to appear in *Oxford Research Encyclopedia of Linguistics*
draft on June, 2017

Scrambling in Korean Syntax

Heejeong Ko
Seoul National University

Summary. Scrambling is one of the most widely discussed and prominent factors affecting word order variation in Korean. Scrambling in Korean exhibits various syntactic and semantic properties that cannot be subsumed under the standard A/A'-movement. Clause-external scrambling as well as clause-internal scrambling in Korean show mixed A/A'-effects in a range of tests such as anaphor binding, weak crossover, Condition C, negative polarity item licensing, *wh*-licensing, and scopal interpretation. VP-internal scrambling, by contrast, is known to be lack of reconstruction effects conforming to the claim that short scrambling is A-movement. Clausal scrambling, on the other hand, shows total reconstructions effects, unlike phrasal scrambling. The diverse properties of Korean scrambling have received extensive attention in the literature. Some studies argue that scrambling is a type of feature-driven A-movement with special reconstruction effects. Others argue that scrambling can be A-movement or A'-movement depending on the landing site. Yet, others claim that scrambling is not standard A/A'-movement, but must be treated as cost-free movement with optional reconstruction effects. Each approach, however, faces non-trivial empirical and theoretical challenges, and further study is still needed to understand the complex nature of scrambling. As the theory develops in the Minimalist Program, a variety of proposals have also been advanced to capture properties of scrambling without resorting to A/A'-distinctions.

Scrambling in Korean applies optionally but not randomly. It may be blocked due to various factors in syntax and its interfaces in the grammar. At the syntax proper, scrambling obeys general constraints on movement (e.g. island conditions, left branch condition, coordinate structure condition, proper binding condition, ban on string vacuous movement). Various semantic and pragmatic factors (e.g. specificity, presuppositionality, topic, focus) also play a crucial role in acceptability of sentences with scrambling. Moreover, current studies show that certain instances of scrambling are filtered out at the interface due to cyclic Spell-out and linearization, which strengthens the claim that scrambling is not a free option. Data from Korean pose important challenges against base-generation approaches to scrambling, and lend further credence to the view that scrambling is an instance of movement. The exact nature of scrambling in Korean - whether it is cost-free or feature-driven - must be further investigated in future research, however. The research on Korean scrambling leads us to the pursuit of a general theory, which covers obligatory A/A'-movement as well as optional displacement with mixed semantic effects in free word order languages.

Keywords. Korean, scrambling, A-movement, A'-movement, reconstruction, binding, islands, cyclic linearization, free word order.

1. Scrambling in Korean

Korean exhibits a wide range of flexibility in word order and provides a rich set of data that can be used to investigate word order variations in depth. As described in (1a), the canonical ordering of a transitive clause in Korean is the Subject-Object-Verb (SOV) order. The object, however, may also precede the subject (OSV), as in (1b). Since Ross (1967), the term *scrambling* has been employed as a cover term to describe optional order variations such as (1b). In Korean, not only the object but also other phrases such as the subject, the indirect object, clausal arguments, and certain types of adjuncts may be scrambled to non-canonical position, and more than one constituent may be scrambled in a sentence. Scrambling in Korean is possible across a clausal boundary as well as within a clause.

(1) a. John-i **sakwa-lul** mek-ess-ta. [canonical ordering]
J.-Nom apple-Acc eat-Past-Dec
'John ate an apple.'

b. **sakwa-lul** John-i mek-ess-ta. [object scrambling]
apple-Acc J.-Nom eat-Past-Dec
'John ate an apple.'

The purpose of this article is to provide a brief introduction and review of word order variations in Korean, with special focus on leftward scrambling. In particular, three issues are examined: (i) what are the main characteristics of scrambling in Korean? (ii) which factors constrain scrambling in Korean? (iii) what makes scrambling possible in the grammar? Our discussion will be based on data from Korean, but reference to major works on other scrambling languages (e.g. German, Hindi, Japanese) will also be made in order to understand the theoretical import of Korean data from general linguistic perspectives.[1]

2. Different Types of Scrambling in Korean

Scrambling can be divided into three types depending on the length of dependency: (i) clause-internal scrambling, (ii) clause-external scrambling, and (iii) VP-internal scrambling. Section 2 examines defining properties of each type of scrambling in Korean. Some noteworthy differences between phrasal and clausal scrambling are also discussed in Section 2. Most previous studies reviewed in this section assume that scrambling is a type of movement. For ease of presentation, the same assumption is adopted in this article (but see section 4 for different approaches to formal properties of scrambling).

2.1 Scrambling and A/A'-diagnostics

It has been widely accepted in the literature that phrasal movement is categorized into two sub-types: A-movement and A'-movement (Chomsky 1981). A-movement typically targets the external subject position, SpecTP (e.g. passivization, subject-to-subject raising). A'-movement targets non-theta positions such as SpecCP and adjoined positions (e.g. *wh*-movement, topicalization). Each type of movement exhibits a range of different syntactic properties. The English examples in (2) and (3) illustrate this point. As shown in (2a), A-movement of *John and Mary* may establish a new binding relationship with *each other*. By contrast, A'-movement of *who* cannot create such a new binding relation, as demonstrated in (3a). The contrast between (2b) and (3b) shows that the pronominal *his* can be bound by the A-moved phrase *everyone*, but that such binding is impossible by the A'-moved phrase *who*. The ill-formedness of (3b) is known as *Weak crossover* (WCO, Postal 1971). The examples in (2c)

and (3c) illustrate that A'-movement obligatorily reconstructs, whereas A-movement is not required to do so (see Chomsky 1995, Fox 1999, Lasnik 1999, Takahashi and Hulsey 2009). *John* in (2c) may be interpreted at the A-moved position, but *John* in (3c) must be reconstructed to its base position after A'-movement, which results in Condition C violation.[2] Other diagnostics such as parasitic gap licensing and quantifier stranding are also employed to make the distinction of A- vs. A'-movement (Richards 2014 for an overview).

(2)*A-movement*

a.	[**John and Mary**]$_1$ seemed to **each other**$_1$ to be t_1 polite.	*anaphor binding*
b.	**Everyone**$_1$ seemed to **his**$_1$ mother to be t_1 smart.	*WCO effects*
c.	[**John**'s$_1$ father]$_2$ seems to **him**$_1$ to t_2 be polite.	*Condition C*

(3) *A'-movement*

a.	***Who**$_1$ did [**each other**'s$_1$ friends] speak ill of t_1?	*anaphor binding*
b.	?***Who**$_1$ does [**his**$_1$ mother] love t_1?	*WCO effects*
c.	*[**John**'s$_1$ brother]$_2$, **he**$_1$ likes t_2.	*Condition C*

A number of earlier studies (especially from the 80s to the late 90s) attempted to show that scrambling can be characterized on the basis of A/A'-distinction or by certain modifications of it (Saito 1985, 1989, 1992, Webelhuth 1989, Tada 1993, Mahajan 1990, Miyagawa 1997, 2001, Karimi 2005; see papers in Corver and van Riemsdijk 1994, Karimi 2003, Sabel and Saito 2005 for perspectives on scrambling). Korean scrambling adds some interesting and challenging data to this discussion (Cho 1994ab, 1996, Y. Lee 1993, 1994, Y.-H. Kim 1999, Jung 2002, R. Kim 2003, K. Lee 2003, Lee and Cho 2003a, Y. Choi 2004a, H. Lee 2006). A general consensus is that scrambling in Korean cannot be mapped into the "standard" dichotomy of A/A'-movement, and that a careful study is yet to be done to claim such a mapping.[3]

2.1.1 Clause-internal scrambling

For ease of presentation, the effects expected from A-movement are called A-effects, and the effects from A'-movement, A'-effects. The examples in (4)-(6) suggest that clause-internal scrambling in Korean exhibits A-effects, just like A-movement in English (2). As described in (4), the anaphor *selo* 'each other' can be licensed by scrambling of *kutul-ul* 'they-Acc', as seen with anaphor binding in (2a). The *wh*-phrase, *nwukwu-lul* in (5) may undergo scrambling to the left of a coreferential pronoun, *ku-uy apeci-ka* 'his father-Nom'. The grammaticality of (5) indicates that clause-internal *wh*-scrambling does not yield WCO effects, similar to A-movement shown in (2b). Moreover, it also demonstrates that *wh*-scrambling in Korean significantly differs from the *wh*-movement in English: the former is not sensitive to WCO effects, whereas the latter is. In (6), we also observe that scrambling of *ku-lul* 'he-Acc' creates a new binding relationship. *Minswu* in (6) is bound by the scrambled *ku-lul* and (6) is thus ruled out by Condition C. The evidence adduced in (4)-(6) thus seems to suggest that reconstruction does not occur after clause-internal scrambling in Korean, similar to A-movement in English.

(4) **kutul-ul**$_1$ [**selo-uy**$_1$ chinkwu-ka] t_1 kosohayssta. *anaphor binding*
they-Acc each-Gen friend-Nom sued
'Each other$_1$'s friends sued them$_1$.' (Cho 1994a: 101; cf. Mahajan 1990, Saito 1992)

(5) **nwukwu-lul**$_1$ [**ku-uy**$_1$ apeci-ka] t_1 silheha-ni? *WCO*
who-Acc he-Gen father-Nom dislike-Q
'Who$_1$ did his$_1$ father dislike t_1?' (Cho 1994a: 18; based on Mahajan 1990)

(6)* **ku-lul**$_1$ [**Minswu-uy**$_1$ pwumonim-i] t_1 pangmwunhayssta. *Condition C*
he-Acc M.-Gen parents-Nom visited
'Minswu's parents visited him.' (Y. Lee 1993: 37; cf. Cho 1996: 267 for different judgement)

Puzzling enough, however, scrambling in (7)-(10) exhibits the opposite pattern, showing A'-effects. As described in (7), the scrambled anaphor *caki* 'self' can be licensed by *ku-ka* 'he-Nom'. This means that the scrambled *caki* may be interpreted in its original position despite scrambling. The Condition C violation in (8) further shows that *Minho-uy emma-lul* 'Minho's mother' must be interpreted in its base position. If *Minho* could be interpreted in the scrambled position higher than *ku-ka* 'he-Nom', (8) would be acceptable, contrary to fact. Note that the ungrammaticality of (8) is in sharp contrast with English (2c), where A-movement bleeds the Condition C violation. Taken together, the data in (7)-(8) seem to indicate that scrambling does not create a new binding relationship like the A'-movement seen in (3). Ironically, this conclusion is the exact opposite from the one we drew from data in (4)-(6).[4]

(7) [**caki-uy**$_1$ atul-ul]$_2$ **ku-ka**$_1$ t_2 ttaylyessta. *anaphor binding*
self-Gen son-Acc he-Nom hit
'He$_1$ hit self's$_1$ son.' (Cho 1994b: 257; cf. Mahajan 1990, Saito 1992)

(8)* [**Minho-uy**$_1$ emma-lul]$_2$ **ku-ka**$_1$ t_2 cohahanta. *Condition C*
M.-Gen mother-Acc he-Nom like
'He likes Minho's mother.' (Y. Lee 1994: 523; cf. Mahajan 1990, Saito 1992)

Moreover, (9)-(10) illustrate that clause-internal scrambling over a (non-contrastive/theme) topic phrase shows consistent A'-effects (Cho 1994a). In (9), the object *John-ul* has undergone scrambling over the topic phrase *caki-uy sensayngnim-un* 'self's teacher-Top'. Interestingly, *John* in (9) cannot create new A-binding with respect to *caki*, and the sentence remains ungrammatical even after scrambling. This sharply contrasts with the grammaticality of (4), where scrambling feeds A-binding. In (10), the *wh*-phrase *nwukwu-lul* has undergone scrambling to the left of the topic phrase, *ku-uy atul-un* 'his son-Top'. Notably, this type of scrambling yields WCO effects, in contrast to (5). The ungrammaticality of (9)-(10) strongly suggests that scrambling over a topic phrase must be treated differently from the cases exemplified in (4)-(5) (cf. Cho 1994a: 122-135 for contrastive topics).

(9) ?* **John-ul**$_1$ [**caki-uy**$_1$ sensayngnim-un] t_1 ttaylyessta. *anaphor binding*
J.-Acc self-Gen teacher-Top hit
'As for John$_1$, self's$_1$ teacher hit him$_1$.' (Cho 1994a: 118, cf. (4))

(10) ?* **nwukwu-lul**$_1$ [**ku-uy**$_1$ atul-un] t_1 conkyengha-ni? *WCO*
who-Acc he-Gen son-Top respect-Q
'Who$_1$ does his$_1$ son respect?' (Cho 1994b: 266; cf. (5))

2.1.2 Clause-external scrambling

It has been argued for Hindi and Japanese that clause-external scrambling shows A'-effect whereas clause-internal scrambling may show A or A'-effects (Mahajan 1990 for Hindi, Saito 1992, Tada 1993 for Japanese; cf. Saito (1992: 109) for a contrast between Japanese and Hindi in WCO).[5] Interestingly, however, it has been reported that Korean shows mixed A/A'-effects not only for clause-internal

scrambling but also for clause-external scrambling.

