Scrambling of Adjunct and Last Resort

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Cho, Jai-Hyoung and Kim, Ock-Hwan. 1999. Scrambling of Adjunct and Last Resort. *Linguistics* 7-2, 39-59. This paper deals with long-distance scrambling of adjuncts in Korean and Japanese with respect to the Last Resort principle. It is claimed that long-distance scrambled arguments are base-generated in the surface non-θ IP-adjoined position and that they must be obligatorily lowered into their θ-position at LF to check their θ-role feature, which is regarded as a movement-driving formal feature. Long-distance scrambled adjuncts are also argued to be base-generated in the IP-adjoined position. Unlike their argument counterparts, they are licensed there since adjuncts do not have any Case or θ-requirement. Thus, they must not be lowered into the embedded clause which they modify, otherwise the Last Resort principle would be violated. (Ajou University)

1. Obligatory LF Movement

Most of the scrambling phenomena have been looked upon as the result of optional overt movement operations (cf. Mahajan 1990, Saito 1985, 1992, Fukui 1993, Nemoto 1993, and Cho 1994, 1997, among many others). In the following examples, (1b) is argued to be a derivation from (1a) via overt movement operation, or scrambling:

(1) a. Yenghi-ka   [[John-i   wancenhi i chayk-ul
          -Nom   -Nom completely this book-Acc
      ta ilkestta]   -nun sasil]-ey mancokhayssta.
      finished reading-Comp fact -at was satisfied
      'Yenghi was satisfied with the fact that John had finished reading this book completely.'

> b. i chayk$_i$ -ul   Younghi-ka   [[John-i   wancenhi
>   this book-Acc   -Nom   -Nom   completely
>   t$_i$ ta ilkestta]   -nun sasil]-ey mancokhayssta.
>   finished reading-Comp fact -at was satisfied
>   'This book, Yenghi was satisfied with the fact that John had
>   finished reading completely.'

In (1b), the object of the embedded clause, *i chayk-ul* is said to be optionally moved into the sentence-initial position without any reason or driving force. Within the framework of Chomsky (1995), however, this analysis is not well accommodated under the Last Resort principle, according to which Move-α is permitted only if the movement operation is morphologically driven by the need to check some features. In this respect, (1b) seems to violate the Last Resort principle. Though there is no movement, (1a) is fine. That is, the accusative NP already has its Case and θ-role feature checked in its original position, which makes any redundant movement violate the Last Resort principle. In addition, as Saito (1992) shows, unlike English *wh*-movement and topicalization, scrambling of the accusative NP does not establish an operator-variable relation.

In contrast to this optional syntactic movement analysis, we propose, adopting Boskovic and Takahashi (1998), the obligatory LF movement analysis. Our claim is that a so-called scrambled argument is base-generated in its surface non-θ IP-adjoined position, the process of which is Merge. At LF, the base-generated argument must be lowered into θ-position to check its θ-role feature.[1] Otherwise, it crashes. We assume that θ-role is a kind of formal feature and that it should be checked when a lexical element and its argument merge (cf. Ahn 1999, Hornstein 1996, Lasnik 1995). Since θ-role is a strong feature in English, it should be checked in overt syntax before Spell-Out, which implies English doesn't allow scrambling. On the other hand, since a θ

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1. For the formal feature view of θ-role, see Ahn (1999), Lasnik (1995), Boskovic & Takahashi (1998) and works cited there.

-role feature is weak in Japanese and Korean, it doesn't have to be checked until LF. So, any phrase can be merged anywhere in overt syntax. In (1b), the scrambled phrase *i chayk-ul* is base-generated or merged there in the IP-adjoined position. It should be lowered into the complement position of VP at LF, of course, the purpose of which is to fulfill its θ-role feature and Case checking requirement.[2] Otherwise, any derivation would crash. For the purpose of convergence, so-called scrambled phrases should be obligatorily lowered at LF, which is well accommodated under the Last Resort principle of movement.

The current analysis aims at accounting for the contrasts between the long-distance scrambling (henceforth, LDS) of argument and that of adjunct; the LDS of [+wh] adjunct and that of [-wh] adjunct, and the LDS of [+wh] adjunct in the matrix declarative sentence and that of [+wh] adjunct in the matrix interrogative sentence, otherwise too puzzling a problem to explain.

