

On the Directionality of Movement and Its Relationship to Stranding*

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* Parts of the present study were presented in ICKL 2008 and CiL 18. I thank the audience for their comment. I must thank, most of all, Marcel den Dikken for his interest and support to my early ideas about stranding phenomena in terms of phase extension. This work was supported by Korean Research Foundation Grant funded by the Korean Government (MOEHRD, Basic Research Promotion Fund) (KRF-2007-327-A00643).

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I. Introduction

It is well known that English generally allows P(reposition)-stranding (Law 2006). Look at the following:

- (1) a. [About what] have they talked ___?
- b. What have they talked [about ___]?
- c. [On which carpet] did they step ___?
- d. Which carpet did they step [on ___]?

What makes the understanding about P-stranding complicated is that the directionality of movement involved plays a role in determining grammaticality. (1) shows that P-stranding is allowed when the movement out of PP proceeds leftward. Interestingly, however, with respect to rightward movements like Heavy NP Shift (HNPS), P-stranding is not allowed (Larson 1989).¹⁾

(2) Heavy NP Shift

- a. I talked to all of the teachers about Johnnie's problems.
- b. I talked ___ about Johnnie's problems [to all of the teachers].
- c. *I talked [to ___] about Johnnie's problems all of the teachers.

(2c) shows that rightward movement cannot leave a preposition behind in contrast to (2b), (1a), and (1c).

This paper aims to give a novel account of the contrast in terms of phase extension which has been originally proposed by den Dikken in his series of recent papers (2006, 2007, and 2008). In doing so, this paper

1) Readers are referred to Larson's (1989) analysis of HNPS in terms of leftward movement and V'-reanalysis

tries to explore a hidden link between P and C(omplementizer) with respect to stranding. To be concrete, this paper attempts to explain an asymmetry between leftward movement and rightward movement with respect to stranding. To be more specific, this paper attempts to answer the following questions:

- (3) a. Why is P-stranding allowed with leftward movement but not with rightward movement in English?
- b. Why is C-stranding not allowed in both leftward and rightward movement like Extraposition in English? (To be discussed in section 2.2.)
- c. Why are P- and C-stranding not allowed both in rightward and leftward movement in Korean/Japanese? (To be discussed in section 2.3)

II. More on Stranding

1. More on P-stranding

The same paradigm as in (2) can also be found in Right Node Raising and Gapping context (Sohn 1999):

- (4) Right Node Raising (RNR)
 - a. John wrote [a book on 9.11 terrorism] and Mary published [a paper on 9.11 terrorism].
 - b. What did John write [a book on ___] and Mary published [a paper on ___]?
 - c. *John wrote [a book on ___] and Mary published [a paper on

___], 9.11 terrorism.

- (5) Gapping (under movement analysis)
- a. Bill talked [about Sue] and John talked [about Mary].
- b. *Bill talked [about ___] Sue and John <talked [about ___]> Mary.

- (4) shows that leftward movement (Across-the-Board *Wh*movement) allows P-stranding, while rightward movement (RNR) does not. (5) also supports the generalization under the understanding of Gapping as a combination of rightward movement plus deletion (Abe and Hoshi 1997).

A careful attention must be paid to other English examples, which challenge the simple generalization that English allows P-stranding with respect to leftward movement. According to Huddleston and Pullum (2002:630-631), English has a few constructions in which P-stranding is "inadmissible or disfavored." These include a case in which PP is in adjunct function. This invites the attention of the present study: ²⁾

2) Also see Ross (1969), Chung et al. (1996), Lasnik (2005) for the same observation. The following examples are also reported in Lasnik (2005) for example:

- (i) a. Under what circumstances will the moon implode?
b. *What circumstances will the moon implode under?

The above data show that pied-piping is sometimes required even in English. Short and frequent questions, however, are more acceptable than the above examples, even though the PP is used in adjunct function (Hudson and Pullum 2002).

- (ii) a. What year_i were you born in t_i?
b. In what year_i were you born t_i?

- (6) a. *What circumstances_i would you do such a thing under t_i?
b. Under what circumstances_i would you do such a thing t_i?
- (7) a. ?That was the party which_i we met at t_i.
b. That was the party at which_i we met t_i.

(6–7) demonstrate that even in English, some instances of P–stranding are not allowed.

In German (and Romance languages as well), P–stranding is not allowed in canonical sentences (Merchant 2001, Law 2006, among others):

- (8) a. Von was_i redest du t_i?
from what talk you
'About what are you talking?'
- b. *Was_i redest du von t_i?
what talk you from
'What are you talking about?'
- (9) a. Mit wem_i hat sie gesprochen t_i?
with whom have you spoken
'With who did you speak?'
- b. *Wem_i hat sie mit t_i gesprochen?
whom have you with spoken
'Who did you speak with?'

What makes the paradigm more intricate in this regard is that ungrammatical strings due to P–stranding are not repaired even by ellipsis in German (Merchant 2001).