Consider first (11)-(14), which conform to the A'-pattern reported in other languages. The scrambled phrases in (11)-(14) are interpreted in base-position with respect to anaphor binding, Condition C, *wh*-scope, and NPI licensing. In (11), the anaphor *caki* is licensed though its surface position is higher than its licenser *ku-ka* 'he-Nom'. This indicates that *caki-uy atul* 'self's son' can be licensed in its base-position. In (12), *John* has undergone scrambling over *ku-ka* 'he-Nom', where it could obviate the Condition C violation. Importantly, however, (12) is ungrammatical. This indicates that *John-uy atul-ul* 'John's son' must be interpreted in its base-position, violating Condition C.

(11) [**caki**$_1$**-uy** atul-ul]$_2$ **ku**$_1$**-ka** [sensayngnim-i t_2 ttaylyessta-ko] sayngkakhanta.
self-Gen son-Acc he-Nom teacher-Nom hit-C think
'He$_1$ thinks that the teacher hit self's$_1$ son.' (Cho 1994b: 258; cf. Mahajan 1990, Saito 1992)

(12) *[**John-uy** $_1$ atul-ul]$_2$ **ku-ka**$_1$ [Mary-ka t_2 ttaylyessta-ko] sayngkakhanta.
J.-Gen son-Acc he-Nom M.-Nom hit-C think
'He thinks that Mary hit John's son.' (Cho 1994a: 88; cf. Y. Choi 2004a: 190-191)

In (13), the *wh*-phrase *mwues-ul* has undergone scrambling over the matrix subject, but it takes scope in the embedded clause and is licensed by the question morpheme *nunci* (as an instance of radical reconstruction in the sense of Saito 1989). In Korean, a Negative Polarity Item (NPI), *amwuto* 'anyone' must be licensed by a clause-mate negation (Sohn 1995, Sells 2015 for overviews). The scrambled *amwuto* in (14), however, can be licensed by the negation in the embedded clause. This suggests that *amwuto* in (14) may be licensed after reconstruction at LF (cf. note 6 for some qualification).

(13) **mwues-ul**$_1$ [na-nun Minswu-ka t_1 ceyil cohaha-**nunci**] anta.
what-Acc I-Top M.-Nom best like-Q know
'I know what Minswu likes best.' (Y. Lee 1993: 72; cf. Saito 1989)

(14) **amwuto**$_1$ na-nun [Minswu-ka t_1 cohahaci **anh**-nun-ta-ko] sayngkakhanta.
anyone I-Top Minswu-Nom like not-Pres-Dec-C think
'I think that Minswu does not like anyone.' (Y. Lee 1993: 80)

Given the data in (11)-(14), clause-external scrambling in Korean seems to be ordinary A'-movement, which undergoes reconstruction at LF. Interestingly, however, (15)-(18) illustrate the opposite point. In (15), the pronoun *kutul-ul* 'they-Acc' has undergone clause-external scrambling, and it may license the anaphor *selo*. Though there is some controversy about the grammatical status of (15), this type of example has been judged acceptable by not a few speakers of Korean (Cho 1994ab, K. Lee 2003, H. Lee 2006; contra Mahajan 1990 for Hindi, and Saito 1992, Tada 1993 for Japanese). This means that clause-external scrambling may create a new binder, unlike typical A'-movement. The data in (16) also shows that Condition C is evaluated at the scrambled position, where *ku* c-commands the matrix subject.

(15) **kutul-ul**$_1$ [**selo-uy**$_1$ chinkwu-ka] [John-i t_1 kosohayssta-ko] malhayssta.
they-Acc each.other-Gen friend-Nom J.-Nom sued-C said
'Each other's$_1$ friends said that John sued them$_1$.'(Cho 1994b: 263)

(16) ***ku-lul**$_1$ [**John-uy**$_1$ emma-ka] [Mary-ka t_1 ttaylyessta-ko] sayngkakhanta.
he-Acc J.-Gen mother-Acc M.-Nom hit-C think
'John's$_1$ mother thinks that Mary hit him$_1$.'

The pattern observed in NPI scrambling and *wh*-scrambling also indicates the same point as the binding data in (15)-(16). In (17), the scrambled *amwukesto* can be licensed by the matrix negation. The example in (18) shows that a scrambled *wh*-phrase can be interpreted in its surface position. Though controversial, researchers often report that scrambled *wh*-phrases as in (18) can be interpreted either in base-position or in scrambled position (Y. Lee 1993, Kang and Müller 1996, Johnston and Park 2001, J-.M. Yoon 2013, Jung 2015; cf. Takahashi 1993 for Japanese). If clause-external scrambling implicated obligatory reconstruction at LF, the facts in (15)-(18) would not be explained.[6]

(17) **amwukesto**$_1$ Mary-ka [John-i t_1 hwumchyessta-ko] mitci **ani** hayessta.
anything M.-Nom J.-Nom stole-C believe not did
'Mary did not believe that John stole anything.' (R. Kim 2003: 14)

(18) **nwukwu-lul**$_1$ ne-nun [ku-ka phathune-lo t_1 senthaykhal-**ci**] alkosiph-**ni**?
who-Acc you-Top he-Nom partner-as choose-Q know.want-Q
i)'Who do you want to know whether he will choose him as his partner?'
ii) 'Do you want to know who he will choose as his partner?' (J.-M. Yoon 2013:45)

Moreover, clause-external scrambling of quantifiers in Korean strongly affects semantic interpretation. In (19a), the scrambled quantifier, *manhun salam-ul* 'many people' must be interpreted as a specific set of people, in contrast to (19b) without scrambling (Sohn 1995: 199). If we assume that *manhun salam-ul* must undergo reconstruction at LF and interpreted as such, the asymmetry between (19a) and (19b) is not expected (cf. Tada 1993).[7] The example in (20) also hints that clause-external scrambling in Korean is not typical A'-movement. As described in (20), scrambling of *nwukwu-lul* 'who' to the left of the matrix subject does not trigger the WCO effect, in contrast to *wh*-movement in English (3b) (Cho 1994ab; cf. Y. Choi (2004a: 188) for an opposing view). Clearly, these facts suggest that clause-external scrambling in Korean is neither semantically vacuous nor a typical type of A'-movement (see Jung 2002, R. Kim 2003, K. Lee 2003, H. Lee 2006 for further discussion).

(19) a. **manhun** salam-ul$_1$ amwuto [Tom-i t_1 piphanhayssta-ko] mitci **ani**hanta.
many people-Acc anyone T.-Nom criticized-C believe not
'No one believes that Tom criticized many people.' (many>>not, *not>>many)

b. amwuto [Tom-i **manhun** salam-ul piphanhaysstako] mitci **ani**hanta
anyone T.-Nom many people-Acc criticized believe not
'No one believes that Tom criticized many people.' (not>>many, *many>>not)
(Sohn 1995: 199)

(20) **nwukwu-lul**$_1$ [**ku-uy**$_1$ apeci-ka] [John-i t_1 ttaylyessta-ko] malhayss-ni?
who-Acc he-Gen father-Nom J.-Nom hit-C said-Q
'Who$_1$ did his$_1$ father say that John hit t_1?'(Cho 1994a: 28; cf. Mahajan 1990:39 for Hindi)

2.1.3 VP-internal scrambling

Though it is rather controversial what the base order in double object constructions in Korean is (see J. Lee 2004, L. Kim 2015 for overall discussions), it is generally accepted that the direct object may

scramble over the indirect object, as illustrated in (21)-(24). This is called *short scrambling* or *VP-internal scrambling*. Interestingly, unlike other types of scrambling, VP-internal scrambling shows consistent A-effects (Cho 1994ab; see Mahajan 1990 for Hindi, Saito 1992, Tada 1993 for Japanese). As in (21), anaphor binding into the indirect object is possible via VP-internal scrambling. Condition C is evaluated in the scrambled position in (22). Note that the grammaticality of (22) is in contrast to the ungrammaticality of (8) and (12), where Condition C is evaluated in the base-position. Anaphor binding is also evaluated after scrambling, as in (23). The example in (24) shows that *wh*-scrambling over an indirect object does not trigger WCO violations, just like typical A-movement. Capitalizing on these facts, previous studies argued that VP-internal scrambling in Korean targets A-position (e.g. scrambling to SpecVP in Cho 1994b; scrambling to SpecAgroP in Cho 1994a, 1996; object shift to Spec*v*P in Lee and Cho 2003a; cf. Hoji 1985, Nemoto 1993, Takano 1998, Saito 2003, among others, for Japanese).[8]

(21) John-i **kutul-ul**$_1$ [**selo-uy**$_1$ sensayngnim-eykey] t_1 sokayhayssta.
J.-Nom they-Acc each.other-Gen teacher-Dat introduced
'John introduced them to each other's teachers.'

(22) Mary-ka [**John-uy**$_1$ sensayngnim-ul]$_2$ **ku-eykey**$_1$ t_2 sokayhayssta.
M.-Nom J.-Gen teacher-Acc he-Dat introduced
'Mary introduced John's$_1$ teacher to him$_1$.'

(23) *nay-ka [**caki-uy**$_1$ sensayngnim-ul] $_2$ **ku-eykey**$_1$ t_2 sokayhayssta.
I-Nom self-Gen teacher-Acc he-Dat introduced
'I introduced self's$_1$ teacher to him$_1$.'

(24) John-i **nwukwu-lul**$_1$ [**ku-uy**$_1$ sensayngnim-eykey] t_1 sokayhayss-ni?
J.-Nom who-Acc he-Gen teacher-Dat introduced-Q
'Who$_1$ did John introduce to his$_1$ teacher?' ((21)-(24) adpated from Cho 1994b: 268-269)

2.1.4 Clausal scrambling

In Korean, a clausal element may undergo scrambling to the left of the matrix subject, as in (25c) and (26c). Interestingly, CP scrambling in Korean exhibits consistent reconstruction effects, in contrast to DP scrambling. Kwon (2010), in particular, shows that an anaphor in a scrambled clause does not create any new binding relation, in contrast to DP scrambling, as shown by the contrast between (25b) and (25c). The data in (26) illustrate this with respect to WCO effects. Clause-external scrambling of a *wh*-phrase does not trigger a WCO violation, as in (26b) (recall (20)). By contrast, scrambling of a CP which embeds *nwukwu-lul* is unacceptable, as in (26c). This means that the *wh*-phrase in (26c) is interpreted in its original position together with the embedding clause, just as in (26a). Kwon (2010) provides further evidence for obligatory reconstruction effects of CP-scrambling from NPI licensing and scope data, and claims that CP-scrambling in Korean is semantically vacuous PF-movement.

(25) a. John-un$_1$ [Mary-ka$_2$ **casin-ul**$_{1/2}$ miwehanta]-ko sayngkakhanta.
J-Top M-Nom self-Acc hate-C think
'John thinks that Mary hate himself/herself.'
b. **casin-ul**$_{1/*2}$ John-un$_1$ [Mary-ka$_2$ t miwehanta]-ko sayngkakhanta.
c. [Mary-ka$_2$ **casin-ul**$_{1/2}$ miwuehanta]-ko$_3$ John-un$_1$ t_3 sayngkakhanta

(26) a. *[**ku-uy**$_1$ emeni-ka] [Mary-ka **nwukwu-lul**$_1$ miwehanta-ko] sayngkakha-ni?
he-Gen mother-Nom M.-Nom who-Acc hate-C think-Q
'Who$_1$ did his$_1$ mother think Mary hates?'
b. **nwukwu-lul**$_1$ [**ku-uy**$_1$ emeni-ka] [Mary-ka t_1 miwehanta-ko] sayngkakha-ni?
c. *[Mary-ka **nwukwu-lul**$_1$ miwehanta-ko]$_3$ [**ku-uy**$_1$ emeni-ka] t_3 sayngkakha-ni?
(data from Kwon 2010: 232-234)

2.2 Approaches to Korean scrambling and A/A'-movement

Overall, the data examined in Section 2.1 show that scrambling in Korean exhibits non-uniform behavior with respect to A/A'-diagnostics. The obvious question is how to explain these facts with a general theory of scrambling. This section critically reviews three approaches to scrambling in Korean, which naturally connect to the current research agenda in the Minimalism Program (Chomsky 1995 and subsequent works).

The first approach is to view *scrambling as A-movement* with special reconstruction effects in certain contexts. Y. Lee (1993, 1994) develops a comprehensive theory of scrambling based on this approach. Y. Lee argues that scrambling in Korean is uniformly Case-driven A-movement (cf. Mahajan 1990, Miyagawa 1997, 2001 for A-scrambling). Under Y. Lee's approach, A-effects obtained with scrambling naturally follow from the claim that scrambling is a kind of A-movement (via IP-adjunction). However, the A'-effects seen in Section 2.1 require additional explanations. Y. Lee claims that scrambling may show A'-effects when it occurs across the subject. In those cases, scrambled phrases must be reconstructed in order to restore a predicational structure at LF, where the subject c-commands all other arguments. For example, A'-effects seen in (7)-(9) and in (11)-(14) may be accommodated by this claim.