First, observe the contrast between (1b) and (2b):

(2) a. Yenghi-nun [nay-ka swulcip-eyse sikan-ul ponayssta-ko]
          -Top   I-Nom pub-at   time-Acc   spent-Comp
       mitessta.
       believed
       'Yenghi believed that I spent time at a pub.'
   b. *swulcip-eyse₁ [Yenghi-nun [nay-ka t₁ sikan-ul ponayssta-ko]]
          pub-at   -Top   I-Nom   time-Acc spent-Comp
       mitessta.
       believed
       'At a pub, Yenghi believed that I spent time.'

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2. Lowering of NP into θ-position seems to violate the θ-Criterion and the Projection Principle. But the minimalist framework dispenses with D-structure, where the Projection Principle is applied. Since there remain no D- and S-structure, the θ-Criterion and the Projection Principle cannot be checked before LF. There is then nothing in our assumption that is not amenable with movement into θ-position. For works motivating this approach, see Ahn (1999) and Boskovic & Takahashi (1998).

Unlike (1b), the LDS of adjunct is not allowed in (2b). If scrambling is an optional movement operation without any driving force, how could the ungrammaticality of (2b) be accounted for?

For another interesting contrast, consider the examples in (3):

(3) a. Mary-ga [John-ga   naze   sono setu-o   sinziteiru ka]
           -Nom   -Nom   why   that theory-Acc   believes   Q
       sitteiru.
       knows
       'Mary knows why John believes in that theory.'
    b. ?naze$_i$ Mary-ga [John-ga t$_i$ sono setu-o   sinziteiru ka]
       why   -Nom   -Nom   that theory-Acc believes Q
       sitteiru.
       knows
       'Mary knows why John believes in that theory.'

(3b) shows that the LDS of [+wh] adjunct is allowed. Though marginal, (3b) is better than (2b), the LDS of [-wh] adjunct.

The example of the third problematic contrast is given in (4b):

(4) a. Yenghi-ka [[Chelswu-ka   way   wassta] -ko] sayngkakha-ni?
           -Nom   -Nom why   came -Comp thinks   -Q
       'Why does Yenghi think that Chelswu has come?'
    b. *way$_i$ Yenghi-ka [[Chelswu-ka t$_i$ wassta] -ko] sayngkakha-ni?
       why   -Nom   -Nom came -Comp thinks   -Q
       'Why does Yenghi think that Chelswu has come?'

The LDS of [+wh] adjunct in (4b) is not allowed. Considering the possibility of (3b), the result is unexpected.

The last example of sharp contrast is given in (5):

(5) a. Chelswu-ka [$_{CP}$ Yenghi-ka   enu   chayk-ul   sassta-ko]
           -Nom   -Nom which book-Acc bought-Comp

sayngkakha-ni?

think-Q

'Which book does Chelswu think that Yenghi bought?'

b. enu chayk-ul$_i$ Chelswu-ka [$_{CP}$ Yenghi-ka t$_i$ sassta-ko]

which book-Acc   -Nom   -Nom bought-Comp

sayngkakha-ni?

     think-Q

'Which book does Chelswu think that Yenghi bought?'

Both (4b) and (5b) are the result of the LDS of the [+wh] element. In (4b) the [+wh] adjunct *way* is long-distance scrambled, the result being unacceptable. In (5b) the [+wh] argument *enu chayk-ul* is long-distance scrambled, the result being acceptable. Then, what makes the sharp contrast? The contrast between (4b) and (5b) seems to be analogous to that between (1b) and (2b).