- (10) a. Anna hat mit jemanden gesprochen, aber ich weiß nicht [mit wem]_i <Anna hit ~~t_i~~ has with someone spoken but I know not with who gesprochen>.
 ‘Anna has spoken with someone, but I don’t know with who.’
 b. *Anna hat mit jemanden gesprochen, aber ich weiß nicht [wem]_i <Anna hit mit ~~t_i~~ gesprochen>.
 ‘Anna has spoken with someone, but I don’t know who.’

According to Merchant (2001), the example (10a) is in clear contrast to (8b). Even if the illicit part of the string is deleted, the sentence does not get better.³⁾

What about English? Since English generally allows P-stranding, canonical sentences are out of question in allowing stranded prepositions in elliptical contexts:

- (11) a. John danced with someone, but I don't know with who_i <John danced ~~t_i~~>.
 b. John danced with someone, but I don't know who_i <John danced ~~with t_i~~>.

Discrepancy, however, arises with PPs in adjunct function. In these examples, P-stranding is salvaged by deleting the illicit part. The following English sluicing data in fact show that P-stranding is in fact forced (Chung et al. 1995, Lasnik 2005).

- (12) a. *The moon will implode under certain circumstances, but I'm not sure exactly under what circumstances_i <the moon will implode ~~t_i~~>.

3) This contrasts with Korean cases, where illicit P-stranding is repaired by ellipsis, which will be discussed in section 2.3.

- b. The moon will implode under certain circumstances, but I'm not sure exactly what_i (circumstances) ~~<the moon will implode under t_i>~~.
- c. *This theory is surely right in some sense, it's just not clear exactly in what sense_i ~~<this theory is surely right t_i>~~.
- d. This theory is surely right in some sense, it's just not clear exactly what_i (sense) ~~<this theory is surely right in t_i>~~.

Compare (12) to (10). Differently from (10a), (12a) shows that pied-piping is not allowed in English ellipsis contexts in contrast to (12b).

2. C-stranding

Now, let us consider C-stranding examples. As was discussed by many researchers, TP is allegedly immobile (Abels 2003, Doherty 2001, Wurmbrand 2004, Chomsky 2006, to name a few). Look at the following English data:

- (13) a. Everybody believes fervently [that John is a fool].
 - b. [That John is a fool] is believed fervently by everybody.
 - c. *[John is a fool] is believed fervently [that] by everybody.
- (14) a. Mary told herself [that John is a fool] at least twice a day.
 - b. [That John is a fool], Mary told herself at least twice a day.
 - c. *[John is a fool], Mary told herself [that] at least twice a day.
- (15) a. Frank saw a play yesterday [that was long and boring].⁴⁾

4) The following example can be added to the paradigm:

b. *Frank saw a play [that] yesterday [was long and boring].

It looks like the complementizer *that* is different from prepositions with respect to stranding. *That* cannot be stranded by the movement of TP to either direction. As for (13) and (14), the whole *that*-clause (CP) can move to the front by leftward movement such as passivization and topicalization. However, TP alone cannot move, leaving *that* behind. (15) shows that *that* cannot be stranded by rightward movement like extraposition, either.⁵⁾

The discussion so far can be summarized in the table below:

(16) P-stranding and C-stranding (English)

	P-stranding		C-stranding	
	Leftward	Rightward	Leftward	Rightward
Canonically	Yes/No ⁶⁾	No	No	No
Repaired by ellipsis?	N/A	No ⁷⁾	-	-

(i) *Frank saw a play yesterday [was long and boring].

This shows that a covert or null complementizer also cannot be stranded. Readers are referred to Bošković and Lasnik (2003) and Kim (2006).

5) It is reported that Right Node Raising allows C-stranding in English:

(i) John says that ___ and Mary believes that [Bill is an idiot].

Since speaker judgment varies regarding this example, I would like to set this aside from the discussion of the present study.

6) No=not allowed, leads to ungrammaticality; Yes=allowed, leads to grammaticality; N/A=irrelevant, because English allows P-stranding with respect to leftward movements.

7) A relevant example would be something like this:

(i) *I talked <to ___> about Johnnie's problems all of the teachers.

Even though the stranded P is deleted, the sentence is not repaired. We set

3. P/C-stranding in Korean

Let us now consider Korean examples:

- (17) a. [Swunhi-etayhay]_i, Chelswu-ka t_i iyakihayssta.
 -about -nom talked
 'About Swunhi, Chelswu talked.'
- b. *Swunhi_i, Chelswu-ka t_i-etayhay iyakihayssta. [Scrambling]
 -nom -about talked
 'Swunhi, Chelswu talked about.'

