

Prosodic Phrasing and Floating Numeral Quantifier Constructions in Scrambling

Gwanrak Son
(Kyungpook National University)

Abstract: Although a number of challenges have been made to the distribution of FNQs in constructions of scrambling, many crucial questions are still unanswered. Giving special concerns to Miyagawa (1989), Ko (2007), and Miyagawa and Arikawa (2007), this paper fleshes out a new analysis termed as 'Restructuring', which plays a key role in understanding many questions remaining up to now. The process of 'xxxx', motivated independently of syntactic operation, is important to reanalyze the whole set of data from a novel point of view. It will be shown that various types of problems detected in literature can be best explained by a conspiracy of the operations referring to the properties phonological as well as syntactic.

Keywords: FNQs, cyclic linearization, prosodic phrasing, restructuring, asymmetry, cyclic derivation, double scrambling, phase impenetrability condition

I. Introduction

In Japanese and Korean, a quantity of people or things is expressed by a Numeral Quantifier (NQ) followed by a classifier (CL). An NQ normally occurs next to its host NP, but it can also be separated from its host NP under some circumstances. See this in (1) in Japanese. In literature, such NQs in (1c) and (1d), left behind scrambling of their host NPs, are referred to as Floating Numeral Quantifiers (FNQs), a term first coined by Sportiche (1988).¹⁾

- (1) a. Gakusei-ga san-nin sake-o nonda.
student-NOM 3-CLs sake-ACC drank
'Three students drank sake.'
b. Gakusei-ga sake-o san-bon nonda.
student-NOM sake-ACC 3-CLo drank
'Students drank three bottles of sake.'
c. *Gakusei-ga sake-o san-nin nonda.
student-NOM sake-ACC 3-CLs drank

1) Sportiche (1988) originally proposed a theory of floating quantifiers based on two assumptions: (i) a quantifier and its associate NP are generated under a single constituent, and (ii) the NP moves up for some reason while stranding the quantifier in its base-generated position. The NP and the quantifier are underlyingly assumed to sit side by side; this local relationship still holds in the analysis of floating numeral quantifiers. See footnote 2 for the locality requirement on the FNQs.

'Three students drank sake.'

- d. Sake-o gakusei-ga san-bon nonda.
sake-ACC student-NOM 3-CLO drank
'Students drank three bottles of sake.'

A number of challenges have been made to the distribution of the FNQs in various environments of scrambling (Haig 1980, Kuroda 1980, Saito 1985, 1989, Miyagawa 1989, Gunji and Hasida 1998, Ahn 2000, Moon 2007, Ko (2007), Kim 2008, Miyagawa and Arikawa (2007), Miyagawa 2010, etc.), and their findings have significantly enlightened our understanding of the syntactic and semantic properties of such constructions. Among these, Ko's (2007) and Miyagawa and Arikawa's work (2007) are particularly noteworthy because they have offered a unified account to the previously heterogenous analyses, thereby stepping forward to a minimalist goal of economy. However, close scrutiny of a full set of data reveals that many crucial questions are still unanswered. In this paper, I will show that "prosodic phrasing," motivated independently of syntax, plays a key role in understanding many of these mysteries. Most of them, if not all, can best be explained by a synthesis of phonological phrasing as well as the well-known syntactic operations.

This paper is organized as follows. In section 2, I will examine some of the central proposals concerning FNQs, in particular, Ko's (2007) Cyclic Linearizaton, and in so doing extract main issues yet to be resolved. The first question addresses the existence of the so-called "non-standard" forms. In the standard analysis of FNQs, a subject is inseparable from its floating quantifier by the vP-internal elements (i.e., an object or a low adverb). However, a good number of sentences exist despite these intervening elements, constituting "non-standard" cases. The second issue concerns "non-cyclic" derivations apparently observable in constructions of well-formed FNQ sentences. The non-cyclic movement contravenes Chomsky's (2001, 2005, 2007, 2008) Phase Impenetrability Condition (PIC), creating a non-trivial problem in the minimalist program. Section 3 aims to construct a framework ultimately designed to resolve these issues. I will begin with close scrutiny to Miyagawa 1989 and Miyagawa and Arikawa 2007 (hereafter, M&A), and draw out an insight that leads us to reanalyze the whole set of data from a novel point of view. It will be shown that a 'prosodic phrasing' is in force and this conjoins syntactic operations to yield up-to-now-unknown phenomena in the area of syntax. Section 4 presents detailed analyses for the various problems revealed in the paper, followed in section 5 by more general consequences for other aspects of syntax.

2. Three Puzzles Germane to Ko's (2007) Cyclic Linearization

2.1 Subject/Object-Asymmetry and Its counter-examples

The paradigm in (2), repeated from (1c) and (1d), illustrates a well-known asymmetry between

the subject- and object scrambling in FNQ constructions. The subject NQ cannot be separated from its host NP, while the object NQ freely appears in the split context.