2. Base-Generation of Adjunct

We assume that just as Move-a is an operation required to check formal features, so is Merge to check θ-role features.[3] As was discussed in section 1, the θ-role features must be checked before LF if they are strong (e.g., English type languages). And not if they are weak (e.g., Japanese and Korean type languages). Considering that adverbs have relatively free distribution in both types of languages, it follows that adverbs may lack any formal feature or that, if any, their features may be weak. If we are on the right track, since adverbs have no Case and θ-role to be checked before LF, they do not require any specific position in Merge. They can merge with any category within a

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3. According to Ahn (1999), if movement operation is required for the checking purpose of formal features, Merge is necessary for checking θ-role features. Once all of the θ-role features are checked at Merge, there is no necessity of extra level established for the checking of θ-role features. See Hornstein (1996) and Lasnik (1995) for further discussion.

clause (CP), i.e., Agr$_S$P, VP, or V, etc. (cf. Grimshaw 1992, Collins and Thrainsson 1994). The apparent local scrambling of adverb in (6) is due to its free base-generation:

   (6) a. wancenhi [$_{AgrsP}$ John-i   swukcey-lul   kkutnayssta].
       completely   -Nom homework-Acc finished
       'Completely, John finished a homework .'
     b. swukcey-lul   wancenhi [$_{VP}$ John-i   kkutnayssta].
       homework-Acc completely   -Nom   finished
       'A homework, completely, John finished.'
     c. swukcey-lul   John-i   wancenhi [$_V$ kkutnayssta].
       homework-Acc   -Nom completely   finished
       'A homework, John completely finished.'

Collins and Thrainsson (1994) draws the following generalization about the distribution of adverb, which we assume as an interpretation measure of adverb. That is, an adjunct in any place can be interpreted iff it is within the clause boundary (CP):

   (7) TP-level adverbs in Icelandic can be adjoined to any XP whose head X is in the checking domain of the matrix T before Spell-Out.

(7) explains the distribution of the adverb in (6). If the base-generation hypothesis is correct, there is no need to depend on clause-internal scrambling possibility of adjunct. For the analysis of adjunct position based on scrambling operation, see Saito (1985) and Cho (1994).

Without the dependency of optional movement analysis of adjunct, how could we account for the contrast shown below?

   (8) a. [PRO John$_i$-ul   mannan-hwuey]$_j$, Mary-ka t$_j$ ku$_i$-lul
              -Acc   meeting-after   -Nom   he-Acc

pinanhayssta.

criticized

'Mary critized him$_i$ after meeting John$_i$.'

b. ?*[PRO John$_i$-ul   mannan-hwuey]$_j$, ku$_i$-ka   t$_j$ Mary-lul

-Acc   meeting-after   he -Nom   -Acc

pinanhayssta.

criticized

'After meeting John$_i$ he$_i$ criticized Mary .'

(8b) should be ruled out by Condition C. Under the standard assumption that scrambling is an overt movement operation, the contrast of (8a) and (8b) is accounted for by the reconstruction effect. When the adjuncts are reconstructed, unlike (8a), the R-expression *John$_i$* in (8b) is c-commanded by *ku$_i$,* which is a case of a Condition C violation. If our hypothesis is correct that the adjuncts are base generated and may stay there in the IP-adjoined position at LF, there seems to be no way to rule out (8b) as a Condition C violation. As a solution for this problem, we adopt the segment theory of adjunction (cf. Reinhart 1976, 1981). The lower IP of examples in (8) is one segment of two-segment category IP. Thus the subject *ku$_i$* in the lower [Spec, IP] is able to c-command *John$_i$* in the higher IP-adjoined adjunct clause, which renders (8b) ungrammatical. Thus, we can maintain the base-generation hypothesis.[4]

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4. A multiple-subject construction in Korean can be a supporting evidence for segment theory. Observe the following examples:

(i) *[$_{IP}$ John$_i$-uy cip   -i [$_{IP}$ ku$_i$-ka   phyenanhata]].

Gen house Nom   he Nom is comfortable

'In John$_i$'s house, he$_i$ is comfortable.'

(ii) *[$_{IP}$ John$_i$-uy cip   -ul [$_{IP}$ ku$_i$-ka   silehanta]].

Gen house Acc   he Nom dislikes

'John$_i$'s house, he$_i$ dislikes.'

Unlike the higher segment of IP in (ii), that of (i) is base-generated without

3. Long-Distance Scrambling of Adjunct

3.1. LDS of [-wh] adjunct

The LDS of [-wh] adjunct in most cases results in the complete ungrammaticality.[5] Consider the examples in (9):

(9) a. Mary-ga [John-ga   riyuu-mo   naku   sono
            -Nom   -Nom reason-even without that
        setu-o   sinziteiru to] omotteiru.
        theory-Acc believes that thinks
        'Mary thinks that John believes in that theory without any reason.'

    b. ?Mary-ga   [riyuu-mo   naku$_i$ [John-ga   t$_i$ sono
                -Nom   reason-even without   -Nom   that
        setu-o   sinziteiru to]]   omotteiru.
        theory-Acc believes that   thinks
        'Mary thinks without any reason that John believes in that theory.'