Scrambling does not allow P-stranding as in (17b). Similar facts are attested with respect to complementizers:

- (18) a. Chelswu-nun [Yenghi-ka pap-ul mekessta-ko] sayngkakhanta.
 -top -nom meal-acc ate-comp think
 'Chelswu thinks that Yenghi ate meal.'
- b. *[Yenghi-ka pap-ul mekessta] Chelswu-nun -ko
 sayngkakhanta.[Left dislocation]
- c. *Chelswu-nun -ko sayngkakhanta [Yenghi-ka pap-ul
 mekessta]. [Right dislocation]

The complementizer *-ko* in Korean is optional in canonical sentences. If it is stranded by the movement of its complement clause, however, the whole string turns out to be bad due to the stranded complementizer *-ko*, whether the movement is leftward or rightward.

What is interesting about P-stranding is that ungrammatical strings due to P-stranding can be repaired when they are put in ellipsis contexts.

aside this example in this paper

- (19) a. *Chelswu-ka nwukwunka-eytayhay iyakihayssuntay, na-nun
 nwukwui Chelswu-ka
 -nom someone-about talked-but I-top who -nom
 t_i-eytayhay iyakihayssn-unci molla.
 about talked-whether do-not-know
 'Chelswu talked about someone, but I don't know who Chelswu
 talked about.'
- b. Chelswu-ka nwukwunka-eytayhay iyakihayssnuntay, na-nun
 nwukwu_i <~~TP~~Chelswu-ka
 -nom someone-about talked-but I-top who -nom
 t_i-eytayhay iyakihayssn>-inci molla.
 about talked-whether do-not-know

(19a) is bad due to the stranded postposition *-eytayhay* 'about' as in (17b). This deviancy is repaired if the remnant TP is deleted under sluicing as shown in (19b). P-stranding is repaired by deleting a string that contains the stranded postposition, differently from the German examples given in (10b).

Contrastively, C-stranding is not repaired even if the stranded complementizer is deleted (Abe and Hoshi 2006).

- (20) a. ?*[Yenghi-ka pap-ul mekessta] Chelswu-nun <←ko>
 sayngkakhanta. [Left dislocation]
- b. *Chelswu-nun <←ko> sayngkakhanta [Yenghi-ka pap-ul
 mekessta]. [Right dislocation]

(20) shows that C-stranding cannot be repaired regardless of whether it is due to leftward or rightward movement. With data from (17) through (18) alone, postpositions and complementizers look similar syntactic

behavior with respect to stranding. Discrepancy between them, however, arises in a more diverse syntactic context involving deletion/ellipsis.

The discussion of this section can be summarized as follows:

(21) P-stranding and C-stranding (Korean)

	P-stranding	C-stranding
Canonically	No	No
Repaired by ellipsis?	Yes	No

P-stranding is disallowed in Korean. Ungrammatical strings, however, can be repaired by ellipsis, if their ungrammaticality is due to stranded Ps. In ellipsis contexts, if stranded Ps are deleted along with the containing TP, the whole derivation (or representation) is repaired and becomes a licit one. Canonically, C-stranding is also disallowed, whether the stranding is due to leftward movement or rightward movement. Even if stranded Cs are deleted, however, a deviant representation or derivation is not repaired. Why do they behave differently with respect to repair by ellipsis strategy?

4. Abe and Hoshi (1997)

In an attempt to suggest a leftward movement analysis of Gapping in Japanese, Abe and Hoshi (1997) claim that P-stranding is allowed at LF for leftward movement in Japanese but it is not for rightward movement. For English, they buy the view that the Gapping example (22a) below is derived by rightward movement of PP and the subsequent IP deletion as represented in (22b):

(22) a. John talked about Bill and Mary about Susan.

- b. [_{IP} John₁ [_{IP} [_{IP} t₁ talked t₂] [about Bill]₂]] and
 [_{IP} Mary₁ [_{IP} <~~_{IP} t₁ talked t₂~~> [about Susan]₂]].

Their analysis is inspired by Jayaseelan (1990), who concludes English Gapping involves rightward movement in the same way as Heavy NP Shift does. With respect to the major concern of the present paper, both HNPS and Gapping in English conforms to the same restriction on the ban on P-stranding:

- (23) a. [The man I recently met]_i I talked about t_i yesterday.
 b. *I talked about t_i yesterday [the man I recently met]_i.
 c. ?*John talked about Bill and Mary Susan.

As has been confirmed in the previous discussion, (23a) shows that leftward movement (Topicalization here) is allowed with a preposition left behind; while (23b) shows that P-stranding is not allowed when the movement is rightward, e.g., HNPS. (23c) shows that P-stranding is not allowed with respect to rightward movement even though the stranded P is deleted along with the whole IP:

- (24) [_{IP} John₁ [_{IP} [_{IP} t₁ talked about t₂] Bill]₂]] and
 [_{IP} Mary₁ [_{IP} <~~_{IP} t₁ talked about t₂~~>] Susan₂]].