On a closer examination, however, it is not clear whether Y. Lee's proposal may capture all the mixed characteristics of scrambling. Y. Lee assumes that the phrases scrambled over the subject *must* be reconstructed at LF. If reconstruction were only optional, we expect (8) to be grammatical, contrary to fact. Crucially, however, this assumption incorrectly nullifies A-effects. For instance, if reconstruction below the subject were obligatory, Condition C would be wrongly obviated in (6). Anti-reconstruction effects observed in (15)-(18) would raise the same problem. Under Y. Lee's approach, it is expected that scrambling will not trigger WCO effects because the target position of scrambling is Case-position with A-properties. Thus, the contrasts between (5) and (10) or between (10) and (20) would not be explained by Y. Lee's theory in any straightforward way. More generally, one may question Y. Lee's premise that scrambling is Case-driven. It is unclear how this may be compatible with the fact that PPs, adjuncts and clauses can be scrambled in Korean, which do not require Case in syntax. Moreover, it is not yet obvious in what sense clause-external scrambling is Case-driven given that a scrambled phrase receives Case clause-internally (cf. responses by Lee 1993: 122-137).[9]

The second approach is to assume that *scrambling can indeed be A- or A'-movement*, depending on the landing site (Mahajan 1990, Saito 1992; cf. Saito 2003). This is an approach extensively developed by Cho (1994ab, 1996). Contra Y. Lee (1993), Cho argues that scrambling in Korean is not a uniform phenomenon, but must be divided into three sub-categories. The first type is short scrambling to SpecAgroP, illustrated in (21)-(24). Cho argues that short scrambling shows consistent A-effects (anti-reconstruction effects) and must be treated as A-movement. Cho argues that the second type is non-operator A'-scrambling (following Webelhuth 1989 and Saito 1992).[10] Clause-internal scrambling over

a subject (e.g. (4)-(8)) and clause-external scrambling (e.g. (11)-(18)) are categorized into this type. Cho argues that this type of scrambling targets IP adjunction or VP adjunction positions. In this case, scrambling shows A'-effects because it targets an adjunction position, and at the same time, it obviates WCO effects because the landing site is a non-operator position and creates a null epithet (cf. Lasnik and Stowell 1991). The last type is operator A'-scrambling over a topic phrase. The examples in (9)-(10) represent this category. This type of scrambling show coherent A'-effects because its target is an operator A'-position, TopP adjunction (cf. Cho 1994a: 122-135 for contrastive topics as IP-adjunction; cf. Cho and Kim 2000, Y. Choi 2004a for alternative approaches).

Cho's proposal captures diverse syntactic properties of scrambling by adopting a hybrid approach. It still remains puzzling, however, why mixed A/A'-effects are obtained with a single type of scrambling. In particular, anti-reconstruction effects in non-operator A'-scrambling may potentially challenge the proposal. To explain the contrast between (8) and (22) in binding, Cho assumes that A'-scrambling undergoes *obligatory* reconstruction at LF (cf. Cho 1994a:65-70 for WCO effects). This assumption, however, leads us to wrongly predict that R-expressions may avoid Condition C violations after reconstruction, contrary to the facts in (6) and (16). It remains unexplained how this assumption can be made compatible with the fact that reconstruction is only optional for NPI licensing as in (17) or *wh*-licensing as in (18). The status of anaphor binding also requires further explanation. To explain the contrast between (4) and (9), Cho (1994ab) proposes that anaphors must be non-operator bound (following Saito 1992). It is unclear, however, *when* anaphor binding happens. Examples like (7) and (11) suggest that anaphor binding occurs after reconstruction, but (4) and (15) hint that it is evaluated before reconstruction at LF. The general interaction between binding and reconstruction needs to be further clarified (cf. Cho 1996, Cho and Kim 2000 for discussion).

Thirdly, one may attribute mixed A/A'-effects of scrambling to optionality of reconstruction at LF. R. Kim (2003) takes this approach. R. Kim argues that scrambled phrases may in principle undergo radical reconstruction at LF, but if necessary for feature checking, it may stay in a scrambled position or in an intermediate position. On this approach, A'-effects in (7)-(9) and in (11)-(14) are observed because scrambling can be freely undone at LF (Saito 1989). If, however, scrambling is associated with feature checking, it may stay in non-base position where the relevant feature can be checked. R. Kim claims that Case-checking in (4), NPI-licensing in (17), and *wh*-licensing in (18) instantiate such cases where feature checking overrides radical reconstruction effects at LF (cf. Son 2001, Jung 2002, Yang and Kim 2005, H. Lee 2006 for alternative views on feature checking and reconstruction in scrambling).

Note, however, that optional reconstruction cancels out A'-effects incorrectly. If the object in (4) may stay in scrambled position for Case checking, we expect that the same would be true of scrambled R-expressions. Such an option, however, would wrongly rule in ungrammatical sentences such as (8) and (12). Moreover, if radical reconstruction is in principle a possible option, we expect that examples like (16) might be saved via reconstruction after feature checking. Recall that in the case of short scrambling such as (21)-(24), LF-reconstruction is not an option, but must be banned. It is not obvious how this approach would accommodate the differences between short scrambling and other types of scrambling. Mixed WCO effects are not expected under this approach, either.

In short, previous studies have discovered major characteristics of scrambling by comparing it with A/A'-movement. The ample empirical discoveries of the previous studies should be well-taken, but it also needs to be asked whether the notion of A/A'-distinction is indeed necessary to understand scrambling. As the theory of Minimalist syntax (Chomsky 1995) develops, the distinction of the A vs.

A'-positions becomes nothing but a descriptive notion. In fact, a variety of proposals have been advanced to capture syntactic and semantic properties of scrambling without resorting to A/A'-distinctions (e.g. Abe 1993, Bošković and Takahashi 1998, Cho and Kim 2000, Son 2001, Jung 2002, Saito 2003). Even if the A/A'-distinction is still a useful tool to describe the typology of movement, it is far from clear whether there exist any "standard" A/A'-diagnostics. Some previous studies tacitly assumed that A/A'-diagnostics employed for other languages can be applied to Korean, but it is yet to be seen whether independent justification for this assumption can be provided.

It is well-known that anaphors in Korean can be bound by an antecedent across a clausal boundary in certain contexts and behave much differently from local anaphors in other languages (Yang 1983, 1986; Madigan 2015 for an overview).[11] Thus, one might reasonably suppose that anaphor binding in Korean has little to do with A-diagnostics developed from other languages (Y. Lee 1993, Y. Choi 2004a). Earlier studies assumed that all the binding relationships must be evaluated at LF and thus binding interpretation at non-surface position was taken as evidence for reconstruction at LF. This assumption, however, has been seriously challenged as well. It has been argued that anaphor binding, pronominal binding, and Condition C effects are evaluated at different points of the derivation and thus cannot be treated in the same way (Belletti and Rizzi 1988, Barss 1986, Lebeaux 1988, 2009, Epstein et al. 1998, Kitahara 2002, Saito 2003, Y. Choi 2004a). On this view, various types of binding data can be duly examined to detect potential semantic effects of scrambling, but may not be taken as a diagnostic to claim LF-reconstruction or A'-effects in general.

Whether we adopt a hybrid approach or pursue a uniform theory of scrambling, it is important to cast Korean data within a general perspective on word order variation. Korean poses empirical challenges to the claim that scrambling can be freely undone at LF (cf. Saito 1989, Bošković and Takahashi 1998). Clause-external scrambling in Korean is semantically effective in terms of binding and scope facts, contrary to what was argued for Hindi and Japanese (cf. Mahajan 1990, Saito 1992, Bošković and Takahashi 1998). Scrambling in Korean does not trigger WCO effects even when it occurs across a clausal boundary, unlike Hindi (cf. Mahajan 1990). It may be the case that A/A'-diagnostics have different implications for each language, or that there are truly different types of scrambling in languages. To respond to these questions, it is necessary to compare scrambling in different languages with a formal theory that can be applied to language in general. How to formulate such a general theory of scrambling remains an important research agenda.

3. Scrambling is not a free option

Scrambling in Korean is an optional operation, yielding flexible orderings. This, however, does not mean that word order in Korean is randomly determined. In fact, scrambling in Korean is systematically regulated by various factors in the grammar. Section 3 examines major factors that constrain scrambling at the syntax proper and its interfaces with phonology, semantics, and discourse.

Let us first consider the constraints that operate at the syntax proper. It has been reported that scrambling in Korean cannot occur out of island domains. More specifically, scrambling cannot occur across strong islands such as relative clauses and adjunct clauses, as shown in (27) (Y. Lee 1993: 140-163, Cho 1994a:106/131, Y. Choi 2004a, R. Kim 2003).

(27) a. *__John-ul__$_1$ Mary-ka [t_2 t_1 cohaha-nun] chinkwutul$_2$]-ul mannassta.
J.-Acc M.-Nom like-Rel friends-Acc met
'Mary met the friends who likes John.' (Cho 1994a: 106)

b. ?? __mwues-ul__$_1$ John-i [Mary-ka t_1 saki-ceney] hwa-ka nass-ni?
what-Acc J.-Nom M.-Nom buy-before anger-Nom got-Q
'What is such that John got angry before Mary bought it?'
(R. Kim 2003:6; based on Saito and Fukui 1998: 463)

Moreover, scrambling cannot occur from the left branch of a noun phrase (Left Branch Condition: Ross 1967), as shown in (28a). It is also impossible to strand a genitive-marked adnominal modifier via leftward scrambling of the host noun, as in (28b) (cf. Ko 2014b, 2016 for such possibilities in rightward dislocation in Korean). As illustrated in (29), scrambling out of a coordinated structure is impossible (Coordinate Structure Constraint: Ross 1967). Scrambling also obeys the Proper Binding Condition (Fiengo 1977) in that a scrambled phrase cannot contain an unbound trace, as in (30) (see Saito 1985, 1992 for Japanese). Overall, the facts in (27)-(30) were taken as counter-evidence against the claim that scrambled orders are freely base-generated (cf. Hale 1980, Bošković and Takahashi 1998 for base-generation approaches). Rather, scrambling in Korean is an instance of a movement operation, which is regulated by general constraints on movement.

(28) a. * __apeci-uy__$_1$ John-i [t_1 cha-lul] wuncenhay-ss-ta.
father-Gen J.-Nom car-Acc drive-Past-Dec
'John drove father's car.'

b. *__cha-lul__$_1$ John-i [apeci-uy t_1] wuncenhay-ss-ta.

(29) a. Mary-ka [__Bill-kwa John-ul__] pinanhayessta.
M.-Nom B.-and J.-Acc criticized
'Mary criticized John and Bill.'

b. *__John-ul__$_1$ Mary-ka [Bill-kwa t_1] pinanhayessta.

c. *__Bill-kwa__$_1$ Mary-ka [t_1 John-ul] pinanhayessta.

(30) *[__Sam-i__ t_1 __mantulessta-ko__]$_2$ ku umsik-ul$_1$ ne-ka t_2 malhayssta.
S.-Nom made-C that food-Acc you-Nom said
'You said that Sam made that food.' (Johnston and Park 2001:731)

A note is in order, however, on islandhood in Korean. Some researchers report that scrambling out of certain types of islands are considerably acceptable in Korean, in contrast to regular A'-movement, such as *wh*-movement and topicalization in English (Y. Lee 1993, R. Kim 2003). Y. Lee (1993) claims that scrambling out of a NP-complement, as in (31a), is possible, in contrast to extraction out of a relative clause seen in (27a). R. Kim (2003) reports that scrambling out of a *wh*-island is possible in Korean, as in (31b) (see also Y. Lee 1993: 153 for the same point).

(31) a. __ku nyesek-eykey__ na-nun [Younghee-ka t_1 holttak ppacie issta-nun] sasil-i
that guy-Dat I-Top Y.-Nom completely fallen.in.love-Mod fact-Nom
an-mitecinta.
not-believe.
'With that guy$_1$, I cannot believe the fact that Younghee is fallen in love t_1.' (Y. Lee 1993:

152)

b. **ku chayk-ul**$_1$ John-un [Mary-ka t_1 ilkess-nunci] kwungkumhayhanta.
that book-Acc J.-Top M.-Nom read-whether want.to. know
'John wants to know whether Mary read that book.'
(R. Kim 2003:7; based on Bošković and Takahashi 1998: 359)

Y. Lee (1993: 163) proposes that sub-categorized clauses (e.g. complements) do not constitute an island in Korean, whereas the non-subcategorized (e.g. adjunct and relative) clauses constitute a strong island. On this view, (31a) and (31b) are grammatical because scrambling occurs out of a complement clause. R. Kim (2003) analyzes *wh*-islands such as (31b) as weak islands (in the sense of Rizzi 1990), which must be distinguished from strong islands. R. Kim claims that strong islands constrain all sorts of movement regardless of its type, whereas weak islands block movement for A'-feature checking only. R. Kim proposes that scrambling is not a feature-driven movement, and thus that scrambling is insensitive to weak islands as in (31b) although it is sensitive to strong islands, as in (27a) and (27b). It is yet to be shown, however, how R. Kim's account may accommodate Y. Lee's observation concerning lack of island effects in NP-complement domains (see Y. Lee 1993: Chapters 5-6 for further discussion concerning complexity of islandhood in Korean).

It has been observed that there is an argument-adjunct asymmetry in the length of scrambling. Though clause-external scrambling of an argument is readily available in Korean (Section 2.1), clause-external scrambling of an adjunct is severely limited (Cho and Kim 2000; cf. H. Lee 2006:453-454 for an opposing claim; cf. Saito 1985, Bošković and Takahashi 1998 for Japanese). As in (32a), when an adjunct PP undergoes clause-external scrambling, speakers find it difficult to interpret it as a modifier for the embedded clause (but some speakers accept it when the PP is a temporal/locative phrase). As in (32b), clause-external scrambling of an adverb is not possible, either. If acceptable, *sikkulepkey* 'loudly' is interpreted as a modifier for the matrix verb in (32b).

