *all* can be stranded not only in its base position, like English prepositions, but also at intermediate points in the sentence:

(4) **West Ulster *all*-stranding**   (McCloskey 2000, ex. 8)
     What$_k$ (all) did he say [$_{CP}$ t_k (**all**) (that) he wanted t_k (all)]?

McCloskey argues that such facts are evidence that A′-movement successive-cyclically passes through CP edges. Decades earlier, Postal (1972, 1974) made exactly the inverse argument, based on the fact that English prepositions cannot be stranded at clause edges:

(5) **No IS of standard English prepositions**
     (In) [whose pants]$_k$ did you say [$_{CP}$ (***in**) t_k (that) I put eels (in) t_k]?

Postal argues that if movement is really successive-cyclic, preposition stranding should be possible at the intermediate landing sites of such movement. The facts instantiated in (4) and (5), and the theories they suggest, are clearly in tension. If long-distance A′-movement is not successive cyclic, what allows (4), and if it is, what is the problem with (5)? I argue that the problem with (5) has to do with word order.

Notice that prepositions, which can't be intermediately stranded, precede the *wh*-phrase they attach to. However, the West Ulster strandable *all* follows the *wh*-phrase, and can be intermediately stranded:

(6) a. **IS impossible**   b. **IS possible**
         <u>In</u> which hovercraft   What <u>all</u>
         (*Strandee precedes strander*)   (*Strandee follows strander*)

This initial word order contrast is exactly parallel to the restriction schematized in (3), and thus fits the generalization in (2) above. The present account will maintain the successive-cyclic nature of A′-movement, and will argue that the above restrictions stem from a linearization problem. The rest of this subsection overviews the other IS patterns I know of, arguing that they all fit (2).

2.2. Afrikaans postpositions

du Plessis (1977) discusses P stranding in Afrikaans, reporting what is probably the first instance of IS in the literature. du Plessis shows that *wh*-movement must pied-pipe prepositions in Afrikaans:

(7) **No preposition stranding in Afrikaans**[3]   (du Plessis 1977, p. 724)

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

Afrikaans also has postpositional adpositions like *-voor* ('for') and *-oor* ('about'), which compound onto the preceding nominal.[4] Unlike prepositions, postpositions can be stranded in their base position, as well as in clause edges, as (8) shows:[5]

(8) **Afrikaans postposition IS**   (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)]?

    b. *Wat/waar_k dink julle dink die bure   [_CP t_k **(oor)**   stry   ons t_k (oor)   ]?*
       What   think you think the neighbors [(about) argue we   (about)]?

As we saw for West Ulster English, the elements that can undergo IS in Afrikaans are, as postpositions, attached to the right of what strands them by leftward movement.

2.3. Polish left branch extraction

Wiland (2010) analyzes *wh*-movement and left branch extraction in Polish. Polish *wh*-movement can pied-pipe the entire nominal phrase containing a *wh*-element, as English does:

(9) **Polish pied-piping *wh*-movement**   (Wiland 2010, ex. 1)
    [***Jaki samochód**]_k Paweł kupił   swojej żonie t_k?*
    [What car]   Pawel bought his   wife?

Another possibility for Polish is left branch extraction of the minimal *wh*-element, stranding NP below:

(10) **Polish left branch extracting *wh*-movement**   (Wiland 2010, ex. 2)
    ***Jaki**_k Paweł kupił   swojej żonie [t_k **samochód**]*
    What Pawel bought his   wife [car]?

This left branch extraction can strand NP at various intermediate points in the sentence:

(11) **IS of NP under left branch extraction in Polish**   (Wiland 2010, ex. 3-5)

    a. ***Jaki**_k Paweł kupił   [t_k **samochód**]_j swojej żonie t_j*
       What Pawel bought [car]   his   wife?

    b. ***Jaki**_k Paweł [t_k **samochód**]_j kupił   swojej żonie t_j*
       What Pawel [car]   bought his   wife?

    c. ?***Jaki**_k pro   myślisz [t_k **samochód**]_j (*ze)   Paweł kupił   swojej żonie t_j*
       What (you) think   [car]   (*that) Pawel bought his   wife?