To explain the difference between English and Japanese Gapping examples, they propose a leftward movement analysis for Japanese Gapping. Below are the Korean counterparts of their Japanese examples:

- (25) a. John-i Bill, kuliko Mary-ka Susan-eytayhay malhayssta.
 [Korean mine]

- nom and -nom -about talked
 'John talked about Bill, and Mary Susan.'
- b. Harry-ka uymilon, kuliko Alfonse-ka thongsalon-ul kongpwuhanta.
 -nom semantics and -nom syntax-acc study
 'Harry studies semantics, and Alfonse syntax.'
- c. John-ka ilen iyu, kuliko Mary-ka celen iyu-lo haykotoyssta.
 -nom this reason and -nom that reason-for was-fired
 'John was fired for this reason and Mary that reason.'
- d. Harry-ka Mary, kuliko John-i Susan-ul mannasstako sayngkakhanta.
 -nom and -nom -acc met-C think
 'Harry thinks that he met Mary, and John Susan.'

According to them, (25a) has the following representation:

- (26) [_{IP} John-i [_{I'} Bill <[_{I'} [_{PP} t₁-eytayhay] manlhayssta>]], kuliko [_{IP} Mary-ka [_{I'} Susan1 [_{I'} [_{PP} t₁-eytayhay] manlhayssta]]].

In (26) *Susan* moves leftward leaving the P *-eytayhay* behind under the movement analysis of Gapping. Since leftward movement allows P-stranding (at LF), (26= 25a) turns out to be grammatical in contrast to the ungrammatical English counterpart in (23c).

Their analysis, however, can be criticized at least in the following three respects. First, they do not provide the motivation for LF movement of *Susan* (and of *Bill* as well before deletion). If it is unclear about why LF movement has to occur in (26), then their argument is evidently weakened. Second, P-stranding can hardly be an LF phenomenon. That is,

P-stranding belongs to a PF or a narrow syntax, which does not have much to do with semantic significance. If grammaticality varies up to the direction of movement which results in stranding, then the possibility that P-stranding would not belong to LF is evident. Third, they do not explain why P-stranding due to leftward movement is allowed while that due to rightward movement is not at LF. This is nothing but a stipulation without evidence that the other way round is not true. In other words, they have yet to explain why P-stranding due to rightward movement is not allowed. In addition, there is no compelling evidence that Japanese (and Korean) Gapping involves a leftward movement followed by remnant I' deletion other than the data they discuss. In the next section, a novel analysis will be proposed which does not bear LF P-stranding problems and at the same time can capture the syntactic behavior of both P and C with respect to the directionality of movement.

III. A Phase Extension Analysis

1. Assumptions

The new analysis is based on the phase extension, originally proposed by den Dikken (2006, 2007). The phase extension is defined as follows:

- (27) Syntactic movement of the head H of a phase α up to the head X of the node β dominating α extends the phase up from α to β : α loses its phasehood in the process, and any constituent on the edge of α ends up in the domain phase β as a result of phase extension.

The gist of phase extension is that phasehood can be extended if the head H of a phase raises to a higher head X: once phasehood is extended to XP, then HP ceases to be a phase. To take an example, consider the object shift in from Scandinavian in (28):

- (28) a. jag kysste henne inte
 I kissed her not
 b. at jag *henne inte kysste <henne>
 that I her not kissed her

In contrast to (28a), (28b) is bad since the object has shifted out of VP while V stays in situ (Holmberg's Generalization).⁸⁾ According to den Dikken (2006), phasehood is extended to the projection of its host head by raising the verb out of vP. This triggers one fell-swoop movement of the object over the base subject position. This is schematically represented in the following:

- (29) a. [_{XP} X+[_v+_V_i]_j [_{vP} [_{DP} SUBJECT] [_t_j [_{VP} _t_i [_{DP} OBJECT]]]]]
 (Φ = phase)
 Φ ←———— (Φ)
 b. [_{XP} [_{DP} OBJECT]_k X+[_v+_V_i]_j [_{vP} [_{DP} SUBJECT] [_t_j [_{VP} _t_k]]]]]
 Φ

(29) explains why (28a) is grammatical. The derivation of (28a)

8) To explain the difference, Fox and Pesetsky (2005) proposes that linear ordering is constrained by the Linearization Preservation: The linear ordering of syntactic units is affected by Merge and Move within a Spell-out Domain, but is fixed once and for all at the end of each Spell-out Domain. Here Spell-out Domain is roughly understood something that is almost the same as Chomsky's notion of phase (Ko 2007).

violates no constraints in that the movement of object does not cross a phase boundary. (28b) is ungrammatical because [$v+V$] does not raise to X out of vP. This will keep vP as a phase. The extraction out of vP from a non-edge position violates the Phase Impenetrability Condition (PIC), which is defined below: ⁹⁾

(30) Phase Impenetrability (den Dikken 2006)

Syntactic relationship (Agree) and processes (Move) are constrained by the Phase Impenetrability Condition (PIC) of Chomsky: in phase α with head H, the domain is not accessible to operations outside α , only H and its edge are accessible to such operations.