(32) a. ***swulcip-eyse**$_1$ [John-i [nay-ka t_1 sikan-ul ponaysssta-ko]] malhayssta.
pub-at J.-Nom I-Nom time-Acc spent-C said
'John said that I *spent time at a pub*.' (modified from Cho and Kim 2000: 173)

b. * **sikkulepkey**$_1$ [John-i [nay-ka t_1 nolay-lul pwullessta-ko]] malhayssta.
loudly J.-Nom I-Nom song-Acc sang-C said
'John said I *sang a song loudly*.'

Y. Lee (1993) claims that certain types of scrambling may be blocked due to an *anti-ambiguity* strategy, which is assumed to be a discourse constraint (following Kuno 1980). As described in (33) and (34), when two arguments are marked by identical Case, scrambling of the lower element over the higher one is unacceptable. As illustrated in (33b), the nominative complement of a stative verb cannot move over the experiencer marked by nominative Case. If the complement is marked by dative Case, as in (33c), such scrambling becomes available. Similarly, the examples in (34) show that a dative-marked argument in an embedded clause cannot be scrambled over a dative-marked matrix argument. If scrambling were just a random option, we would expect that all the sentences in (33)-(34) would be equally acceptable, contrary to fact. Y. Lee (1993: 117-118) argues that speakers tend to assign the base order interpretation when a sentence is potentially ambiguous between scrambled and non-scrambled structure. For instance, (33a) is potentially ambiguous due to having two NPs with identical Case marking. It could mean 'I am fond of Minho' with a non-scrambled order, or 'Minho is fond of me' with

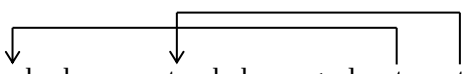
a scrambled order. Though both structures are in principle available in syntax, the scrambled parse is disfavored to avoid ambiguity, and (33a) is interpreted with a non-scrambled structure only.

(33) a. Nay-ka Minho-ka cohta.
I-Nom M.-Nom be fond of
'I am fond of Minho.'
b. *__Minho-ka__$_1$ nay-ka t_1 cohta.
c. __Minho-eykey__$_1$ nay-ka t_1 cohta. (Y. Lee 1993: 114,116)

(34) a. emma-ka apeci-eykey [**Minho-hanthey** yongton-ul mos-cwu-key] hayssta.
mom-Nom father-Dat M.-Dat money-Acc not-give-C made
'Mom made father not give money to Minho.'
b. *emma-ka **Minho-hanthey**$_1$ apeci-eykey [t_1 yongton-ul mos-cwu-key]hayssta.
(Y. Lee 1993: 121)

It is generally assumed that string vacuous scrambling is banned. An important piece of evidence for this restriction can be drawn from scope rigidity of canonical sentences (see Hoji 1985 for the original argument based on Japanese). In Korean, the subject scopes over the object in the canonical order as in (35a). If, however, the object undergoes scrambling over the subject, as in (35b), scope ambiguity arises: the object may scope over or under the subject (Ahn 1990, Suh 1990, S. Kim 1991, Sohn 1995: 145; Son 2001; cf. Kim and Larson 1989 for scope in psych-predicate constructions; see Huang 1982 for Chinese, Hoji 1985 for Japanese). Suh (1990) argues that a quantifier phrase QP_1 may scope over QP_2 if QP_1 c-commands a member of the chain containing QP_2 (Aoun and Li 1989). The scrambled object in (35b) c-commands the subject, which in turn c-commands the trace of the object. Thus, we obtain scope ambiguity in (35b). There is a missing piece in this explanation, however. If the subject in (35a) undergoes string vacuous scrambling over the object, as in (35c), we would expect (35a) to be ambiguous, contrary to fact. To block such a possibility, it is necessary to assume that string vacuous scrambling such as (35c) is somehow ruled out. In the Minimalist Program, the ban on string vacuous scrambling can be attributed to interface economy: optional movement occurs only when it has an effect at the interface (see Chomsky 1995, 2001, Fox 2000, Miyagawa 2006 for output economy). Sabel (2005) claims that scrambling must have an output effect at both PF and LF and that string-vacuous scrambling without a PF-effect such as (35c) is not allowed (see Sabel 2005 for futher discussion).[12]

(35) a. nwukwunka-ka motun haksayng-ul piphanhayssta.
someone-Nom all student-Acc criticized
'Someone criticized all the students.' (some>>all, *all>>some)
b. **motun haksayng-ul**$_1$ nwukwunka-ka t_1 piphanhayssta.
all student-Acc someone-Nom criticized
'Someone criticized all the students.' (some>>all, all>>some)



c. [nwukwunka-ka$_2$ motun haksayng-ul$_1$ t_2 t_1 piphanhayssta].

When two NPs with identical Case compete for scrambling, semantic factors may play a crucial role as well. As illustrated in (36b), when two NPs are semantically associated by a part-whole relationship, the part NP cannot be scrambled over the whole NP. A similar restriction holds on two NPs

in a subset-superset relationship, as in (37b). The examples in (38) illustrate an ordering restriction in multiple nominative constructions. The first NP in a multiple nominative construction is called the Major Subject, and the following (saturated) sentence functions as a sentential predicate which denotes a characteristic property of the Major Subject (J. Yoon 2004, 2007; see Kuno 1973 for original insight). The Major Subject can be an argument of the verb, a possessor of the grammatical subject, or a scene-setting adjunct such as a locative PP or a source PP (J. Yoon 2015 for an overview). Notably, the Major Subject cannot be preceded by other nominative-marked NPs via scrambling, as in (38b) (see J. Yoon 2004).

(36) a. Sally-ka [John-uy ai-lul] tali-lul ttaylyessta.
S.-Nom J.-Gen child-Acc leg-Acc hit
'Sally hit John's child on the leg.'
b. *Sally-ka **tali-lul**$_1$ [John-uy ai-lul] t_1 ttaylyessta.
(adapted from S. Kim 1999: 259)

(37) a. Sally-nun kwail-ul sakwa-lul culkye mek-nun-ta.
S.-Top fruit-Acc apple-Acc with.joy eat-Pres-Dec
'Sally enjoys eating some fruit, apples.'
b. *Sally-nun **sakwa-lul**$_1$ kwail-ul t_1 culkye mek-nun-ta.

(38) a. [ilen chayk-i]$_1$ [salamtul-i *pro*$_1$ culkye ilknunta].
this.kind book-Nom people-Nom with.joy read
'People read this kind of book with joy.' (J. Yoon 2007: 625)
b. * **salamtul-i**$_2$ [ilen chayk-i]$_1$ [t_2 *pro*$_1$ culkye ilknunta].
(Ko 2014a: 172)

The data in (36)-(38) cannot be subsumed under the *anti-ambiguity* strategy introduced for (33)-(34) because they are not ambiguous. The data in (36)-(38) cannot be explained by *output economy*, either, because scrambling of the second NP is not string vacuous. Rather, the data in (36)-(38) suggest that certain semantic considerations may regulate scrambling possibilities in constructions with multiple Case marking. In particular, adopting Kuno's (1973) *aboutness condition*, J. Yoon (2004) argues that Major Subjects in Korean must be 'news-worthy' and claims that the Major Subject must precede the sentential predicate (including the Grammatical Subject) to be interpreted as such (for alternative proposals on this restriction, see Lee and Cho 2003b for a locality-based approach; Ko 2014a:170-175 for a cyclicity-based approach). It remains open, yet, whether the ordering restriction imposed on multiple Accusative constructions shown in (36)-(37) should receive the same account as the one for multiple Nominative constructions.

Case omission also interacts with the (im-)possibility of scrambling. As illustrated in (39a), the accusative Case of the object in Korean can be dropped in the canonical SOV order (see Kwon and Zribi-Hertz 2008 and H. Lee 2015, among others, for Case ellipsis in Korean). Interestingly, if an indefinite object is devoid of overt Case, object scrambling is judged degraded, as in (39b). A similar pattern is found in (40). Lee and Cho (2003ab) argue that an object must undergo object shift prior to scrambling, and that an indefinite object may undergo object shift only when it is overtly Case-marked and interpreted as specific. On this view, the objects in (39b) and (40b) cannot be scrambled because they are interpreted as non-specific without overt Case (cf. Y.-H. Kim 1998 for an alternative view).[13]

(39) a. John-i **chayk** ilk-ess-ta.
J.-Nom book read-Past-Dec
'John read a book.'
b. ?? **chayk**$_1$ John-i t_1 ilk-ess-ta. (Lee and Cho 2003b: 332)

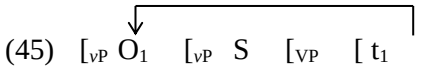
(40) a. [**sakwa sey-kay-lul**]$_1$ na-nun t_1 mek-ess-ta.
apple 3-Cl-Acc I-Top eat-Past-Dec
'I ate three apples'
b. *? [**sakwa sey-kay**]$_1$ na-nun t_1 mek-ess-ta.
(D. Kim 1993: 76; recited from Lee and Cho 2003a:40)

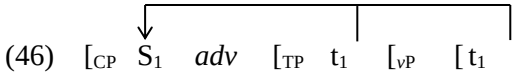
Scrambling may be ruled out due to an interplay between the syntax and its interfaces as well. A series of work by Ko (2005a, 2007, 2011, 2014a) provides an in-depth discussion on this issue. Ko proposes that cyclic Spell-out crucially affects the (re)ordering of elements in scrambling, and shows that certain instances of scrambling are filtered out at the PF interface even though they are perfectly grammatical at the syntax proper. Evidence for this claim is drawn from a wide range of asymmetries obtained in scrambling in Korean and Japanese. Two representative pieces of evidence are introduced in this article: *subject scrambling* and *predicate inversion*.

The data in (41) and (42) illustrate a well-known asymmetry between the subject and the object in scrambling. As illustrated in (41), the object in Korean may undergo scrambling over the subject, stranding an associate numeral quantifier (NQ). Interestingly, however, the subject cannot strand an associate NQ *sey-myeng* over the object, as in (42). If scrambling were just a free option, we would expect that the subject could scramble over the object in (42), contrary to fact. Observing the same type of asymmetry in Japanese, Saito (1985) originally claims that the subject in general cannot undergo scrambling and thus examples like (42) are ruled out (cf. Hoji 1985, Miyagawa 1989). Ko (2005a, 2007), however, shows that the subject in Korean and Japanese may indeed scramble in some contexts. The subject may scramble over *v*P-external high adverbs such as *ecey* 'yesterday', as in (43). Subject scrambling may also occur across a clausal-boundary (with some parsing difficulty), as in (44) (cf. Saito 1985; see Sohn 1995: 236 for parsing difficulties in subject scrambling). The grammaticality of (43) and (44) strongly suggests that the subject can in principle scramble, but subject scrambling is somehow more restricted than object scrambling, as shown by the contrast between (41) and (42) (see Ko 2005a, 2014a, and references therein for further discussion).

(41) **maykcwu-lul**$_1$ John-i t_1 **sey-pyeng** masi-ess-ta.
beer-Acc J.-Nom 3-Cl_{bottle} drink-Past-Dec
'John drank three bottles of beer'
(42) * **haksayng-tul-i**$_2$ maykcwu-lul$_1$ t_2 **sey-myeng** t_1 masi-ess-ta.
student-Pl-Nom beer-Acc 3-Cl_{person} drink-Past-Dec
'Three students drank beer.' (Ko 2007: 50-51)
(43) **haksayng-tul-i**$_1$ *ecey* t_1 **sey-myeng** maykcwu-lul masi-ess-ta.
student-Pl-Nom yesterday 3-Cl_{people} beer-ACC drink-Past-Dec
'Three students drank beer yesterday.'
(44) ? **John-i**$_1$ [$_{CP}$ na-nun [$_{CP}$ t_1 Mary-lul mannassta-ko] sayngkakhanta]].
J.-Nom I-Top M.-Acc met-C think
'John$_1$, I think that t_1 met Mary.' (Ko 2007: 52)

Following Fox and Pesetsky (2005), Ko argues that the output of syntax maps into the phonology via *Cyclic Linearization* (CL), which establishes linear orderings of syntactic terms at each Spell-out (cf. Chomsky 2000, 2001). Crucially, the linear orderings of a syntactic unit must be preserved once it undergoes CL. Under Ko, it is assumed that scrambling is triggered by a head which contains an EPP feature (or scrambling-related discourse feature), which c-commands its goal (Chomsky 2001). On this view, scrambling of the object in (41) is possible because the object may undergo scrambling to the left of the subject at *v*P before Spell-out of the *v*P domain, as in (45) (see Jung 2002, Cho 1994a, 1996, Lee and Cho 2003a for successive cyclicity in scrambling). Scrambling of the subject in (43) is also possible because the subject may undergo scrambling over *v*P-external materials when it is probed by a higher head such as T, as illustrated in (46) (see Ko 2007: 58-59 for detailed descriptions).