Wiland argues that the facts in (11) instantiate NP stranding in specifiers of VP, vP and CP (all phasal, for Wiland) under successive-cyclic *wh*-movement, and cannot be scrambling or remnant movement of NP. He reaches this conclusion from the fact that while Polish scrambling is clause-bounded, *wh*-movement can strand NP in a clause other than where it originated.

Notice that the *wh*-element which is left branch extracted from NP starts out to the left of the NP that it strands (hence the term 'left branch' extraction). Thus this IS scenario also fits (2).

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[3]There are details about the form of the *wh*-phrases in question, such as *wat* versus *waar*, which pattern with the facts about stranding but aren't relevant to the basic word order facts that I'm concerned with here.

[4]The nominals that appear in this circumstance are *R-pronouns*, in the terms of van Riemsdijk (1978).

[5]For other restrictions on IS in Afrikaans see Rackowski & Richards (2005).

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2.4. Korean and Japanese numeral quantifiers

Japanese and Korean numeral quantifiers, which in the unmarked case follow NP, can be stranded by scrambling. Ko (2011) shows for Korean that object scrambling to spec-TP, leaving the subject in situ, can strand a numeral quantifier in spec-vP:

(12) **IS of numeral quantifier by object scrambling 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'

The same possibly holds for Japanese, which has the same relevant syntactic properties as Korean:[6]

(13) **IS of numeral quantifier by object scrambling in Japanese** (P.C. Takashi morita)
Neko-o$_k$ osoraku [$_{vP}$ [t_k *san-biki*]$_j$ *gakusei-ga* *umaku* t_j *mitsuketa*]
cat-ACC probably   3-CL   student-NOM skillfully   found

'The students probably skillfully found 3 cats'

These instances of IS also fit (2), since these strandable numeral quantifiers are able to be attached on the right side of a leftward scrambling NP.

2.5. Russian ambivalent adpositions

Podobryaev (2010) shows that prepositions in Russian can't be stranded by A′-movement:

(14) **No preposition stranding in Russian** (Podobryaev 2009, ex. 1)
   a. *O*   *čem$_k$* *ty* *govoriš* t_k*?*   b. **Čem$_k$* *ty* *govoriš* *o* t_k*?*
     About what you talk?   What you talk about?

In addition to pure prepositions, Russian also has what Podobryaev terms 'ambivalent Ps' which can either follow or precede their complement NP:

(15) **Variable word order of ambivalent Ps** (Podobryaev 2009, ex. 15-16)
   a. *navstreču Pete / Pete navstreču*   b. *nazlo tebe / tebe nazlo*
     towards Petya / Petya towards   to.spite you / you to.spite

Podobryaev shows that these ambivalent Ps may be stranded, unlike prepositions:

(16) **Pied-piping and stranding of ambivalent Ps** (Podobryaev 2009, ex. 18-19)
   a. *(Navstreču) komu$_k$ (navstreču) ty bežal t_k (navstreču)?*
     (Towards) whom (towards) you ran (towards)?

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

IS of these ambivalent Ps is also possible:[7]

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[6]In (13) the inclusion of the adverb *umaku* is intended to rule out a derivation with VP fronting after verb movement out of VP, followed by scrambling of the object. Miyagawa (2017) shows that the adverb *umaku* adjoins at about the VP level, and in (13) we see that *umaku* sits in its base position. The fact that *umaku* was not carried along by any of the movement operations in (13) suggests that the VP was not fronted.

[7]This observation was made by Tanya Bondarenko, who with Mitya Privoznov confirmed that such sentences are possible, but not for all speakers / all adpositions. The examples in (17) use a subjunctive embedded clause because these are easier to extract from in Russian (Bailyn (2012)). Younger speakers who permit extraction from finite clauses (most notably, those with the C *čto*) allow similar IS examples with embedded finite clauses.

(17) **IS of ambivalent Ps** (P.C. Tanya Bondarenko, Mitya Privoznov)

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

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

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

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

In (17) above we see the adposition stranded by *wh*-movement in a position preceding the embedded C. If the complement of the adposition does not undergo A′-movement, moving the adposition to this intermediate position is highly degraded, unless the moved adposition is given a focus interpretation:

(18) **Non-pied-piping adposition movement** (P.C. Tanya Bondarenko)

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

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

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

         'Lena wanted that Masha would win <u>in spite of</u> Nastya (not for Nastya's benefit!)'