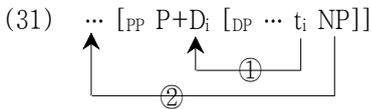
As is well-known, the PIC does not allow a complement to move from within a phase unless it happens to stay at the edge.

2. P-stranding under phase extension

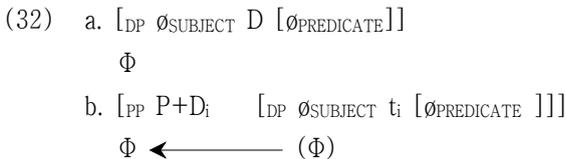
Under this phase extension proposal, P- and C-stranding and their relationship with the directionality of relevant movements boil down to the matter of head to head movement and subsequent phase extension. If a phase is extended, movement out of it would be banned if the movement is not from an edge position. If a head does not move up to a higher head, then the phase is not extended and therefore movement will be allowed out of PP, which is not a(n extended) phase.

9) As was noted by Robert (2007:59), den Dikken (2006) bears a problem. "It is not clear what forces the subject as opposed to the object to raise to TP (XP, here), yielding an O-V-S ordering. If the subject and the object are counted as equidistant from T, then the object has no reason why it has not been raised by T(+v+V).

For the structure of PP, the present paper adopts Law's (2006) D to P incorporation analysis. According to him, D can incorporate with P inside PP. P-stranding results when D does not incorporate into P. If D incorporates into P, P-stranding is not allowed. He claims that if D is raised up into P as shown in ①, then the extraction of NP is not possible, as shown in ②.



He does not, however, explain why D to P incorporation bleeds NP movement out of PP. This paper proposes that this is because PP becomes a phase due to phase extension. Suppose DP is intrinsically predicational in the sense of Chomsky (1970); therefore, it is a phase according to den Dikken (2006, 2007).¹⁰⁾ By raising a phase head D to P, phasehood is extended to PP under phase extension.



If this is the case, then no DP (or NP) is predicted to be extractable out of PP due to the PIC. Since DP is not at the edge of PP, the PIC would prevent the extraction from a non-edge position. So, there is no way for DP to escape out of PP in (32b). One may argue that if DP moves first to

10) It is very important to note that den Dikken's (2006) definition is not based on proposition but on predication. Note also that CP is not a phase unless it inherits phasehood from TP by extension.

Spec-PP after incorporation, extraction out of PP is would be allowed without violating the PIC. This option, however, is not available since the movement is too local. The movement of a complement to its Spec is judged to be too local to be allowed (Abels 2003, cf. Grohmann 2003).¹¹⁾ If D does not incorporate into P, DP is free to move since PP is not an inherent phase.

3. Movement and Stranding

Now, why may leftward movements leave a preposition behind, while rightward movement may not in English? The answer lies in the possibility of D to P incorporation in PP. The answer of the present paper is that D does not incorporate with P in English in general. This is understandable in that English has no amalgamated D+P forms which could be found in some European languages which do not allow P-stranding:

(33) P+D suppletive forms:

- a. French: *au* = *le* 'to the', *aux* = *les* 'to the', etc.
- b. Italian: *al* = *a il* 'to the', *alla* = *a la* 'to the', etc.
- c. German: *am* = *an dem* 'at/by the-mas/neu-dat', *ans* = *an das*

11) Grohmann (2003) provides a little different version of anti-locality.

- (i) Anti-locality Condition
Movement within a Prolific Domain is ruled out.
- (ii) Prolific Domain
 - a. Θ -Domain (VP/vP)
 - b. Φ -Domain (IP and its articulation)
 - c. Ω -Domain (CP and its articulation)

This is a reflection of a generally agreed thesis that movement of a complement to Spec is too local to be allowed. So, the present paper assumes that both Abels (2003) and Grohmann (2003) shares the same view against anti-locality.

'at/by the-neu-acc', etc.

d. English: **to-the*, * *at-the*, * *by-the*, ...

If there is no D to P incorporation, phasehood is not extended to PP. So, the movement of the whole DP out of PP is possible without the PIC in operation.

With respect to rightward movements, however, the present study assumes that D incorporates with P. This is not improbable when we consider that usually heavy NPs move rightward. Strictly speaking, what is heavy is actually an NP rather than the whole DP since their difference is dependent on the addition of D, which is a light functional category. Let us assume that heaviness is a relative notion in that when NP is heavy then the selecting D is light, and when NP is not heavy then the selecting D is also not light. It is natural to assume that light categories incorporate with higher categories as auxiliary verbs raise up to tense while main verbs do not in English. This is in fact attested in the following examples where PP functions as an adjunct:

- (34) a. The moon will implode under a certain circumstances.
 b. *What_i circumstances will the moon implode under t_i?