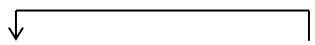
(45) 
[$_{vP}$ O_1 [$_{vP}$ S [$_{VP}$ [t_1 NQ_{OBJ}] V] *v*]]

(46) 
[$_{CP}$ S_1 *adv* [$_{TP}$ t_1 [$_{vP}$ [t_1 NQ_{SUBJ}] [$_{VP}$ O V] *v*] T] C]

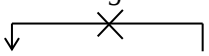
An interesting problem arises when the subject undergoes scrambling over *v*P-internal material as in (42). As illustrated in (47), the object may optionally undergo scrambling within the *v*P, and thus two types of linear orderings can be obtained in syntax: (i) S<NQ_{Subj}<O or (ii) O<S<NQ_{Subj}. Importantly, however, the order in which the object intervenes between the subject and NQ_{Subj} cannot be generated. As depicted in (48a), the subject is already merged on the edge of the *v*P and cannot undergo *v*P-internal movement (under *probe-goal Search* by Chomsky 2001). Thus, S<O<NQ_{Subj} order cannot be generated within the *v*P. If the subject scrambles over the object in a later derivation, the derivation may be licit in syntax but is filtered out at the interface. As illustrated in (48b), if the object intervenes between the subject and NQ_{Subj} in CP, the orderings at CP in (48b) necessarily conflict with the possible orderings at *v*P demonstrated in (47). In short, (42) is ruled out not because subject scrambling is totally banned, but because the word order at *v*P must be preserved after CL (see Ko 2014a for further evidence and formal descriptions of CL effects).[14]

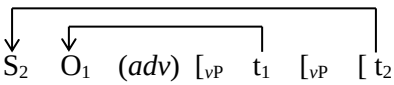
(47) *Possible orderings*

a. [$_{vP}$ [S NQ_{Subj}] [$_{VP}$ O V] *v*] : $S<NQ_{Subj}<O$

b. 
[$_{vP}$ O_1 [S NQ_{Subj}] [$_{VP}$ t_1 V] *v*] : $O<S<NQ_{Subj}$

(48) *Impossible orderings*

a. 
*[$_{vP}$ S_2 [$_{vP}$ O_1 [t_2 NQ_{Subj}] [$_{VP}$ t_1 V] *v*] : $S<O<NQ_{Subj}$

b. 
*[$_{CP}$ S_2 O_1 (*adv*) [$_{vP}$ t_1 [$_{vP}$ [t_2 NQ_{Subj}] [$_{VP}$ t_1 V] *v*] T C] : $S<O<NQ_{Subj}$

The examples in (49)-(50) illustrate how CL restricts predicate inversion in Korean. As illustrated in (49), the small clause (SC) predicate *kyoswu-lo* 'professor-as' may be fronted over the main subject.

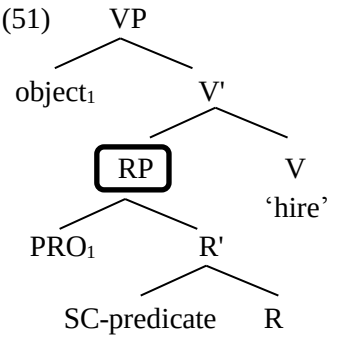
Importantly, however, predicate inversion is not always possible. For instance, predicate inversion of a SC-predicate, *ceyca-lo* is impossible in (50b). The obvious question is why we observe two different types of behavior of small clause predicates in (49)-(50). Ko (2011, 2014a) argues that the crucial difference between the two cases lies in the semantic nature of the main predicate, which affects the size of linearization domain at the interface.

(49) a. SNU-nun **Lee paksa-lul** ***kyoswu-lo*** ppopassta.
SNU-Top Lee Dr.-Acc professor-as hired
'SNU hired Dr. Lee as (its) professor.'
b. ***kyoswu-lo***$_1$ SNU-nun **Lee paksa-lul** t_1 ppopassta.

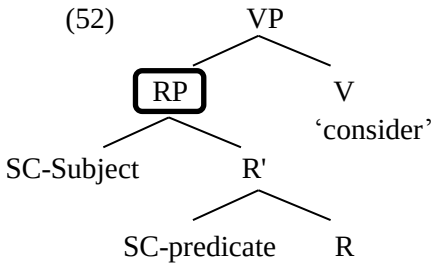
(50) a. Kim kyoswu-nun **Lee paksa-lul** ***ceyca-lo*** yekyessta.
Kim professor-Top Lee Dr.-Acc student-as considered
'Prof. Kim considered Dr. Lee (as) his student.'
b. ***ceyca-lo***$_1$ Kim kyoswu-nun **Lee paksa-lul** t_1 yekyessta.

The main verb 'hire' in (49) takes the object as its complement and (49a) entails that 'SNU hired Dr. Lee'. The epistemic verb 'consider' in (50), on the other hand, takes a proposition as its complement and thus (50a) does not entail that Prof. Kim considered Dr. Lee (see Aarts 1992 for similar distinctions in English). This means that the complementation structures of (49) and (50) are radically different. As depicted in (51), *Lee paksa-lul* in (49a) is merged as the object of the main verb, in a different domain from the SC-predicate, *kyoswu-lo*. By contrast, *Lee paksa-lul* in (50a) is merged in the same domain as SC-predicate, *ceyca-lo*, as illustrated in (52). RPs in (51)-(52) represent a small clause domain, which undergoes Spell-out and CL at the interface (see Ko 2011, 2014a, 2015 for the typology and structure of small clauses in Korean; cf. den Dikken 2006, 2007 for the syntax and semantics of RPs).

(51)



(52)



The contrast between (51) and (52) in their argument structures results in crucial differences in linearization. In the case of (51), the object is linearized in a separate domain from the small clause predicate. Thus, the predicate (more precisely, the small clause RP with PRO) can be scrambled over the object in (49b) without ordering conflicts. By contrast, in (52), the SC-subject must be linearized together with its predicate given that they are merged in the same predicational domain, RP. Since the SC-subject precedes the SC-predicate in the small clause, this ordering must be preserved after CL. If predicate inversion occurs in a later derivation, as in (50b), ordering conflicts arise between the small clause and CP domains, and thus the derivation is filtered out at the interface. Put generally, the CL-approach to scrambling correctly predicts that SC-predicate inversion is banned once the small clause undergoes CL, and crucially, this restriction holds only in the cases where the SC-subject and SC-

predicate are externally merged within the same small clause. Ko (2014a) extensively argues that this account extends to restrictions on predicate inversion out of other types of small clauses in scrambling languages (see Ko 2014a, 2015 for CL effects in depictives, resultatives, and decomposed VPs).

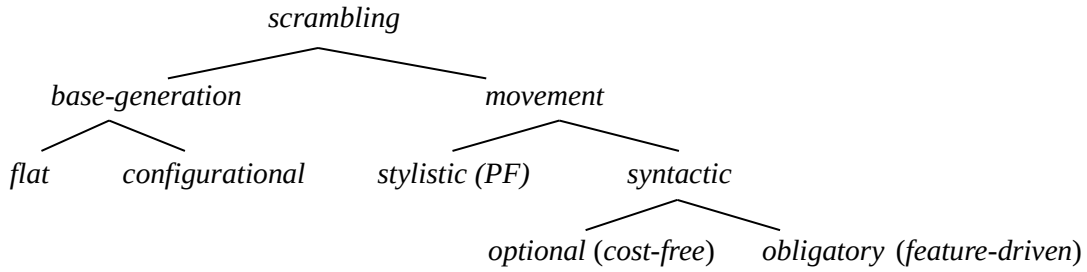
In this section, we have seen that scrambling in Korean applies optionally but not randomly. It may be blocked due to various factors in syntax and its interfaces in the grammar. Before closing this section, it is worth mentioning that scrambling is sometimes forced if scrambling is the only way to derive a grammatical output. One such case is the NPI licensing discussed with (17); clause-external scrambling of *amwukesto* is necessary to license it by the matrix negation (Sohn 1995, Y. Lee 1993, R. Kim 2003). A structure with potential "LF-Intervention effects" is another well-established case (Beck and Kim 1997; cf. Hoji 1985, S. Kim 1991). As illustrated in (53a), the NPI *amwuto* cannot precede a *wh*-phrase in Korean (cf. Ko 2005b for exceptional behavior of *way* 'why'). In contrast, if the *wh*-phrase undergoes scrambling over the NPI, as in (53b), it is interpreted as a licit *wh*-question. Beck and Kim (1997) argues that *wh*-scrambling in (53b) is forced to obviate intervention effects at LF. Specifically, when the NPI and negation hierarchically intervene between *mwues-ul* and *Q*, as in (53a), it blocks *wh*-licensing at LF. By contrast, if *wh*-scrambling occurs, as in (53b), the NPI does not intervene between the *wh*-phrase and *Q* at LF, and the sentence is interpreted as a licit *wh*-question. S.-S. Kim (2002) further argues that focus-bearing elements work as an LF-intervener and thus that *wh*-scrambling is necessary when a *wh*-phrase is c-commanded by a focus-bearing element in the overt syntax (cf. Sohn 1995, Son 2001, Tomioka 2007, Y. Choi 2007, among others, for different approaches).

(53) a. ***amwuto** **mwues-ul** mek-ci-anh-ass-ni?
anyone what-Acc eat-CI-Neg-Past-Q
'What did no one eat?'
b. **mwues-ul**$_1$ **amwuto** t_1 mek-ci-anh-ass-ni? (Beck and Kim 1997)

4. Formal Properties of Scrambling

Section 4 provides an overview of major studies on the formal property of scrambling, assessing their implication for Korean data. The term *scrambling* was coined by Ross (1967), who defined it as a stylistic rule which applies freely in the grammar. Its theoretical import has been adopted in many different ways since then. Though the details differ, major approaches can be summarized as in (54): some authors argue that scrambling is a result of base-generation, whereas others take scrambling as a movement operation with differing assumptions on its nature (cf. Corver and van Riemsdijk 1994:13).

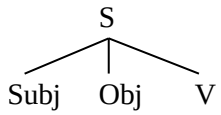
(54)



Let us first consider the base-generation approach, which posits non-configurational flat structures.

Hale (1980) is the earliest attempt to provide a theoretical account on scrambling based on this approach. Hale suggested a parameter that partitions languages into two groups: configurational and non-configurational. Configurational languages have a hierarchical structure, but non-configurational languages take a flat structure such as (55). Under the non-configurational structure, it is assumed that all phrases have a symmetrical relation with the head, so that they are free to occur in any order in syntax. Hale claims that scrambling languages take the non-configurational parameter. Under this proposal, different orders in scrambling languages are freely base-generated in syntax: no movement is involved in scrambling.

(55) *non-configurational flat structure*



If Hale's proposal is on the right track, scrambling languages should exhibit general properties of non-configurational structures in syntax. Subsequent work, however, presented considerable evidence against this prediction (Saito and Hoji 1983, Saito 1985, Hoji 1985, Choe 1985, Whitman 1987). The data from Korean lend further evidence against the non-configurationality approach. As seen in Section 2, clear configurational asymmetries are observed in Korean in terms of binding, scope, and crossover effects. As discussed in Section 3, word order variation in Korean is regulated by various predictable factors at the syntax proper and its interfaces. Scrambling in Korean also affects semantic interpretation in areas such as scope. If scrambled orders can be randomly base-generated, the facts discussed in Sections 2 and 3 would not be expected. All of these data point to the conclusion that scrambling in Korean cannot be attributed to the hypothesis that Korean takes the non-configurational parameter.

An alternative view is to inherit Hale's insight that scrambled orders are freely base-generated, but assume that scrambling languages are fully configurational. Some researchers indeed pursue this line of research (e.g. Y.-S. Kim 1997, Neeleman and Reinhart 1998, Bošković and Takahashi 1998, Cho and Kim 2000, Fanselow 2001, Bošković 2004; cf. also Kempson and Kiaer 2010 for a processing-based approach under the Dynamic Syntax model). Mainly based on Japanese, Bošković and Takahashi (1998) argue that scrambled phrases must be base-generated in their surface position (cf. Neeleman and Reinhart 1998 for flexible merger of the object in Germanic OV languages). Under Bošković and Takahashi (1998), the phrases scrambled clause-externally must undergo lowering at LF in order to check their theta-feature. The phrases scrambled clause-internally, on the other hand, may stay in their surface position if locally theta-marked in IP-adjoined position or undergo LF-lowering to its theta position (cf. Cho and Kim 2000). This analysis makes optional scrambling consistent with the *Last Resort* principle (Chomsky 1995) in that scrambled phrases undergo obligatory (covert) movement for feature-checking at LF.

Crucially, this approach predicts that clause-external scrambling would be semantically vacuous because scrambled phrases *must* be lowered to their theta position at LF (Bošković and Takahashi 1998, Bošković 2004; cf. Saito 1989). This prediction, however, is not upheld in Korean scrambling with mixed A/A'-effects. As discussed in Section 2, upstairs interpretation of scrambled phrases is sometimes necessary and sometimes optional in Korean. If LF-lowering for theta checking is an obligatory operation (as enforced by Last Resort), *anti-reconstruction effects* shown in (15)-(20) would remain surprising. Put generally, cross-linguistic variations in semantic effects of scrambling are not expected

under this approach. Moreover, if scrambled phrases are base-generated in surface position, no WCO effects (or their variations) would be expected in scrambling, contrary to fact (recall (5) vs. (10)). More importantly, it remains largely unexplained how this approach would explain the fact that movement constraints posited in the overt syntax regulate scrambling. We have seen that scrambling in Korean is sensitive to movement restrictions such as strong islands, PBC, LBC, and CSC, showing locality effects. This, however, is not be expected under the base-generation approach in an obvious way (cf. Bošković and Takahashi 1998: 358-359/361 for some responses; see Bailyn 2001, Johnston and Park 2001, and Miyagawa 2006 for extensive reviews and criticisms on the base-generation/LF-lowering approach to scrambling). Moreover, the set of evidence adduced for the claim that scrambling undergoes cyclic Spell-out in the course of derivation cannot be accommodated in any straightforward way under the base-generation approach (see Ko 2014a).