- (2) a. *Gakusei-ga sake-o san-nin nonda.
student-NOM sake-ACC 3-CL_{Subj} drank
b. Sake-o gakusei-ga san-bon nonda.
sake-ACC student-NOM 3-CLoc_{bj} drank

Traditionally, this contrast was captured by the "locality requirement," which demands that an NP and its associate NQ observe strict locality in the form of mutual c-command.²⁾ Miyagawa (1989), for instance, asserts that in the well-formed (2b), there is an object trace to the left of the associate NQ, but the sentence (2a) has no such licensing trace because a subject is prohibited from scrambling (Saito 1985). The sentence (2a) is then in violation of the locality requirement. For this account to hold, Saito's assumption of the "ban on subject scrambling" is crucial. However, given recent evidence for the contrary (Kurata 1991, Sohn 1995, Bobaljik 2003, Bošković 2004a, Ko 2007), this approach is no longer sustainable.³⁾

Recently, Ko (2007) provided an alternative proposal to this puzzle, capitalizing on Fox and Pesetsky's (2003) "Linear Preservation Principle" in (3).

(3) *Linear Preservation* (Fox and Pesetsky 2003:1)

The linear ordering of syntactic units is affected by Merge and Move within a Spell-out Domain, but is fixed once and for all at the end of each Spell-out Domain.

The key idea of the Linear Preservation is that ordering statements established in each cycle cannot be erased at PF and should be kept constant throughout derivation. In case of the object scrambling in (2b), the object first moves to the edge of vP, creating the ordering statement of (4b). Upon being transferred to PF, this ordering is maintained in the higher domain of CP following the movement of the object (see (4c)).⁴⁾ Consequently, the sentence becomes grammatical.⁵⁾

2) *Locality requirement*

a. The NQ and its associated NP observe strict locality (Saito 1985).
b. The NQ or its trace and the NP or its trace must mutually c-command each other (Miyagawa 1989).

3) Ko (2007:51-52); M&A (2008), M (2010:68)... subject scrambling is possible.

4) F&P's Spell-Out domain is roughly correspondent to Chomsky's (2001) phase, but they differ in their details. Under F&P's Spell-Out system, both the specifier and the complement of a Spell-Out domain are linearized at the time of Spell-Out. But, in Chomsky, only the complement of the phase head is spelled out. See F&P 2005 and Ko (2007: fn.10, 11) for the difference.

5) In this paper, I will use a CP as a cover term for a higher phase, ignoring a categorical difference between TP and CP. [cf 1. C is the locus of φ-feature agreement of the EPP (and inherited by T) (Chomsky 2000, 2001).] [cf2. In (4c), the object may scramble to Spec,TP, presumably to satisfy the EPP (Mahajan 1990, Saito 1992, Sohn 1995, and Miyagawa 1993).]

- (4) a. Sake-o gakusei-ga san-bon nonda.
 sake-ACC student-NOM 3-CLobj drank
 b. [vP O₁ S [vp t₁ NQ_{Obj}...]]
 Linearize vP: O<S<NQ_{Obj}
 c. [CP O₁ [vP t'₁ S [vp t₁ NQ_{Obj}...]]]
 Linearize CP: O<S<NQ_O

By contrast, when subject scrambling has taken place, the ordering statements in vP and CP become 'inconsistent'. See the relevant derivations in (5).

- (5) a. *Gakusei-ga sake-o san-nin nonda.
 student-NOM sake-ACC 3-CL_{Subj} drank
 [S₂ O₁ t₂ NQ_S t₁ V]
 b. [vP O₁ S NQ_S [vp t₁...]]
 Linearize vP: O<S<NQ_S
 c. [CP S₂ O₁ [vP t'₁ t₂ NQ_S [vp t₁ NQ_O...]]]
 Linearize CP: S<O<NQ_S [ordering contradiction!]

At the stage when the subject moves to CP via scrambling (5c), the PF ordering established in the previous Spell-out domain of vP is no longer maintained (compare (5b) with (5c), especially the underlined parts), thereby yielding an ungrammatical sentence. Since the subject is assumed not to scramble inside vP, this PF crash is unavoidable whenever the subject moves across the transposed object.⁶⁾

Ko's account of this subject/object-asymmetry is generally acceptable, but it holds only for the standard cases. In literature, a number of counter-examples exist, in which the subject and its associate quantifier are separated by the object, while still keeping an acceptable status (Kuno 1978, Gunji and Hasida 1998, Takami 1998, Nishigauchi and Ishii 2003, M&A 2007, Miyagawa 2010, among many others). For instance, M&A states that a sentence such as (5a) improves considerably with an intonation break before the stranded NQ (6a). Presence of a

6) If the subject were allowed to scramble inside vP, thereby creating a derivation in (i), the sentence (5) would be wrongly predicted to be correct.