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any movement. Though no reconstruction effect is expected in (i), it is bad. By depending not on reconstruction but on segment theory, we can account for the ungrammaticality of (i).

5. Saito(1985) distinguishes "true adjuncts," in our terms '[-wh] adjuncts' from adjuncts. He argues that since the adjunct *sono seki-de* in (i) is not a true adjunct, it can be licensed in the sentence-initial position:

(i) sono seki-de   John-ga [Mary-ga Bill-no waruguti-o
    that meeting-at   -Nom   -Nom -Gen ill-remarks-Acc
    itta to]   syutyoosita.
    said Comp insisted
    'John insisted that Mary spoke ill of Bill at that meeting.'

According to him, (i) seems to be ambiguous between the reading where the sentence-initial adjunct is interpreted with the matrix clause and the one in which the adjunct is interpreted with the embedded clause.

c. *riyuu-mo   naku_i   [Mary-ga   [John-ga t_i sono
   reason-even   without   -Nom   -Nom   that
   setu-o   sinziteiru to]   omotteiru]
   theory-Acc   believes that   thinks
   'Without any reason, Mary thinks   that John believes in that
   theory.'

There arises a sharp contrast between (1b) and (9c).[6] The LDS of
adjunct is not allowed in (9c) but that of argument is permitted in (1b).
Standard optional analysis of scrambling phenomena has difficulty
explaining the contrast. If the accusative NP in (1b) is argued to be
preposed via Move-α, it is curious that the same reasoning can't be
maintained for the IP-adjoined adjunct in (9c).

The current analysis, however, provides an answer. It is claimed that
the accusative NP i $chayk_i$-ul in (1b) is base-generated in the non-θ
matrix IP-adjoined position. At LF it is lowered into θ-position to
check its θ-role feature and Case. If not, the derivation crashes. The
adjunct $riyuu$-mo $naku$ is also argued to be base-generated in its
matrix IP-adjoined position. At LF, like its NP counterpart, it should
also be lowered into the position where it could modify the embedded
clause. Otherwise, it cannot be interpreted and leads to the

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6. But Murasugi (1991, 1992) argues that temporal and locative phrases may
at least marginally undergo the LDS and thus they are arguments rather than
adjuncts. (i), an example from Sakai (1994), independently supports her claim.
$Boston$-e_i in (ib) is, according to Murasugi, regarded as a locative NP:

(i) a. Masao-ga [Kumiko -ga [Takahashi-ga Tokyo-kara   Boston-e itta]
           -Nom   -Nom   -Nom   -from   -Loc go
        to   itta] to   omotteiru.
        Comp say Comp think
        'Masao thinks that Kumiko said that Takahashi went to Boston from
        Tokyo.'
   b. Boston-e_i Masao-ga [Kumiko-ga [Tokyo-kara_j Takahashi-ga   t_j t_i itta]
           -Loc   -Nom   -Nom   -from   -Nom   go
        to   itta] to   omotteiru.
        Comp say Comp think

ungrammaticality. Now, observe an interesting contrast between (9b) and (9c). The adjunct in (9b) is base-generated in the embedded IP-adjoined position, possibly premodifying the lower clause. The adjunct of (9c) is base-generated in the matrix IP-adjoined position and for some reason cannot modify the embedded clause. Though adjunct should be lowered into near or within the embedded clause to be interpreted, it is not permitted. The reason is that, unlike argument, adjunct does not have any θ-role feature or Case to be checked off. So it can be licensed there in higher IP-adjoined position without any movement or lowering. If it does not have to be lowered, according to the Last Resort principle, it must not. The adjunct in (9c) is licensed in its base-generated position, which renders interpretative requirement of adjunct to be violated, and hence the example (9c) is ruled out.