Against the base-generation approach, a number of researchers argue for a movement approach to scrambling. Some researchers argue that scrambling is an instance of movement that operates at the phonological component, not in core syntax (see Ross 1967, Chomsky and Lasnik 1977 for scrambling as a stylisitic rule, Zubizarreta 1998 for prosodically-motivated scrambling, Sauerland and Elbourne 2002 for PF-scrambling in Japanese). Kwon (2010), in particular, adopts this approach and argues that CP-scrambling in Korean is optional PF-movement driven by prosodic requirement and has no LF import at all. Though this approach may fit well with the CP-scrambling data which show total reconstruction effects, it cannot be extended to other instances of scrambling with semantic effects. As demonstrated in Section 2, certain types of DP-scrambling in Korean clearly yield new semantic interpretations. This means that PF-movement cannot be the sole source of scrambling in Korean. If PF-scrambling exists in the grammar, it is crucial to clarify how we can dissociate PF-scrambling from syntactic scrambling in a principled way and why we should do so. These questions, however, will have to be answered in future research.

Another approach in this vein is to regard scrambling as cost-free optional movement in syntax - which has been the most dominant view in the field, especially in the pre-minimalist era (e.g. Kuroda 1988, Saito 1985, 2003, Hoji 1985, Fukui 1993, Abe 1993, Cho 1994ab, Saito and Fukui 1998, Tada 1993, Takano 1998, R. Kim 2003). In this approach, scrambling is considered a truly optional and costless movement, which may occur without any driving force. Fukui (1993) and Saito and Fukui (1998), in particular, argue that optional movement in language depends on the directionality of the head parameter: left-headed languages allow optional movement to the right such as heavy NP shift in English, whereas right-headed languages allow optional movement to the left such as leftward scrambling in Korean and Japanese. This approach naturally captures the fact that scrambling in a head-final language yields an optional variation, unlike obligatory A/A'-movement in other languages (cf. Bailyn 2001: 652 for right-branching scrambling languages such as Russian as a challenge to this theory). Since scrambling is defined as a type of movement, it straightforwardly follows that scrambling is subject to movement constraints, as in (27)-(31), and it is also expected that scrambling may yield a new interpretation in terms of binding and scope, as a consequence of displacement in syntax.

As the theory of syntax develops in the framework of the Minimalist Program, however, this approach faces some non-trivial challenges both empirically and theoretically. On the theoretical side, this approach is not compatible with the premise that syntactic operations are driven by morphological forces such as *Last Resort* (Chomsky 1995) or *probe-goal Search* (Chomsky 2000, 2001). Under this approach, it remains largely open *when* and *why* scrambling occurs in a language because scrambling is assumed to be a cost-free option. On the empirical side, it cannot explain the fact that scrambling is

constrained by the same factors that regulate feature-driven movement. If scrambling is a cost-free option, we expect that scrambling would be much freer than feature-driven movement, but this prediction is not borne out. It has been shown that scrambling exhibits locality and anti-locality effects just as feature-driven movement (Miyagawa 2001, 2010, Richards 2001, Kitahara 2002, Ko 2007, 2011, 2014a). Scrambling is allowed only when a proper probe (trigger) exists within the cyclic domain, just as in the case of feature-driven movement (e.g. (48a)).

Some recent studies converge on the conclusion that scrambling is a feature-driven movement in the syntax proper (e.g. Y. Lee 1993, Miyagawa 1997, 2001, 2010, Karimi 1999, Grwendorf and Sabel 1999, Sabel 2001, Kitahara 2002, Lee and Cho 2003ab, Jung 2002, Yang and Kim 2005, H. Lee 2006, Ko 2007, 2011, 2014a). Notably, this approach claims that scrambling is obligatory movement despite the fact that scrambling yields an optional variation. A head may optionally obtain a scrambling feature, but once the feature is assigned, scrambling becomes obligatory in syntax. Proponents of this approach argue that scrambling must be triggered by a formal feature, just as other types of movement in syntax, and thus that it is constrained by general principles for feature checking. Given that scrambling is a type of movement, it naturally explains the fact that scrambling shows the traits of movement in its derivation and representation; it is subject to movement constraints and may create a new semantic interpretation, as seen in Sections 2 and 3. This model is in good harmony with current assumptions on cyclic syntax, so it is expected that scrambling will be filtered out if it cannot maintain the monotonicity of CL at PF. It is also correctly predicted that scrambling will not be possible if a proper probe does not exist within the cyclic domain, just as feature-driven movement (Ko 2014a for general discussion).

The nature of the formal feature that triggers scrambling is under investigation, however. Various proposals have been advanced: Case (Y. Lee 1993; cf. Miyagawa 1997 for A-scrambling), Σ-feature (Grwendorf and Sabel 1999), EPP (Miyagawa 2001, Kitahara 2002; cf. INT-Move by Yang and Kim 2005), Focus/Topic (Karimi 1999, Miyagawa 1997, 2010, 2017, Jung 2002, Lee and Cho 2003ab), and Edge Feature (H. Lee 2006), among many others. It has been widely reported that scrambling in Korean is associated with discourse effects such as topic, focus, specificity, or presuppositionality (Y. Lee 1993, D. Kim 1993, 1995, H. Choi 1999, Lee and Cho 2003ab, Son 2001, 2003). Thus, it seems reasonable to assume that some sort of discourse force underlies the scrambling operation in syntax. It remains open, however, how fine-grained analyses can be developed for the theory of formal features that trigger scrambling. It also remains to be seen how successfully the feature-based theory may accommodate typological variations in scrambling, using the inventory of formal features in languages.

5. Implications of studies on Korean scrambling

This article surveyed the key properties of scrambling in Korean. In-depth studies on Korean scrambling contribute to our understanding of the typology of movement and displacement in general. Korean scrambling cannot be directly mapped into the dichotomy of A/A'-movement. The current observation naturally leads us to the pursuit of a general theory, which covers obligatory movement as well as optional displacement with mixed semantic effects. The contrasts between Korean and other scrambling languages engender an important research question on how to account for cross-linguistic differences and similarities among languages with free word order. Investigations on restrictions in scrambling tell us how the syntax interacts with various components of the grammar at the interfaces.

References

Aarts, Bas. 1992. *Small clauses in English*: *The nonverbal types*. Berlin-New York: Mouton de Gruyter.

Abe, Jun. 1993. Binding conditions and scrambling without A/A' distinction. Doctoral dissertation, University of Connecticut, Storrs, CT.

Ahn, Sung-Ho. 1990. Korean quantification and universal grammar. Doctoral dissertation, University of Connecticut, Storrs, CT.

Aoun, Joseph, and Yen-hui Audrey Li. 1989. Scope and constituency. *Linguistic Inquiry* 20:141-172.

Bailyn, John Frederick. 2001. On scrambling: A reply to Bošković and Takahashi. *Linguistic Inquiry* 32:635-658.

Barss, Andrew. 1986. Chains and anaphoric dependence*:* On reconstruction and its implications. Doctoral dissertation, MIT.

Beck, Sigrid, and Shin-Sook Kim. 1997. On wh-and operator scope in Korean. *Journal of East Asian Linguistics* 6:339-384.

Belletti, Adriana, and Luigi Rizzi. 1988. Psych-verbs and θ-theory. *Natural Language & Linguistic Theory* 6:291-352.

Bošković, Željko. 2004. Topicalization, focalization, lexical insertion, and scrambling. *Linguistic Inquiry* 35:613-638.

Bošković, Željko, and Daiko Takahashi. 1998. Scrambling and last resort. *Linguistic Inquiry* 29:347-366.

Cho, Jai-Hyoung. 1994a. Scrambling in Korean: Crossover, reconstruction and binding theory. Doctoral dissertation, University of Connecticut.

Cho, Jai-Hyoung. 1994b. On scrambling: reconstruction, crossover, and anaphor binding. In *Theoretical issues in Korean linguistics*, ed. by Young-Key Kim-Renaud, 255-274. Stanford: CSLI.

Cho, Jai-Hyoung. 1996. Reconstruction effects and intermediate A-position. *Studies in Generative Grammar* 6:257-279.

Cho, Jai-Hyoung, and Ock-Hwan Kim. 2000. Scrambling without syntactic movement. *Studies in Generative Grammar* 10:151-179.

Choe, Hyon-Sook. 1985. Remarks on configurationality parameters. In *Harvard Studies in Korean Linguistics I,* ed. by Susumu Kuno, John Whitman, Ik-Hwan Lee, and Young-Se Kang, 14-29. Department of Linguistics, Harvard University, Cambridge, MA.

Choi, Kiyong. 2014. Phikyelsok-pyenhang taymyengsaloseuy 'caki' [*caki* as a bound-variable pronoun]. *Studies in Generative Grammar* 24(2): 325-364.

Choi, Hye-Won. 1999. *Optimizing structure in context: Scrambling and information structure*. Stanford, Calif.: CSLI Publications.

Choi, Young-Sik. 2004a. Reconstruction, weak crossover, and binding in Korean scrambling: some theoretical implications. *The Linguistic Association of Korea Journal* 12(2):185-206.

Choi, Young-Sik. 2004b. The structure of *selo* and its implication for binding theory. *Language Research* 40(3): 681-694.

Choi, Young-Sik. 2007. Intervention effect in Korean *wh*-questions: indefinite and beyond. *Lingua* 117:2055-2076.

Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.

Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.

Chomsky, Noam. 1982. *Some concepts and consequences of the theory of government and binding.* Cambridge, MA: MIT Press.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT press.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step*: *Essays on Minimalist syntax in honor of Howard Lasnik*, ed. by Roger Martin, David Michaels, and Juan Uriagereka, 89-155. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale*: *A life in language*, ed. by Michael Kesntowicz, 1-52. Cambridge, MA: MIT Press.

Chomsky, Noam. 2008. On phases. In *Foundational Issues in Linguistic Theory*: *Essays in Honor of*

Jean-Roger Vergnaud, ed. by Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta, 133-166. Cambridge, MA: MIT Press.
Chomsky, Noam. 2013. Problems of projection. *Lingua* 130: 33-49.
Chomsky, Noam, and Howard Lasnik. 1977. Filters and control. *Linguistic Inquiry* 8:425–504.
Chung, Daeho. 1996. On the representation and licensing of Q and Q-dependents. Doctoral dissertation, University of Southern California.
Chung, Daeho. 2008. Agree but not necessarily at the same time. *Studies in Generative Grammar* 18: 509-524.
Chung, Daeho and Hong-Keun Park. 1998. On *selo*. In *Japanese/Korean Linguistics* 8, ed. by David James Silva, 417-430. Stanford University, CA: CSLI Publications.
Corver, Norbert, and Henk van Riemsdijk, eds. 1994. *Studies on scrambling: Movement and non-movement approaches to free word-order phenomena*. Berlin-New York: Walter de Gruyter.
den Dikken, Marcel. 2006. *Relators and linkers*: *The syntax of predication, predicate inversion, and copulas*. Cambridge, MA: MIT Press.
den Dikken, Marcel. 2007. Phase extension: contours of a theory of the role of head movement in phrasal extraction. *Theoretical Linguistics* 33:1-41.
Epstein, Samuel David, Erich M. Groat, Ruriko Kawashima, and Hisatsugu Kitahara. 1998. *A derivational approach to syntactic relations*. Oxford: Oxford University Press.
Fanselow, Gisbert. 2001. Features, θ-roles, and free constituent order. *Linguistic Inquiry* 32:405-437.
Fox, Danny. 1999. Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry* 30:157-196.
Fox, Danny. 2000. *Economy and semantic interpretation*. Cambridge, MA: MIT Press.
Fox, Danny, and David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31:1-45.
Fukui, Naoki. 1993. Parameters and optionality. *Linguistic Inquiry* 24:399-420.
Grewendorf, Günther, and Joachim Sabel. 1999. Scrambling in German and Japanese: Adjunction versus multiple specifiers. *Natural Language and Linguistic Theory* 17:1-65.
Hagstrom, Paul. 1998. Decomposing questions. Doctoral dissertation, MIT.
Hale, Kenneth. 1980. Remarks on Japanese phrase structure: Comments on the papers on Japanese syntax. In *Theoretical issues in Japanese linguistics*, ed. by Yukio Otsu and Ann Farmer, 185-203. MIT Working Papers in Linguistics 2. Cambridge, MA: MITWPL.
Han, Chung-hye, and Dennis Ryan Storoshenko. 2012. Semantic binding of long-distance anaphor *caki* in Korean. *Language* 88(4):764-790.
Hoji, Hajime. 1985. Logical form constraints and configurational structures in Japanese. Doctoral dissertation, University of Washington, Seattle.
Huang, C.-T. James. 1982. Logical relations in Chinese and the theory of grammar. Doctoral dissertation, MIT.
Johnston, Jason C., and Iksan Park. 2001. Some problems with a lowering account of scrambling. *Linguistic Inquiry* 32:727-732.
Jung, Yeun-Jin. 2002. Scrambling, edge effects and A/A'-distinction. *The Linguistic Association of Korea Journal* 10:41-64.
Jung, Yeun-Jin. 2015. Subjacency revisited: Is it real or a reflex of performance biases? *Korean Journal of Linguistics* 40:511-542.
Kang, Beom-Mo. 1998. Three kinds of Korean reflexives: a corpus linguistic investigation on grammar and usage. In *Proceedings of the 12th Pacific Asia Conference on Language, Information, and Computation*, 10-19. Singapore: PACLIC.
Kang, Jung-Goo, and Gereon Müller. 1996. Reconstruction vs. copying: The case of *wh*-scope. In *Japanese/Korean linguistics 5*, ed. by Noriko Akatsuka, Shoichi Iwasaki, and Susan Strauss, 269–285. Stanford, Calif.: CSLI Publications.
Karimi, Simin. 1999. Is scrambling as strange as we think it is? In *Papers on morphology and syntax, cycle one*, ed. by Karlos Arregi, Benjamin Bruening, Cornelia Krause, and Vivian Lin, 159-190. MIT Working Papers in Linguistics 33. Cambridge, MA: MITWPL.
Karimi, Simin, ed. 2003. *Word order and scrambling*. Malden, MA: Blackwell Publishing.