I argue that the examples in (17) are true IS under A′-movement, whereas those in (18) are derived by scrambling of the adposition, resulting in corresponding effects on information structure.

    If these facts are accurate, in Russian we find another instance of IS that fits the generalization: These ambivalent adpositions are able to be to the right of what strands them in an intermediate position.

2.6. English DP-adjunct stranding

    McCloskey (2000) discusses a pattern in English involving the adverbs *precisely/exactly*, which he credits to Urban (1999). These DP adjuncts can precede or follow DP:

(19)   (**Exactly/precisely**) ten trips (**exactly/precisely**) were made to Antarctica last year.

These adjuncts can be stranded by A′-movement:[8]

(20)   ***Exactly*-stranding**
       What$_k$ do you want t_k **exactly/precisely**?

Stranding between clauses is possible as well:[9]

(21)   ***Exactly*-IS**
       What$_k$ did you suppose t_k (**exactly/precisely**) that they wanted t_k?

I argue that the stranded adjunct in (21) must have really been stranded here, and cannot be an adjunct of the matrix VP, as the matrix V *suppose* is independently semantically odd with such adjuncts.

    The same stranding pattern is evident with other DP adjuncts of quantity/degree, like *to the nearest pound* in (22), for which it is even clearer that the stranded adjunct is not a modifier of the matrix VP:[10]

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[8]Zyman (under review) argues that these adjuncts are never actually stranded in their base position, but rather somewhere high to the right. However, Zyman argues that IS of these elements truly is stranding. Zyman also argues that *exactly*-stranding in spec-vP is possible. I contest this judgment. I suggest that such cases represent an adverbial *exactly*, not produced by IS. Other strandable DP adjuncts, like that in (22), are much harder to parse as v/VP level adjuncts and so are more clearly bad when stranded in spec-vP. See the appendix for these facts.

[9]Itai Bassi (p.c.) tells me that the same pattern holds for Hebrew.

[10]Credit for this observation goes to David Pesetsky.

(22) **Quantity adjunct IS**
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)]]

These strandable adjuncts also fit the generalization in (2), as they can be subject to IS, and can precede or follow the moving DP that strands them.

2.7. Interim summary

In this section, I've shown you a set of IS scenarios which all fit a certain word order generalization:

(23) **Intermediate Stranding Generalization** [=(2)]
IS is only possible when the stranded material is, or can be, to the right of the material that continues to move leftward

See the appendix for a discussion of a final example from Dutch (Barbiers (2002)), which looks like a counterexample to this generalization. This example is saved until later, as the discussion of CL coming in the next section is necessary for understanding this fact.

3. Two phase theories and their predictions
3.1. Chomsky's phases

Chomsky (2000, 2001, inter alia) argues that syntactic structure is mapped onto phonology (PF) and interpretation (LF) incrementally, at domains termed *phases*. Minimally, vP and CP are phases.[11] When the operation *spellout* performs this mapping, the content of the spelled-out constituent by hypothesis becomes inaccessible to the rest of the syntactic derivation, and thus unavailable for Agree or movement. Chomsky argues that spellout applies to the complement of phase heads. Consequently, moving from a phase directly from its complement isn't possible, as such movement applies too late to escape spellout, as in (24b). However, moving to the edge (specifier) of the phase before exiting it escapes the complement before it spells-out, permitting movement out of the phase, as in (24a):

(24) **Must exit a phase via the edge**
a. [$_{ZP}$ α Z [$_{YP[Phase]}$ α̵ Y [$_{XP}$ α̵]]]   b. * [$_{ZP}$ α Z [$_{YP[Phase]}$ Y [$_{XP}$ α̵]]]

In this way, Chomsky's proposal predicts that movement must stop in the edge of each phase crossed.

3.1.1. Predictions for IS in Chomsky's theory

Given the above argumentation, anything which is in (or can reach) a phase's specifier and is in principle movable should be available for further movement. Word order should not be at issue here, only structure. However, recall that the step of A′-movement which strands material in a phase edge does indeed have a word order restriction: The material that is stranded in an edge cannot have (obligatorily) preceded what strands it. I argue that this connection between word order and the availability of IS at phase edges is precisely what the Cyclic Linearization view of phases predicts, as we'll see next.