Even though English generally allows P-stranding with respect to leftward (*wh*-)movement, (34b) is bad. According to the present analysis, this is because [_{NP} what circumstances] is relatively heavier than its selecting D so that the D incorporates with the preceding P (as in European examples given in 33). This incorporation results in phase extension to PP and the extraction out of its complement would be banned due to the PIC. Interestingly, short and frequent questions are more acceptable than the above examples, even though the PP is used in adjunct

function (Hudson and Pullum 2002).

- (35) a. What year_i were you born in t_i?
 b. In what year_i were you born t_i?

This is explicable under the present analysis in that short questions have relatively not so heavy an NP such that its selecting D does not incorporate with the higher P.

A possible objection to the present analysis would be that D to P incorporation is implausible in that it is not morphologically attested in English. However, morphological realization is not a necessary condition for incorporation. In reality, this view is supported by Enç's (1987) analysis of "spontaneous reading":

- (36) John heard that Mary was pregnant.

(36) has a couple of meanings in that Mary's pregnancy can be identical or prior to John's hearing of it. This can be understood in terms of the following representation:

- (37) John_j heard_j+that_i [_{CP} t_i [_{TP} Mary t_i was pregnant]].

Even though no C to V amalgamation is morphologically attested in English, there is a need to admit that such incorporation is actually necessary. According to Enç, *that* moves and incorporates with *heard* in (37). This results in [*heard_j+that_i*] amalgamation, which happens to have a couple of time indices, *i* and *j*. This is why (34) has two time/tense interpretations including a simultaneous reading.¹²⁾

12) As a reviewer comments, this C to V amalgamation needs morphological evidence. Readers are referred to Kim (2008) for more discussion.

Now let us consider the ban on P-stranding in Korean. Recall that P-stranding is not allowed whether the related movement is leftward or rightward. For this let us suppose D raises and incorporates with P in Korean PPs. If this happens, phasehood is extended from DP to PP. This will keep the extraction out of PP due to the PIC. D to P incorporation in Korean is motivated by the fact that no morphological insertion is allowed between D and P.

- (38) a. Chelswu-ka Swunhi-eytayhay iyakihayssta.
 -nom -about talked
 'Chelswu talked about Swunhi.'
 b. *Chelswu-ka Swunhi ecey -eytayhay iyakihayssta.
 -nom yesterday -about talked
 'Chelswu talked yesterday about Swunhi.'

Before leaving the discussion on P-stranding, recall that Abe and Hoshi (1997) argues that P-stranding is universally allowed for leftward movement but not for rightward movement at LF in the least.

- (39) John-i Bill, kuliko Mary-ka Susan-eytayhay malhayssta.
 [Korean mine] (=24)
 -nom and -nom -about talked
 'John talked about Bill, and Mary Susan.'
 (40) [_{IP} John-i [_{I'} Bill <_{I'} [_{PP} t_I-eytayhay] manlhayssta >]], kuliko
 [_{IP} Mary-ka [_{I'} Susan1 [_{I'} [_{PP} t₁-eytayhay] manlhayssta]]]

They argue that Susan undergoes leftward movement and adjoins to I'. In (40), *-eytayhay* 'about' is stranded under their movement analysis of Gapping. However, their conclusion would face difficulty in explaining a

sentence like the following. Although *onul* 'today' is adjoined to Γ , (41) would be incorrectly predicted to be good to them:

- (41) *John-i Bill-eytayhay ecey, kuliko Mary-ka [Γ Susan [Γ onul [Γ [$_{PP}$ __-eytayhay] malhayssta]]].
 -nom yesterday and -nom today
 'John talked about Bill yesterday, and Mary Susan today.'

This argues that the present analysis is superior to their stipulation that P-stranding is allowed at LF in Japanese (and Korean).

4. C-stranding

The same analysis that has been proposed to deal with P-stranding can also hold for C-stranding in English. That is, T to C movement or incorporation does not allow the movement of TP leaving *that* behind, whether it is rightward or leftward. This is understandable if it is assumed that T to C movement is an obligation as is argued by Roberts and Roussou (2001), Roussou (2002), and Pesetsky and Torrego (2004), among others. If this is true, then exactly the same explanation holds also for the ban on C-stranding in Korean. Let us reproduce the relevant examples below:

- (42) a. Chelswu-nun [Yenghi-ka pap-ul mekessta-ko] sayngkakhanta.
 (=18)
 -top -nom meal-acc ate-comp think
 'Chelswu thinks that Yenghi ate meal.'
 b. *[Yenghi-ka pap-ul mekessta] Chelswu-nun -ko sayngkakhanta.
 [Left dislocation]

- c. *Chelswu-nun -ko sayngkakhanta [Yenghi-ka pap-ul mekessta]. [Right dislocation]

Whether the dislocation is rightward or leftward, C-stranding is not allowed. T to C movement or incorporation blocks the movement of TP leaving *-ko* behind. By the definition of phase extension, phasehood is extended from TP to CP. Then the extraction of TP is not admissible, for the TP is the complement of the CP phase. Its extraction leads to a violation of the PIC. This is illustrated below:¹³⁾



Why does English not allow *that*-stranding at all? As readers might have noticed already, this is because T moves to C and this extends phasehood from TP to CP. Then TP alone cannot move, whether it is rightward or leftward, leaving *that* behind without violating the PIC. This explains the examples given in (13) through (15).