Karimi, Simin. 2005. *A minimalist approach to scrambling: Evidence from Persian*. Berlin-New York: Mouton de Gruyter.
Kempson, Ruth, and Jieun Kiaer. 2010. Multiple long-distance scrambling: syntax as reflection of processing. *Journal of Linguistics* 46: 127-192.
Kim, Dae-Bin. 1993. *The specificity/non-specificity distinction and scrambling theory.* Seoul: Taehaksa.
Kim, Dae-Bin. 1995. Non-specificity and scrambling. *Studies in Generative Grammar* 5:199-238.
Kim, Ji-Hye, and James H. Yoon. 2009. Long-distance bound local anaphors in Korean - an empirical study of the Korean anaphor *caki-casin. Lingua* 119: 733-755.
Kim, Ji-Hye, Silvina Montrul, and James H. Yoon. 2009. Binding interpretation of anaphors by Korean heritage speakers. *Language Acquisition* 16:3-35.
Kim, Lan. 2015. Asymmetric ditransitive constructions: evidence from Korean. *Lingua* 165:28-69.
Kim, Rhang-Hye-Yun. 2003. Scrambling and minimalist program. *Studies in Generative Grammar* 13:3-19.
Kim, Shin-Sook. 2002: Intervention effects are focus effects. In *Japanese/Korean linguistics 10*, ed. by Noriko Akatsuka and Susan Strauss, 615-628. Stanford: CSLI Publications.
Kim, Soowon. 1991. Chain scope and quantification structure. Doctoral dissertation, Brandeis University, Waltham, MA.
Kim, Soowon. 1999. Sloppy/strict identity, empty objects, and NP ellipsis. *Journal of East Asian Linguistics* 8:255-284.
Kim, Yong-Ha. 1998. Overt Case and covert Case in Korean. *Studies in Generative Grammar* 8: 177-237.
Kim, Yong-Ha. 1999. *Hankwuke kyekkwa eswunuy choysocwuuy mwunpep* [*A minimalist approach to Case and word order in Korean*]. Seoul: Hankwukmwunhwasa.
Kim, Young-Suck. 1997. The LF analysis of scrambling. *Studies in Modern Grammatical Theories* 11:79-90.
Kim, Young-joo, and Richard Larson. 1989. Scope interpretation and the syntax of psych-verbs. *Linguistic Inquiry* 20(4): 681-688.
Kitahara, Hisatsugu. 2002. Scrambling, case, and interpretability. In *Derivation and explanation in the minimalist program*, ed. by Samuel David Epstein and T. Daniel Seely, 167-183. Malden, MA: Blackwell Publishing.
Ko, Heejeong. 2005a. Syntactic edges and linearization. Doctoral dissertation, MIT.
Ko, Heejeong. 2005b. Syntax of *why-in-situ*: Merge into [Spec,CP] in the overt syntax. *Natural Language and Linguistic Theory* 23:867-916.
Ko, Heejeong. 2007. Asymmetries in scrambling and cyclic linearization. *Linguistic Inquiry* 38:49-83.
Ko, Heejeong. 2011. Predication and edge effects. *Natural Language and Linguistic Theory* 29:725-778.
Ko, Heejeong. 2014a. *Edges in syntax: scrambling and cyclic linearization.* Oxford: Oxford University Press.
Ko, Heejeong. 2014b. Remarks on right dislocation construction in Korean: challenges to biclausal analyses. *Language Research* 50:275-310.
Ko, Heejeong. 2015. On the typology of small clauses: null subject and mode of merge in resultatives. *Studies in Generative Grammar* 25:347-375.
Ko, Heejeong. 2016. Gapless right-dislocation: the role of overt correlates. *Language Research* 52:1-30.
Kwon, Song-Nim, and Anne Zribi-Hertz. 2008. Differential function marking, case, and information structure: evidence from Korean. *Langauge 84(2):* 258-299.
Kuno, Susumu. 1973. *The structure of the Japanese language*. Cambridge, MA: MIT Press.
Kuno, Susumu. 1980. A further note on Tonoike's intra-subjectivization hypothesis. In *Theoretical issues in Japanese linguistics*, ed. by Yukio Otsu and Ann Farmer, 171-184. MIT Working Papers in Linguistics 2. Cambridge, MA: MITWPL.
Kuroda, Shige-Yuki. 1988. Whether we agree or not: a comparative syntax of English and Japanese. *Lingvisticae Investigationes* 12:1-47.
Kwon, Jongil. 2010. Scrambling of Korean embedded clauses. *Studies in Generative Grammar* 20:229-

249.
Lasnik, Howard. 1999. Chains of arguments. In *Working minimalism*, ed. by Samuel David Epstein and Norbert Hornstein, 189-215. Cambridge, MA: MIT Press.
Lasnik, Howard, and Tim Stowell. 1991. Weakest crossover. *Linguistic Inquiry* 22: 687-720.
Lebeaux, David. 1988. Language acquisition and the form of the grammar. Doctoral dissertation, University of Massachusetts, Amherst.
Lebeaux, David. 2009. *Where does binding theory apply*? Cambridge, MA: MIT Press.
Lee, Hanjung. 2015. Case particle ellipsis. In *Handbook of Korean Linguistics*, ed. by Lucien Brown and Jaehoon Yeon, 196-211. Hoboken, NJ: John Wiley & Sons.
Lee, Hyeran. 2006. A study on scrambling in Korean: the minimalist approach. *Studies in Generative Grammar* 16:425-460.
Lee, Hyunoo. 2001a. Interpreting *selo* as a variable: the syntax and semantics interface. *Language Research* 37: 293-309.
Lee, Hyunoo. 2001b. A case of anaphor-antecedent reversal and binding theory. *Eoneohak* 29:133-152.
Lee, Hyunoo. 2006. A comparative study of reciprocals in English and Korean: their distribution and interpretation. *Studies in Generative Grammar* 16(1): 129-152.
Lee, Ju-Eun. 2004. Ditransitive structures and (anti-)locality. Doctoral dissertation, Harvard University.
Lee, Kap-Hee. 2003. Semantic effects in scrambling. In *Explorations in Korean language and linguistics*, ed. by Gregory K. Iverson and Sang-Cheol An, 377-390. Seoul: Hankook Publishing.
Lee, Wonbin, and Sungeun Cho. 2003a. Argument scrambling and object shift. *Studies in Generative Grammar* 13:39-59.
Lee, Wonbin, and Sungeun Cho. 2003b. Is scrambling EPP-driven? *Studies in Generative Grammar* 13:331-341.
Lee, Young-Suk. 1993. Scrambling as case-driven obligatory movement. Doctoral dissertation, University of Pennsylvania.
Lee, Young-Suk. 1994. Scrambling as case-driven movement. *Studies in Generative Grammar* 4:495-533.
Madigan, Sean. 2015. Anaphora and binding. In *Handbook of Korean linguistics*, ed. by Lucien Brown and Jaehoon Yeon, 137-154. Hoboken, NJ: John Wiley & Sons.
Mahajan, Anoop Kumar. 1990. The A/A'-distinction and movement theory. Doctoral dissertation, MIT.
Martin, Samuel E. 1992. *A reference grammar of Korean: a complete guide to the grammar and history of the Korean language*. Rutland, Vt.: Charles E. Tuttle.
May, Robert. 1977. The grammar of quantification. Doctoral dissertation, MIT.
May, Robert. 1985. *Logical form: its structure and derivation.* Cambridge, MA: MIT Press.
Miyagawa, Shigeru. 1997. Against optional scrambling. *Linguistic Inquiry* 28:1-25.
Miyagawa, Shigeru. 2001. The EPP, scrambling, and *wh*-in-situ. In *Ken Hale*: *A life in language*, ed. by Michael Kesntowicz, 293-338. Cambridge, MA: MIT Press.
Miyagawa, Shigeru. 2006. On the 'undoing' nature of scrambling: a response to Bošković. *Linguistic Inquiry* 37:607-624.
Miyagawa, Shigeru. 2010. *Why Agree? Why Move? Unifying agreement-based and discourse-configurational languages*. Cambridge, MA: MIT Press.
Miyagawa, Shigeru. 2017. *Agreement beyond phi*. Cambridge, MA: MIT Press.
Neeleman, Ad, and Tanya Reinhart 1998. Scrambling and the PF interface. In *The projection of arguments: lexical and compositional factors*, ed. by Miriam Butt and Wilhem Geuder, 309-353. Stanford: CSLI Publications.
Nemoto, Naoko. 1993. Chains and case positions: A study from scrambling in Japanese. Doctoral dissertation, University of Connecticut.
Postal, Paul. 1971. *Cross-over phenomena*. New York: Holt, Rinehart, and Winston.
Reinhart, Tanya. 1981. Definite NP anaphora and c-command domains. *Linguistic Inquiry* 12: 605-635.
Richards, Norvin. 2001. *Movement in language*: *interactions and architecture*. Oxford-New York: Oxford University Press.
Richards, Norvin. 2014. A-bar movement. In *The Routledge handbook of syntax*, ed. by Andrew Carnie, Yosuke Sato, and Daniel Siddiqi, 167-191. New York: Routledge.

Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge, MA: MIT Press.
Ross, John Robert. 1967. Constraints on variables in syntax. Doctoral dissertation, MIT.
Sabel, Joachim. 2001. *Wh*-questions in Japanese: scrambling, reconstruction, and *wh*-movement. *Linguistic Analysis* 31:1-41.
Sabel, Joachim. 2005. String-vacuous scrambling and the effect on output condition, In *The free word order phenomenon*: *its syntactic sources and diversity*, ed. by Joachim Sabel, and Mamoru Saito, 281-334. Berlin: Mouton de Gruyter.
Sabel, Joachim, and Mamoru Saito, eds. 2005. *The free word order phenomenon: its syntactic sources and diversity*. Berlin: Mouton de Gruyter.
Saito, Mamoru. 1985. Some asymmetries in Japanese and their theoretical implications. Doctoral dissertation, MIT.
Saito, Mamoru. 1989. Scrambling as semantically vacuous A'-movement. In *Alternative conceptions of phrase structure*, ed. by Mark R. Baltin and Anthony S. Kroch, 182-200. Chicago: University of Chicago Press.
Saito, Mamoru. 1992. Long-distance scrambling in Japanese. *Journal of East Asian Linguistics* 1:69-118.
Saito, Mamoru. 2003. A derivational approach to the interpretation of scrambling chains. *Lingua* 113:481-518.
Saito, Mamoru, and Hajime Hoji. 1983. Weak crossover and move α in Japanese. *Natural Language and Linguistic Theory* 1:245-259.
Saito, Mamoru, and Naoki Fukui. 1998. Order in phrase structure and movement. *Linguistic Inquiry* 29:439-474.
Sato, Yosuke and Nobu Goto. 2014. Scrambling. *The Routledge handbook of syntax*, ed. by Andrew Carnie, Yosuke Sato, and Daniel Siddiqi, 264-282. New York: Routledge.
Sauerland, Uli, and Paul Elbourne. 2002. Total reconstruction, PF movement, and derivational order. *Linguistic Inquiry* 33:283-319.
Sells, Peter. 2015. Negation and negative polarity items. In *Handbook of Korean linguistics*, ed. by Lucien Brown and Jaehoon Yeon, 212-231. Hoboken, NJ: John Wiley & Sons.
Sohn, Keun-Won. 1995. Negative polarity items, scope, and economy. Doctoral dissertation, University of Connecticut.
Son, Gwangrak. 2001. Scrambling, reconstruction, and the checking principle. Doctoral dissertation, University of Wisconsin-Madison.
Son, Gwangrak. 2003. Traces of *wh*-scrambling. *Studies in Generative Grammar* 13:99-118.
Song, Jae Jung. 2009. Word order patterns and principles: an overview. *Language and Linguistics Compass* 3(5): 1328-1341.
Song, Jae Jung. 2012. *Word order*. Cambridge: Cambridge University Press.
Suh, Jinhee. 1990. Scope phenomena and aspects of Korean syntax. Doctoral dissertation, University of Southern California.
Tada, Hiroaki. 1993. A/A-bar partition in derivation. Doctoral dissertation, MIT.
Takahashi, Daiko. 1993. Movement of *wh*-phrases in Japanese. *Natural Language and Linguistic Theory* 11:655-678.
Takahashi, Shoichi and Sarah Hulsey. 2009. Wholesale merger: beyond the A/A'-distinction. *Linguistic Inquiry* 40:387-426.
Takano, Yuji. 1998. Object shift and scrambling. *Natural Language and Linguistic Theory* 16:817-889.
Tomioka, Satoshi. 2007. Pragmatics of LF intervention effects: Japanese and Korean *wh*-interrogatives. *Journal of Pragmatics* 39:1570-1590.
Tsai, Wei-Tien Dylan. 1994. On economizing the theory of A-bar dependencies. Doctoral dissertation, MIT.
Uriagereka, Juan. 1999. Multiple spell-out. In *Working Minimalism*, ed. by Samuel Epstein and Norbert Hornstein, 251-282. Cambridge, MA: MIT Press.
Watanabe, Akira. 1992. *Wh-in-situ, subjacency, and chain formation* (*MIT Occasional Papers in Linguistics 2*). Cambridge, MA: MITWPL.
Webelhuth, Gert. 1989. Syntactic saturation phenomena and the modern Germanic languages. Doctoral