3.2. Cyclic Linearization (Fox & Pesetsky 2005)

CL offers another view of how spellout leads to successive-cyclicity. In this system, a phasal constituent spells-out all at once, not just the complement. A phase spells-out as soon as it is done being built. Since everything in a phase gets spelled-out, any movement out of a phase, even from the specifier, is of something that has been spelled-out. Therefore the hypothesis that spelled-out constituents are impenetrable for extraction is removed in CL, in order not to inaccurately predict no movement out of

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[11]DP may qualify for phasehood also, though as far as I can tell the evidence is less clear. Intriguingly, Zyman (under review) points out that *exactly*-stranding does not seem possible in DP edges, puzzlingly if DPs are phases.

phases. If phase-level spellout doesn't target just complements, and spellout doesn't prevent extraction, then a Chomsky-style explanation of successive-cyclicity is lost. The alternative hypothesis offered by CL is that successive-cyclic movement occurs to bring moving phrases to the linear edge of each phase moved through. This is necessary to ensure that the linear order information generated for a given phase by spellout is consistent with that of all other phases in the derivation. What follows briefly demonstrates this logic.

Consider a derivation like (25) below, where the moving item *what* non-successive-cyclically moves to spec-CP without stopping at the edge of the vP phase:

(25) **Hypothetical non-successive-cyclic movement from vP**
$[_{CP}$ What did Mary $[_{vP}$ give the cat ~~what~~ $]]]$?

In this dervation, *what* had not moved to the edge of vP at the time when vP spelled-out. Therefore spellout of this vP generates the following ordering information:

(26) **Linearization of vP (without successive-cyclic movement)**
give < the cat < what   ($\alpha < \beta$ means 'α linearly precedes β')

Later, *what* moves in one step to spec-CP. When CP spells out, the information in (27) is produced:

(27) **Linearization of CP**
what < did < Mary < [vP's contents]

Notice that in (26), *what* follows everything in vP. However, in (27) linearization is told that *what* precedes everything in CP, which ultimately precedes everything in vP. Thus we have a contradiction: In this derivation the moving phrase *what* has been determined to simultaneously follow and precede the content of vP. CL posits that such contradictory results yields a crashed derivation.[12]

This contradictory result was caused by not moving *what* to precede everything within vP before vP spelled-out. Notice that if *what* moves to the most linearly peripheral position of vP, there is no contradiction. Such movement yields the following linearization for vP:

(28) **Linearization of vP (with successive-cyclic movement)**
what < give < the cat

This ordering information for vP is not in contradiction with the linearization eventually produced at CP that we saw in (27). In this case, both phases find *what* to precede their contents. This result is consistent with *what* ending up at the left edge of the sentence, preceding the content of all phases in this derivation.

Fox & Pesetsky argue that in this way successive-cyclic movement through the linear edge of phases is necessary to keep the ordering information that phase-by-phase spellout generates consistent across a derivation. When material does not exit from the linear edge, hence crossing over some material in the phase on the way out, incoherent linearizations are generated.[13]

3.2.1. Cyclic Linearization's predictions for IS

Recall the generalization about IS that this paper has argued for:

(29) **Intermediate Stranding Generalization**
IS is only possible when the stranded material is, or can be, to the right of the material that continues to move leftward

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[12]Fox & Pesetsky propose that linearization information that has already been generated can't be deleted (*Order Preservation*), so there is no way to avoid a contradiction by getting rid of offending ordering statements.

[13]At least, in the basic case. See the appendix for some discussion of CL's predictions for saving a derivation where something exits a phase without passing through the linear edge.

If the material being stranded at an intermediate phase edge precedes what moves on, the mover must cross over what it strands as it continues its movement path, as schematized once more below:

(30) a. ***Crossing at the edge**
$[_{ZP}\ \alpha\ [_{YP[Phase]}\ \beta\alpha\ [_{XP}\ \beta\alpha\ ]]]$

b. **Crossing avoided at the edge**
$[_{ZP}\ \alpha\ [_{YP[Phase]}\ \alpha\beta\ [_{XP}\ \alpha\beta\ ]]]$

We've just seen that phase exits which cross material are precisely what CL rules out. Thus CL accurately rules out (30a), but predicts no issues for (30b). Consequently, CL predicts the intermediate stranding generalization. The crossing problem that derives this generalization applies only at phase edges. Thus base position preposition stranding in English, for instance, is correctly permitted.[14]