3.2. LDS of [+wh] Adjunct

Unlike the LDS of [-wh] adjunct, the LDS of [+wh] adjunct improves a lot. Consider (10):

(10) a. Mary-ga [cp [ip John-ga   naze sono setu-o   sinziteiru] ka]
              -Nom   -Nom why that theory-Acc believs Q
        sitteiru
        knows
        'Mary knows why John believes in that theory.'

  b. ?naze$_i$ Mary-ga [cp [ip John-ga t$_i$ sono setu-o   sinziteiru]
        why   -Nom   -Nom that theory-Acc   believs
        ka] sitteiru
        Q knows
        'Mary knows why John believes in that theory.'

Holding to our claim that adjuncts are base-generated in the IP-adjoined position, *naze* in (10b) is also argued to be base-generated there. Then what causes the contrast between (9c) and (10b)? We

suppose that the clue to an answer lies in the presence or absence of [+wh] feature of adjuncts. In case of *riyuu-mo naku* 'without any reason' in (9c), the adjunct does not have the [+wh] feature and thus could be licensed in its IP-adjoined position. On the other hand, in case of *naze* 'why' in (10b), the adjunct has the [+wh] feature. If the [+wh] feature is strong, it should be checked off before Spell-Out. It drives an obligatory movement. Thus, *naze* in (10b) should be lowered into the [Spec, CP] position of the embedded clause in order to have its strong [+wh] feature checked off, where it can modify the embedded clause. Otherwise, it crashes.

Then, consider the example (11) below. We can see another interesting contrast between (10b) and (11b):

(11) a. Mary-wa [Bill-ga   naze kubi-ni natta to]   omotteiru no?
                -Top   -Nom why was fired   that thinks   Q
         'Why does Mary think that Bill was fired?'
     b. *naze$_i$ Mary-wa [Bill-ga t$_i$ kubi-ni natta to] omotteiru no?
        why   -Top   -Nom   was fired that thinks   Q
         'Why does Mary think that Bill was fired?'

It is too curious that the LDS of [+wh] adjunct in (10b) is allowed but that of (11b) is not. The current analysis can provide a straightforward account. *naze* in (11b) cannot be lowered into its scope position, that is, the embedded [Spec, CP]. Since the [+wh] feature of *naze* can be checked by the close [+wh] feature of matrix Q, the Last Resort principle prohibits *naze* from moving into the Spec of CP whose head does not have the [+wh] feature. If there is no need to satisfy the morphological requirement, any movement operation should be banned. Then the adjunct *naze* in the sentence initial position cannot modify the embedded clause. As a result, the adjunct *naze* remains uninterpretable.

Having observed that the [+wh] phrase base-generated in the matrix interrogative CP is not allowed in (11b), we may raise an immediate question of why the example (12b) below is fine:

(12) a. Chelswu-ka [cp Yenghi-ka　enu　chayk-ul sassta-ko]
　　　　　　　　-Nom　　　　-Nom which book-Acc bought-Comp
　　　sayngkakha-ni?
　　　　think-Q
　　　'Which book does Chelswu think that Yenghi bought?'
　b. enu　chayk-ul¡　Chelswu-ka [cp Yenghi-ka t¡ sassta-ko]
　　　which book-Acc　　　　　-Nom　　　　-Nom bought-Comp
　　　sayngkakha-ni?
　　　　think-Q
　　　'Which book does Chelswu think that Yenghi bought?'

This contrast is analogous to the contrast between arguments and adjuncts. While arguments have Case and θ-role features that have to be checked at LF, adjuncts have no such features. *enu chayk-ul* in (12b), which is an argument, has at least three features: [+wh], Case, and θ-role features. After checking its [+wh] feature at the matrix Q, the accusative NP has to be lowered in order to check off its remaining features. All are satisfied and (12b) is fine. In contrast, *naze* in (11b), which is an adjunct, has only one feature: [+wh] feature. Once it has its [+wh] feature checked at the matrix Q, the closest one, it has no remaining feature driving LF movement. So the adjunct has to remain there and, as a result, cannot modify the lower clause, which renders (11b) bad. In this way, the contrast between (11b) and (12b) is accounted for straightforwardly.