5. Reparability

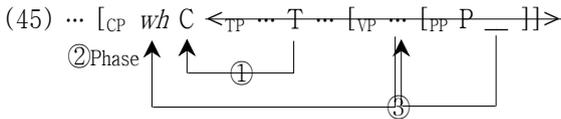
As has been discussed before, some instances of P-stranding in English and Korean can be repaired while other instances of P- and C-stranding cannot, across languages. Non-reparability comes the generalization that the violation of derivational constraints cannot be repaired (Merchant 2001). Since the PIC is a derivational constraint, not representational, its violation cannot be repaired whether it is due to P- or C-stranding. Then

13) Note that this analysis is actually provides an answer to why "headless" TPs are immobile (Wurmbrand 2004).

why are some instances repaired? The relevant examples are reproduced below:

- (44) a. The moon will implode under certain circumstances, but I'm not sure exactly what_i (circumstances) ~~<the moon will implode under t_i>~~. (=12b)
- b. Chelswu-ka nwukwunka-eytayhay iyakihayssnuntay, na-nun nwukwui <_{TP} Chelswu-ka -nom someone-about talked-but I-top who -nom ti-eytayhay iyakihayssn>-inci molla. (=19b)
 about talked-whether do-not-know

Under the phase extension analysis, the relevant part of the representation would be something like the following:



According to the phase extension theory, if T, a phase head, incorporates into C, then, TP loses its phasehood and in turn CP inherits the TP's phasal status. This is marked as the number ① and ② in (45). The next step shown in ③ is of no problem since the movement is done within a phase. This does not violate the PIC or whatever. This explains why (44b) is grammatical.

The same explanation also holds for the Korean example. If T incorporates into C, then CP becomes a phase while TP loses its phasehood. The movement inside CP, which is a phase, would be allowed without violation of the PIC. After that, TP is deleted resulting in a

grammatical string like (44b).¹⁴)

IV. A Note on Multiple Sluicing

Recently, Lasnik (2006) suggests that the following multiple sluicing examples involve both leftward and rightward movement.

- (46) a. I know that in each instance one of the girls got something from one of the boys.
?But which from which.
- b. I know that in each instance one of the girls got something from one of the boys.
?But they don't tell me which from which.

Taking similarity with rightward movement as evidence, Lasnik (2006) concludes that the second *wh* of English multiple sluicing results from rightward movement, while the first is due to leftward movement. One salient property of multiple sluicing in English, which invites attention of the present study is that the second *wh* strongly favors a PP rather than an simple NP.

- (47) a. ?Someone talked about something, but I can't remember who about what.

14) One objection might be that the extraction out of PP inside TP would violate the PIC since D incorporates with P inside PP. For this, this paper relies on Lasnik's (2005) division of PPs in terms of feature percolation. According to him, the difference between languages that do and do not allow P-stranding is whether the *wh*-feature can or must percolate from DP to immediately dominating PP.

b. ?*Someone saw something, but I can't remember who what.

- (48) a. ?Mary showed something to someone, but I don't know exactly what to whom.
 b. ?*Mary showed someone something, but I don't know exactly who what.

To take care of this contrast, Lasnik (2006) suggest that the second *wh* moves rightward out of TP, for rightward movement does not allow P-stranding in general. Lasnik (2006), however, does not explain the reason why the second *wh* must be a PP rather than a simple NP. In fact, P-stranding is not allowed in English multiple sluicing.

- (49) a. *Someone talked about something, but I can't remember who what.
 b. *Mary showed something to someone, but I don't know exactly what who.
 c. *Some linguists spoke about some paper on sluicing, but I don't know which linguists which paper on sluicing.

The present paper provides a parallel analysis to the bad sluicing examples in (49) with those that result from P-stranding due to rightward movement. (49c), for example, would have the following representation:

- (50) ... know which linguist_i <~~TP~~ [~~which linguist_i]~~ spoke [~~PP~~ about [~~which paper on sluicing_j]]]> which paper on sluicing_j.~~

This is not allowed since PP is an extended phase due to D to P incorporation, and the extraction out of it would result in the violation of

the PIC. One might say (48) must be allowed since it has been repaired by deleting the stranded P. This, however, would be rebuked by Merchant (2001), who argues that P-stranding cannot be repaired by deletion.¹⁵⁾

Park (2007) argues for the existence of Korean multiple sluicing, taking the following as examples:

- (51) A: Nwukwunka-ka nwukwunka-eytayhay malhaysse.
 Someone-nom someone-about said
 'Someone talked about someone.'
- B: a. ??Nwuka nwukwu?
 Who-nom who
 b. Nwuka mwue-eytayhay?
 Who-nom who-about

Differently from him, (51Ba) is a little awkward to me (and other Koreans, too), though (51Bb) is perfect. If this is true, then they can be explained under the same rubric. (51Bb) is of no problem since the whole PP moved rightward. (51Ba), however, is awkward, since DP movement would violate the PIC due to phase extension via D to P incorporation. This is schematically represented below:

- (52) a. ... [_{PP} <nwukwu_i>-eytayhay] nwukwu_i (PP = phase)
 b. ... [_{PP} <nwukwu-eytayhay_i>] nwukwu-eytayhay_i (P P
 ≠ phase)

15) See Ameida and Yoshida (2007) against Merchant's (2001) generalization. They argue that Brazilian Portuguese VP ellipsis examples do not fit into his generalization.

V. Conclusion

So far, this paper has tried to do the following tasks raised in the introduction.

- (53)
- a. To explain why P-stranding is allowed in leftward movement but not in rightward movement in English
 - b. To explain why C-stranding is not allowed in both left and rightward movement like Extraposition in English.
 - c. To explain why P- and C-stranding are not allowed both in right and leftward movement in Korean/Japanese.

For the three tasks, one and the same answer could be possible on the basis of phase extension under the assumption that D to P incorporation or T to C raising occurs inside PP and CP respectively. If D incorporates to P, PP becomes a phase. Then, the extraction of DP out of PP would violate the PIC. In the same way, if T raises to C, then CP becomes a phase, then the extraction out TP over CP boundary would also result in the violation of the PIC. The present paper also deals with the reason why some instances of stranding are repaired but others cannot. In addition, a special requirement of the second *wh* in multiple sluicing in English that it must be a PP is explained in the same way as a result of D to P incorporation and subsequent phase extension to PP.

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Abstract

On the Directionality of Movement and Its Relationship to Stranding

Sun-Woong Kim

This paper attempts to give a new analysis of (preposition) stranding in terms of phase extension which has been originally proposed by den Dikken in his series of recent papers (2006, 2007, and 2008). In doing so, this paper tries to explore a hidden link between P(reposition) and C(omplementizer) with respect to stranding. In particular, this paper is focused on the asymmetry between leftward movement and rightward movement with respect to stranding. To be more specific, this paper attempts to answer the following questions. Why is P-stranding allowed with leftward movement but not with rightward movement in English? Why is C-stranding not allowed in both leftward and rightward movement like Extraposition in English? And why are P- and C-stranding not allowed both in rightward and leftward movement in Korean and Japanese?

It is widely known that English allows P-stranding in general. In this regard, canonical sentences are out of question in allowing stranded prepositions in elliptical contexts. Discrepancy, however, arises with PPs in adjunct function. In those examples, P-stranding is salvaged by deleting the illicit part. Some English sluicing data in fact show that P-stranding is in fact forced: some examples show *that* pied-piping is not allowed in English ellipsis contexts. Regarding C-stranding, it looks like the complementizer *that* is different from prepositions with respect to stranding. *That* cannot be stranded by the movement of TP to either

direction. In principle, the whole *that*-clause (CP) can move to the front by leftward movement such as passivization and topicalization. However, TP alone cannot move leaving *that* behind. The fact is that *that* cannot be stranded by rightward movement like extraposition, either.

P-stranding is disallowed in Korean at all. Ungrammatical strings, however, can be repaired by ellipsis if their ungrammaticality is due to stranded Ps. In ellipsis contexts, if stranded Ps are deleted along with the containing TP, the whole derivation (or representation) is repaired and becomes a licit one. Canonically, C-stranding is disallowed, whether the stranding is due to leftward movement or rightward movement. Even if stranded Cs are deleted, however, a deviant representation (or derivation) is not repaired.

For these findings, one and the same answer turns out to be possible on the basis of phase extension under the assumption that D to P incorporation or T to C raising occurs inside PP and CP, respectively. If D incorporates with P, then PP becomes a phase, the extraction of DP out of which would violate the PIC. In the same way, if T raises to C, then CP becomes a phase, then the extraction out TP over CP boundary would also result in the violation of the PIC. The present paper also deals with the reason why some instances of stranding are repaired but others cannot. In addition, a special requirement of the second *wh* in multiple sluicing in English that it must be a PP is explained in the same way as a result of D to P incorporation and subsequent phase extension to PP.

Keywords : preposition stranding (P-stranding) complementizer stranding (C-stranding), phase extension, ellipsis, reparability
전치사좌초, 보문자좌초, 국면확대, 생략, 복원

논문접수일: 2008. 11. 19

심사완료일: 2008. 12. 12

게재확정일: 2008. 12. 15

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