4. Agree as the trigger of movement and restrictions at edges

This work so far has argued that CL accurately derives the restrictions on IS. Further consideration of the possible IS derivations reveals a problem, however. If IS is illicit when it would be necessary for movement out of the phase to cross what is being stranded at the phase edge, IS of material that precedes what strands it should be made possible by moving around the stranded material within the same phase before exiting. For instance, IS of prepositions might hypothetically be derived by moving the complement of a pied-piped PP across P, to a higher specifier of the same phase, as in (31):[15]

(31) **Hypothetical phrase-bound spec-to-spec movement (to be ruled out)**

a. $XP_{[Phase]}$ $\rightarrow\rightarrow\rightarrow$ b. $XP_{[Phase]}$

a.
```
        XP_[Phase]
        /        \
      PP          X  ...
     /  \
    P   WH
```

b.
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        XP_[Phase]
        /        \
     WH_k         \
            PP      X  ...
           /  \
          P   t_k
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The possibility of such specifier to specifier movement within the same phrase must be eliminated, otherwise we wrongly predict IS of elements that precede what strands them.

Chomsky (2015) argues that External Merge and so also Internal Merge (aka 'movement') must apply freely and untriggered, amounting to a return to a *'Move α'* view. If this view is correct, it is not clear what bans derivations like (31). Another view is that movement does not apply freely, but has Agree as a prerequisite (Chomsky 1995, 2001, Ko 2014, van Urk 2015). Ko points out that this view predicts a ban on phrase-bound spec-to-spec movement, if moving an element to the specifier of a head requires a probe on that head to find that element in its c-command domain via Agree. Since heads don't c-command their specifiers, they can't probe and move material from one of their specifiers to another. This theory desirably rules out derivations like (31). Thus a theory of movement as contingent on c-command constrained Agree complements CL in deriving (2).

5. Conclusion

In this work I observed a cross-linguistic generalization about word order and IS, which I argued serves as evidence for the CL theory of successive-cyclic movement, and a theory of movement as driven by Agree (and hence c-command). This account predicts that IS, of the right kinds of elements, should be possible in principle at any phase edge that movement passes through. However, independent factors

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[14]Though base-position preposition stranding is absent in many languages, a few of which we've seen above. This fact is predicted if PP is a phase in such languages and Abel's (2003) anti-locality holds, though see that work for a more thorough discussion of the complications in this area.

[15]The antilocality of Abels (2003) prevents having the *wh*-phrase precede P by moving to spec-PP. However, if the constituent to be stranded is larger, movement within that constituent to save IS should be possible. Perhaps this is an option with DP adjuncts like *exactly* and Russian ambivalent adpositions, which in section 2 I showed are able to appear on either side of their complement, and can be subject to IS. Such situations are my reason for the wording "is, or can be, to the right of the material that moves leftward" in (2).

may still rule out IS in particular scenarios. Therefore the account here does not predict a set of positions where IS must be possible, but rather a set of positions where it may be, as far as syntax and linearization are concerned.[16] What other factors constrain stranding is a question for future developments of the perspective proposed in this paper. See Davis (2018) for more work in this direction.

6. Appendix: Crossing and Stranding at vP

The concepts argued for in this work make some predictions about when an edge position is not viable for stranding. As described in section 3, CL motivates moving elements to stop in the linear edge of each phase passed. CL also predicts a repair strategy for cases where a movement does not exit a phase successive-cyclically. That is, any material crossed over by the movement step that exits a phase must also move out, to a position that precedes what previously crossed it. Doing so restores the original order of the two elements, and maintains a clean linearization. This scenario is the essence of Fox & Pesetsky's account of Holmberg's Generalization. This prediction leads us to expect that phase edges crossed over by a non-successive-cyclic movement are not viable for IS. Rather, any potentially strandable material must be pied-piped (or otherwise somehow moved) out of that edge to avoid a crossing problem.