4. Long-Distance Scrambling and Copy Theory

4.1. Scope Reconstruction

As shown in (13b) and (13c), (13a) is ambiguous. (13b) is understood as a constituent question, while in (13c), the matrix clause is interpreted as a yes/no-question, and the embedded clause as a constituent question:

(13) a. nwukwu-lul Yenghi-nun [CP Chelswu-ka   salanghanun-ci]
　　　　　who-Acc　　　　-Top　　　　　Nom　loves　　　-Q
　　　　a-ni?
　　　　know-Q
　　b. 'Who does Yenghi know whether Chelswu loves t?'
　　c. 'Does Yenghi know who Chelswu loves t?'

On the contrary, (14) has only one reading. This can be an evidence that the scrambled phrase must be lowered into the embedded [Spec, CP] position:

(14) a. nwukwu-lul$_i$ Yenghi-nun [CP Chelswu-ka   t$_i$ salanghanun-ci]
　　　　　who-Acc　　　　-Top　　　　　Nom　　　loves　-Q
　　　　an-ta.
　　　　knows-Decl
　　b. 'Yenghi knows who Chelswu loves t.'

In order to get the reading of (13c) and (14b), the scope of the *wh*-phrase must be reconstructed. In the stand analysis of copy theory, the reconstruction process is not necessary because a complete copy of it already stands in the embedded [Spec, CP] position. The S-structural representation of (14a) looks like (15) under this approach:

(15) [NP1 *nwukwu-lul*] Yenghi-nun [CP [Spec-c [NP2 *nwukwu-lul*]]
　　　　　who-Acc　　　　-Top　　　　　　　　　　who-Acc
　　Chelswu-ka [NP3 *nwukwu-lul*] salanghanun-ci] an-ta.
　　　　　-Nom　　　who-Acc　　　loves　-Q　knows

On the way to PF, [NP2 *nwukwu-lul*] and [NP3 *nwukwu-lul*] are deleted, whereas on the way to LF, [NP1 *nwukwu-lul*] and [NP3 *nwukwu-lul*] are deleted. The resulting LF representation is given as in (16):

(16) Yenghi-nun [CP[Spec-C [*nwukwu-lul*]] Chelswu-ka salanghanun-ci]
         -Top   who-Acc   -Nom loves   -Q
    an-ta.
    knows

Notice that it is crucially presupposed in the copy theory of movement that the reconstruction position, i.e. the position that *nwukwu-lul* takes at LF, has already been used as a landing site of the overt movement.

According to our analysis, *nwukwu-lul* is lowered at LF for the checking purpose: it has at least three formal features, that is, Case, [+wh], and θ-role features. They have to be checked in the embedded clause. Scope is there, which causes the [+wh] feature to be checked there. Its accusative Case and θ-role also have to be checked in the lower clause. Under our account, the LF representation of (14a) is as follows:.[7]

(17) Yenghi-nun [CP[Spec-C [*nwukwu-lul*]] Chelswu-ka
        -Top   who-Acc   -Nom

         |_____↑

                lowering

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7. Discussing scrambling phenomena in Japanese, Saito (1992) heavily depends on the Proper Binding Condition(PBC). He rules out (ii) via PBC.

(i) Proper Binding Condition(PBC)
    A trace must be bound at SS and at LF.
(ii) a. Taroo-ga [Hanako-ga   sono hon-o   yonda-to]   itta
          -Nom   -Nom   that book-Acc read Comp said
        'Taroo said that Hanako read that book.'
    b. *[Hanako-ga t$_i$ yonda to]$_j$ [sono hon-o$_i$ [Taroo-ga   t$_j$ itta]]]
            -Nom   read Comp that book-Acc   -Nom   said
        'That Hanako read, that book, Taroo read.'

But following Lasnik and Saito (1984, 1992) and Boskovic and Takahashi (1998), we assume that unless lowering must leave a trace for independent reasons, lowering should be allowed not to leave a trace to the extent that its results do not violate independently motivated conditions of the grammar.

salanghanun-ci] an-ta.
     loves   -Q knows

4.2. LDS of [+wh] Adjunct and Copy Theory

As observed by Lasnik and Saito (1984, 1992), Chomsky (1986), Cinque (1990), and Rizzi (1990), arguments behave differently from adjuncts with respect to extraction out of islands. It seems as if arguments can leave a CP in one swoop, while adjuncts always have to rely on successive-cyclic movement via the [Spec, CP] position, which serves as an escape hatch. (18) is a classic example of this contrast (cf. Chomsky 1986):

(18) a. [$_{NP}$ Which car]$_i$ do you know [$_{CP}$ when$_j$ [$_{IP}$ PRO to fix t$_i$ t$_j$]]?
    b. *[How] do you know [$_{CP}$[$_{NP}$ Which car]$_i$ [$_{IP}$ PRO to fix t$_i$ t$_j$]]?