dissertation, University of Massachusetts, Amherst.
Whitman, John. 1987. Configurationality parameters. In *Issues in Japanese linguistics*, ed. by Takashi Imai and Mamoru Saito, 351-374. Dordrecht: Foris.
Yang, Dong-Whee. 1983. The extended binding theory of anaphors. *Language Research* 19(2):169-192.
Yang, Dong-Whee. 1986. Hankwuke-uy tayyongsalon [a discussion of Korean anaphors]. *Kwukehak* 15: 41-162.
Yang, Dong-Whee, and Sung-Hun Kim. 2005. Scrambling and interpretive complex. *The Linguistic Association of Korea Journal* 13(2):169-193.
Yoon, James H. 2004. Non-nominative (major) subjects and case stacking in Korean. In *Non-nominative subjects*: *volume 2* (*Typological Studies in Language* 61), ed. by Peri Bhaskararao and Karumuri Venkata Subbarao, 265-314. Amsterdam/Phildelphia: John Benjamins.
Yoon, James H. 2007. Raising of major arguments in Korean and Japanese. *Natural Language and Linguistic Theory* 25:615-653.
Yoon, James H. 2015. Double nominative and double accusative constructions. In *Handbook of Korean linguistics*, ed. by Lucien Brown and Jaehoon Yeon, 79-97. Hoboken: John Wiley & Sons.
Yoon, Jeong-Me. 2013. Undoing and *wh*-Island effects of scrambling in Korean. *Studies in Generative Grammar* 23:41-63.
Zubizarreta, Maria Luisa. 1998. *Prosody, focus and word order*. Cambridge, MA: MIT Press.

[1] Word order variation in Korean has been attributed to various syntactic operations such as leftward scrambling, topicalization, left-dislocation, and right-dislocation (also called rightward scrambling/afterthought). Amongst these, this article focuses on the syntax and semantics of leftward scrambling, which is one of the most discussed and prominent topics in Korean linguistics. The literature covered in this article is largely confined to previous works developed under the Generative Grammar framework (in particular, the Government and Binding Theory, Minimalist Program, and its predecessors that cohere with the Principles and Parameters approach to language: e.g. Chomsky 1965, 1981, 1982, 1986, 1995, 2001, 2008, 2013). See Song (2009, 2012) for a critical survey of different approaches to word order, based on linguistic typology, generative grammar, optimality theory, and performance-based theories. This article employs the Yale Romanization (Martin 1992) to transliterate Korean examples. The back vowel [u], however, is consistently transliterated as 'wu' regardless of its phonetic context.

[2] The term *reconstruction* is employed in this article to refer to *interpretive effects* such that a phrase is interpreted in non-surface position (most likely, the base position) after overt movement. This article abstracts away from the theoretical discussion on whether reconstruction implies literal lowering at LF (May 1977, 1985) or interpretation of a (part of) lower copy at LF (Chomsky 1995).

[3] Most examples in Section 2.1 are drawn from the literature on scrambling in Korean (with minor modifications in notations, styles, and transliteration). To clarify, some of the Korean examples are modeled after data studied in other languages (see, in particular, Mahajan (1990, Hindi) and Saito (1992, Japanese) and Tada (1993, Japanese) for tests concerning binding and WCO effects). Given that the notion of A- and A-bar distinction can be applicable to language in general, it is not surprising that researchers tested A/A'-effects in different languages with similar data structures. If relevant, the article refers the reader to the literature on other languages in the text. This, however, does not mean that all the scrambling languages behave in the same way on the test at issue. For data in other languages, refer to primary sources cited for each language.

[4] Y. Choi (2004a:189-190) reports that Korean data similar to (8) are grammatical, however. The reader may note that the data in (8) (also (12)) may be explained by assuming that the subject in fact c-commands the scrambled R-expression adjoined in the same TP (under *c-command* in the sense of Reinhart 1981). Some previous studies have taken such an approach (see Bošković and Takahashi 1998: 361 for Japanese, and Son 2001: Chapter 2 for Korean scrambling and binding under an IP-adjunction structure). It is unclear, however, whether this approach would explain *variations* in Condition C (reconstruction) effects in languages. Bailyn (2001:643) reports that Condition C (reconstruction) effects hold only when a certain semantic condition is met for the scrambled NP in Russian. Citing Nishigauchi (2002), Miyagawa (2006) also argues that reconstruction effects due to Condition C are not observed in Japanese when an R-expression is embedded under a scrambled adjunct phrase. These variations in reconstruction are not expected under the adjunction-based approach to Condition C. It remains open

whether Condition C effects in Korean are subject to similar variations reported for other languages and whether the data in Korean support the adjunction-based approach over the standard LF-reconstruction approach.

[5] Based on Hindi, Mahajan (1990) argued that clause-internal scrambling may target the A or A'-position while clause-external scrambling must target the A'-position. Saito (1992) argues that Japanese scrambling shows a property of non-operator movement at S-structure (following Webelhuth's (1989) approach to German) but must be reanalyzed as A or A'-movement at LF (adapting Mahajan's (1990) analysis of Hindi). Under Saito (1992), clause-internal scrambling can be reanalyzed as either A or A'-movement (depending on verb raising), whereas clause-external scrambling must be reanalyzed as A'-movement at LF. See Sato and Goto (2014) for an overview on Japanese scrambling.

[6] The reader may note that *wh*-phrases and NPIs (e.g. (13), (14), (17)) may be licensed at any point of derivation without assuming reconstruction at LF (see Sohn 1995 for a related discussion on NPI licensing and feature checking in Korean). It is unclear, however, how this alternative would explain *wh*-licensing in (18). Once a *wh*-feature is checked in the embedded clause, it will not be checked again in the matrix clause. Thus, the ambiguity claimed for (18), if it exists, would not be explained in any obvious way under the derivational checking account. Moreover, a wide range of approaches have been proposed for *wh*-licensing in *in-situ* languages, and thus a careful study should be done to evaluate such a derivational approach to *wh*-licensing (cf. Huang 1982, Watanabe 1992, Takahashi 1993, Tsai 1994, Chung 1996, 2008, Hagstrom 1998, Jung 2015, among many others).

[7] More precisely, Sohn (1995: 151, 199-200) claims that if *manhun* 'many' undergoes scrambling to sentential initial position (over an NPI and negation), it must be interpreted as a specific group whose cardinality is many. This generalization holds in both clause-external and clause-internal scrambling. Sohn interprets the contrast between (19a) and (19b) to indicate that not all instances of long distance scrambling are undone, contra Tada (1993) (see also Bailyn 2001: 642, and Miyagawa 2006 for anti-reconstruction effects in long distance scrambling). It should be noted, however, that Sohn acknowledges reconstruction effects of long distance scrambling in other cases. Sohn (1995: 188) reports that when negation is not involved, as in (i), *manhun* 'many' must be reconstructed back after long distance scrambling and can take scope only in the embedded clause (as argued for Japanese in Tada 1993). It remains an open question for future research when and why a scrambled quantifier must be interpreted as a specific indefinite, as in (19a) or as as a quantificational element with LF-reconstruction effects, as in (i).

(i) **manhun** salam-ul$_1$ [nwukwunka-ka [John-i t_1 piphanhaysstako] mitunta
many people-Acc someone-Nom J.-Nom criticized believe
'Someone believes that John criticized many people.'(some>>many, *many>>some) (Sohn 1995: 188)

[8] See also Y. Lee (1994) for the lack of reconstruction effects in pronominal (variable) binding in VP-internal scrambling. A cautionary note is in order in the interpretatin of (23), however. In contrast to *caki* in (23), some speakers find that a reciprocal DO can be bound by an IO, as in (i). Given this, one might argue that (23) is ungrammatical because *caki* is strongly subject-oriented in Korean, and that the DO in (i) may undergo reconstruction below the IO, contra Cho (1994ab) (see Miyagawa 1997 for the claim on Japanese that DO may undergo A'-scrambling over IO and subsequent reconstruction below IO when focus is involved). See also note 11 for further discussion on anaphors in Korean.

(i) Nay-ka [**selo-uy**$_1$ sensayngnim-ul] ecey [**John-kwa Mary-eykey**]$_1$ sokayhassta.
I-Nom each.other-Gen teacher-Acc yesterday J.-and M.-Dat introduced
'I introduced John and Mary to each other's teacher.'

[9] Y. Lee (1993) claims that adjunct scrambling and clause-external scrambling are Case-driven as well. To explain counterexamples such as (6) (in conjunction with (8)), Y. Lee (1994: 528) assumes that Condition C applies at SS and cannot be "undone" at LF, which amounts to saying that Condition C must be satisfied in the scrambled position as well as in the reconstructed/original position.

[10] The idea that scrambling can be a type of non-operator A'-movement dates back to earlier influential works by Webelhuth (1989) and Saito (1992) (see note 5). Cho (1994ab) adapts this idea to clause-internal and external scrambling in Korean that occurs across a subject. Departing from Saito (1992) who assumes LF-reanalysis of scrambling, however, Cho does not postulate LF-reanalysis but assumes that non-operator scrambling must be understood as non-operator A'-movement throughout the derivation.

[11] It has been reported that some reflexives in Korean (e.g. *caki, casin*) can be used as a long-distance anaphor quite freely while other reflexives (e.g. *caki-casin, ku casin*) strongly prefer a local (clause-bound) reading (see Kang 1998, Kim, Montrul, Yoon 2009, Madigan 2015; cf. Kim and Yoon 2009 for *caki-casin* as a logophor). It is rather controversial how these reflexives should be analyzed. Various suggestions have been made for reflexives in Korean (e.g. local anaphor, long-distance anaphor, pronoun, logophor/exempt anaphor, bound variable). See, for instance, Han and Storoshenko (2012) and K. Choi (2014) for reviews and controversies on *caki*. Kim and Yoon (2009: 754) concludes that there are no anaphors that are used exclusively for core binding (in the sense of Chomsky 1986), with others being reserved for discourse-bound exempt binding. Instead of reflexives, some researchers used *selo* 'each other' in testing reconstruction effects. The status of *selo*, however, is yet unclear and diverse suggestions have been made for *selo* as well (e.g. local anaphor, bound variable/resumptive pronoun, coreferential pronominal, and collective adverb). See Yang 1986, Ahn 1990, Chung and Park 1998, H. Lee 2001ab, 2006, and Y. Choi 2004b for discussions on *selo*. Overall, current debates on anaphors lead us to the point that anaphor binding in Korean cannot be taken as straightforward evidence for (anti-)reconstruction effects which have been observed with core binding in other languages. Only after the nature of anaphor binding in Korean is properly understood can its consequence for scrambling be properly evaluated.

[12] Alternatively, one may rule out (35c) by extending the *anti-ambiguity* constraint employed for (33a) (cf. Kuno 1980, Y. Lee 1993). The linear order in (35a) may be potentially ambiguous in syntax, but the canonical parse is favored over the one with string-vacuous scrambling, and thus the derivation in (35c) becomes unavailable.

[13] Judgements on (39) and (40) are rather controversial, however. Some speakers find that (39) and (40) are acceptable when the Caseless NP is interpreted as a left-dislocated topic or hanging topic, and some speakers also find that (40) becomes acceptable when the subject is marked with nominative Case instead of the Topic marker.

[14] Under cyclic syntax (e.g. Uriagereka 1999, Chomsky 2001, Fox and Pesetsky 2005), all the syntactic structures must be cyclically linearized at the interface after Spell-out. The consequences of cyclic Spell-out are understood differently from theory to theory, however. Ko (2014a) adopts Fox and Pesetsky's (2005) CL model over Chomsky's (2001) phase model and derives peculiar properties of syntactic edges from various interactions among scrambling, predicational structures, and CL. Refer to Ko (2014a) for further discussion on scrambling and cyclic syntax. See also Ko (2014a) and references therein for other important issues such as the cross-linguistic typology and structure of numeral quantifiers and the role of A/A'-scrambling in floating quantifier constructions.