Recall West Ulster English. This dialect allows stranding of *all* in spec-CP, but as McCloskey points out, not in spec-vP. McCloskey's analysis of West Ulster English suggests that V moves to a head above vP, thus his examples showing this gap attempt *all*-stranding after V:

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

Analogously, adjunct stranding in standard English (for which I don't assume V movement past v) as described in subsection 2.6 above is also not possible in spec-vP:

(33) **No adjunct stranding in spec-vP**
How much flour did you [$_{vP}$ **(*to the nearest pound)** tell me [$_{CP}$ that the bakery [$_{vP}$ **(*to the nearest pound)** asked you for]]]?

The concepts I've discussed so far predict this gap in the stranding paradigm of (West Ulster) English, for two reasons. First, CL requires a moving *wh*-phrase to stop in the most peripheral position of the vP phase, a specifier above the in situ subject.[17] There is no problem with the subject later A-moving to spec-TP across that outer spec-vP formed by successive-cyclic *wh*-movement, as long as the content of the outer specifier moves along to spec-CP. However, if *wh*-movement were to strand something in that outer spec-vP, movement of the subject across the stranded material would yield a crossing problem. Rearranging the material in the vP edge to fix this problem is not possible, given the ban on phrase-bound spec-to-spec movement argued for in section 4.

As mentioned, McCloskey argues that V moves to a position outside of vP in West Ulster English. Such movement provides a second reason why spec-vP *all*-stranding is ruled out. Given the head movement constraint (Travis (1984)), there is no head which V can move to that precedes the specifiers of vP within this phase. Thus V moving out of vP can't avoid non-successive-cyclically crossing a stranded *all* in spec-vP, a position which by being crossed in this way cannot remain filled.

This analysis leads us to the expectation that spec-vP IS will be ruled out in any language which has either subject movement out of vP, or, leftward head movement out of vP. Earlier, I showed IS at vP by object scrambling in Korean (12) and Japanese (13). In these languages, object scrambling leaves the

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[16]For example, Cora Lesure suggests that some positions that might be syntactically licit for stranding may not satisfy independent (morpho)-phonological properties of a given element that could otherwise be stranded there. Other syntactic details might interfere with IS at a particular edge, as overviewed in the appendix. I am also aware of scenarios where material that is postnominal and strandable in its base position cannot undergo IS. I hypothesize that in such cases, the relevant elements may be linearly concatenated by their first spellout (essentially like bound morphemes) in such a way that they cannot later be separated, banning IS from occurring later on in the derivation.

[17]Under CL theme subjects must also pass through the same lower spec-vP to precede V, if V moves to v in English. This leads to the prediction that movement of theme subjects will also block spec-vP IS. This appears to be true for adverb stranding cases like (33) in unaccusatives and passives, not shown here for space reasons.

subject in situ. Since these languages are head-final, any verb movement is to the right. Thus subject movement and head movement are accurately predicted to not interrupt spec-vP IS.

6.1. A potential counterexample: Dutch

Barbiers (2002) argues that A′-movement in Dutch can strand various modifiers and adpositions in spec-vP. While many of these elements Barbiers shows are postnominal, at least one (*maar* below) is prenominal, which is a problem for the generalization in (2). Also, we might expect A-movement of the subject to rule out spec-vP stranding in Dutch, just as in English, but this apparently isn't the case.

(34) **Stranding in spec-vP of prenominal element in Dutch** (Barbiers 2002, ex. 6c)
[*Een boek*]$_j$ *had ik* [$_{vP}$ [***maar*** *j*]$_k$ *gedacht dat Ed* t_k *zou kopen*]
One book Had I only thought that Ed would buy

Consider that Dutch is a V2 language, and such languages permit word orders like XP > V > SUBJ. This word order, where V precedes the subject after head movement to C, cannot be derived in CL if vP is a phase. This is because there is no position within vP where V can precede an in situ external argument. Thus CL predicts that vP cannot be a phase in a V2 language. Indeed, Fox & Pesetsky propose that VP is a phase in languages that show Holmberg's Generalization, which are Germanic V2 languages. If V2 languages have a phasal VP rather than vP (and perhaps this is what permits V2 order in the first place), then Barbiers' data constitute IS that is not at a phase edge. Thus this IS shouldn't be subject to the restrictions that the present account predicts, which only apply at phase edges.

The Polish facts in section 2, where as Wiland argues we see IS in spec-vP and spec-VP (both phasal, for Wiland), raise similar issues. See Davis (2018) for an attempt to make sense of these and more facts, which space constraints prevent a thorough examination of here.

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