In (18a) and (18b), the [Spec, CP] position of the embedded clause is occupied by the *wh*-phrase. Accordingly, long-distance movement of *which car* in (18a) or *how* in (18b) cannot take place by successive-cyclic movement, but rather must happen in one swoop. Arguments can be extracted out of a *wh*-island with only a subjacency violation arising. In contrast, extraction of an adjunct across a *wh*-island without landing in an embedded [Spec, CP] position is strongly prohibited by the ECP.

The same contrast can be found in the case of LDS in Korean.[8] As was shown in section 1, the LDS of an accusative NP across a CP is possible (cf. (1b)), whereas the LDS of adjuncts is impossible. In (19a), the [-wh] adjunct *iyu-to epsi* is scrambled, in our terms generated, within the CP, and the sentence is fine. However, the LDS of the same

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8. Proposing Discourse Rule on Scrambling, Kim (1996) argues that ECP effects are not the relevant explanation for this contrast. Though interesting, this view seems to be beyond the level of formal syntax. See Kim (1996) for further discussion.

adjunct across the CP turns out to be bad, as in (19b):

(19) a. Yenghi-ka [$_{CP}$ [$_{IP}$ iyu-   to   epsi$_i$ [$_{IP}$ nay-ka t$_i$ wulessta-
            -Nom   reason even without I-Nom   cried
        ko]]   mitessta.
        Comp believed
        'Yenghi believed that without any reason I cried.'

   b. *[$_{IP}$ iyu-   to   epsi$_i$ [$_{IP}$ Yenghi-ka [$_{CP}$ nay-ka   t$_i$ wulessta-
        reason even without   -Nom   I-Nom   cried
        ko]   mitessta]
        Comp believed
        'Without any reason, Yenghi believed that I cried.'

The LDS of a [+wh] adjunct is also barred. Observe (20):

(20) a. ne-nun [$_{CP}$ Chelswu-ka   way wassta-ko] sayngkakha-ni?
        you-Nom   -Nom why came-Comp   think-Q
        'Why do you think Chelswu came?'

   b. *way$_i$ [$_{IP}$ ne-nun   [$_{CP}$ Chelswu-ka t$_i$ wassta-ko]
        why   you-Nom   -Nom   came-Comp
        sayngkakha-ni?
            think-Q

(21) seems to be a crucial example concerning our discussion:

(21) a. nwukwu-lul$_i$ Yenghi-ka [$_{CP}$ nwukwu-ka t$_i$ salanghanun-ci]
            who-Acc   -Nom   who-Nom   love-Q
        a-ni?
        know-Q
        'Does Yenghi know who loves whom?'

   b. *way$_i$ Yenghi-ka [$_{CP}$ nwukwu-ka t$_i$ wunun-ci] a-ni?
        why   -Nom   who-Nom   cry-Q   know-Q
        'Why does Yenghi know who cries?'

The contrast between the unacceptable (19b), (20b), and (21b) on the one hand and the acceptable (21a) on the other is analogous to the English example in (18). Then, according to Kang & Muller (1996), the ungrammaticality of (19b), (20b), and (21b) follows from the assumption that LDS can never use a [Spec, CP] position as a landing site, but must happen in one step. In other words, it looks as if a derivation like (22) must be excluded for the LDS of adjuncts:

(22) *[$_{XP}$ YP$_i$ [$_{XP}$ ...[$_{CP}$ [$_{Spec-C}$ t'$_i$] [$_{IP}$ ... t$_i$ ...]]]]
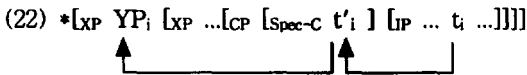
The speculation is that in the movement analysis, the LDS of [+wh] arguments is subject to subjacency and hence (21a) is not bad, whereas the LDS of [+wh] adjuncts is subject to the ECP and thus (21b) is bad.

However, there is an example the copy theory of movement cannot cope with. Consider the example (23), the sole fine case of adjunct LDS:

(23) ?way$_i$ John-i [$_{CP}$ [$_{IP}$ Mary-ka t$_i$ ku ilon-ul   mitnun-ci] anta.
       why   -Nom   -Nom the theory-Acc believe-Q knows
       'Why, John knows Mary believes in the theory.'

If our speculation is on the right track, *way* must be reconstructed for the satisfaction of scope since (23) is not bad. The copy theoretic S-structural representation of (23) must be (24):

(24) [$_{AdvP1}$ way]$_i$ John-i [$_{CP}$ [$_{Spec-C}$ [$_{AdvP2}$ way]$_i$] Mary-ka [$_{AdvP3}$ way]$_i$ ku ilon-ul mitnun-ci] anta.

On the way to PF [$_{AdvP2}$ *way*]$_i$ and [$_{AdvP3}$ *way*]$_i$ are deleted, while on the way to LF [$_{AdvP1}$ *way*]$_i$ and [$_{AdvP3}$ *way*]$_i$ are deleted. Then the resulting LF representation is illustrated as (25):

(25) John-i [$_{CP}$ [$_{Spec-c}$ [$_{AdvP2}$ way]$_i$] Mary-ka t$_i$ ku ilon-ul mitnun-ci] anta.

The problem, however, is that the representation (25) is not viable in the framework of copy theory. The copy theory presupposes that the reconstruction position has already been used by S-structural movement. The reconstruction site in (25) is the embedded [Spec, CP] position. Since the position cannot be used as an intermediate position with LDS in overt syntax (cf. (22)), the copy theoretic analysis of at least [+wh] adjunct LDS does not seem to be borne out.

In contrast, our analysis has no problem with this example. *way* is base-generated in the IP-adjoined position. Unlike [-wh] adjunct, it cannot be licensed at the original position since it carries a [+wh] feature. So it must be lowered into the embedded [Spec, CP] position for the purpose of [+wh] feature checking. Otherwise, the derivation crashes. At the embedded [Spec, CP] position, the [+wh] feature can be checked off and the adjunct can modify the embedded clause.

5. Summary

This paper dealt with long-distance scrambling of adjunct with respect to Last Resort principle. In the standard analysis, scrambling is regarded as optional overt movement. This optionality is not amenable with Last Resort principle, because any movement is argued to be driven by morphological necessity. In order to have this kind of optionality removed from the theory, we adopted Boskovic and Takahashi (1998). We argued that the so-called scrambled arguments are base-generated in their surface non-θ position, the process of which is Merge. At LF, they obligatorily have to be lowered into θ-position to have their Case or θ-role feature checked. Otherwise, they will crash. This is viable with Last Resort principle.

For the analysis of the LDS of adjunct, we argueed that adjuncts are base-generated and interpreted within the domain of CP. In case of

[-wh] adjunct LDS, the adjunct is base-generated in the surface matrix IP-adjoined position. For the adjunct to modify the embedded clause and be interpreted there, it obligatorily has to be lowered to the embedded clause. However, unlike its argument counterpart, the [-wh] adjunct does not have any Case or θ-role feature which induces lowering movement at LF. So, our claim demonstrated that, in principle, the LDS of adjunct is not possible. In particular, the LDS of [+wh] adjunct is allowed, the reason of which is that the [+wh] adjunct has the formal feature, [+wh]. In order for the [+wh] adjunct to check off its formal feature, it has to be lowered into the embedded [Spec, CP] position. Otherwise, it would crash. If the matrix clause is interrogative, the [+wh] adjunct cannot be lowered into the embedded [Spec, CP] position. Therefore, our analysis provides a straightforward account for the contrast between the LDS of argument and that of adjunct, the LDS of [-wh] adjunct and that of [+wh] adjunct, and the LDS of [+wh] adjunct in the matrix declarative sentence and that of [+wh] adjunct in the matrix interrogative sentence. Another consequence is that our analysis overcomes the failure of copy theory.

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