(i) [vP S₂ O₁ t₂ NQ_S [vp t₁...]]
 Linearize vP: S<O<NQ_S

Ko eliminates this possibility by assuming that a specifier of head α is not in the search domain of the head α (p.57), which restricts the subject from scrambling "from one specifier of a head α to another specifier of α ." In Ko's system, as seen, Saito's (1985) ban on subject scrambling is rephrased by the more restricted constraint, i.e., the ban on subject scrambling "inside vP."

focus marker *-mo* on the object also brings about marked improvement (6b). Insertion of a high adverb induces a mitigation effect of similar sorts, as in (6c).

- (6) a. ?Gakusei-ga sake-o [PAUSE] san-nin nonda
student-NOM sake-ACC 3-CL_{Subj} drank
'Three students drank sake.' [M&W 2007:651]
- b. ?Gakusei-ga uisukii-mo futa-ri nonda
student-NOM whiskey-also 2-CL_{Subj} drank
'Three students drank sake.' [Miyagawa 2010:68]
- c. ?Gakusei-ga sake-o imamadeni/kinoo san-nin nonda
student-NOM sake-ACC so far/yesterday 3-CL_{Subj} drank
'Three students drank sake so far/yesterday.' [Gunji and Hasida 1998:57]

Since these examples all involve subject scrambling across the intervening objects, they should be excluded entirely under the Cyclic Linearization (CL) analysis, precisely in the same way as the ungrammatical (5). The acceptable status of these examples is then inexplicable. The traditional analyses of FNQ constructions (e.g., Saito's 1985) cannot handle this problem either since subject scrambling is prohibited *a priori*. M&A (2007) and Miyagawa (2010) brings about this issue, but their account falls short of providing a full explanation, as will be addressed in details in section 3.

2.2. High/Low-Adjunct Asymmetry and Its Counter-examples

As witnessed in (6c) of the previous section, high adverbs (e.g., *imamadeni* 'so far') freely take place before the stranded subject NQ. But, as Ko and others note, such an occurrence is not a viable option for the vP-internal adjuncts like '*slowly*' and '*loudly*'. See (7) and (8) below for the contrast between the two types of adverbs in Korean and Japanese, respectively.

- (7) a. Haksayngtul-i pwunmyenghi *t_i* sey-myeng maykcwu-lul massiessta
students-NOM evidently 3-CL_{Subj} beer-ACC drank
'Three students evidently drank beer.'
 - b. ?Haksayngtul-i chunhunhi *t_i* sey-myeng maykcwu-lul massiessta
students-NOM slowly 3-CL_{Subj} beer-ACC drank
'Three students drank beer slowly.'
- (8) a. Kodomo-ga kinoo san-nin kurasu-de waratta
child-NOM yesterday 3-CL_{Subj} class-in laughed
'Three children laughed yesterday in class.'
 - b. *Kodomga geragerato san-in waratta.

child-NOM loudly 3-CL_{Subj} laughed
 'Three children laughed loudly.' [M&A 2007:660]

Ko's CL captures the above asymmetry by appealing to two different syntactic positions where the adverbs are merged. That is, a high adverb is introduced after the Spell-out domain of vP, and hence its appearance in CP does not distort the pre-established ordering in vP (see (9a) below for the derivations). In contrast, a low adverb is merged vP-internally (t_2 in (9b)); accordingly it must be linearized with respect to the subject in vP, precisely in the same manner as the vP-internal object that we saw earlier in section 2.1. Thus, the (b) examples of (7) and (8) are ruled out, on a par with (5).

(9) *CL analysis*

- a. [CP S₁ H-Adv [vP t_1 NQ_{Subj} [vP ..O..]]]
 Order in vP: S<NQ_{Subj}<O
 Order in CP: S<H-Adv<NQ_{Subj}<O
- b. [CP S₁ L-Adv₂ [vP t_1 NQ_{Subj} [vP t_2 [vP ..O..]]]] [consistent ordering]
 Order in vP: S<NQ_{Subj}<L-Adv<O
 Order in CP: S<L-Adv<NQ_{Subj}<O [ordering contradiction!]

Again, we find a number of examples countering this expectations of CL (Haig 1980, Takami 1998, Nakanishi 2003, M&W 2007, Son and Yu 2010, etc.). See some of them in (10).

(10) ((10a-b) in Japanese; (10c) in Korean)

- a. Gakusei-ga watasi-no hon-o futa-ri-sika kaw-ana-katta
 student-NOM my-GEN book-ACC 2-CL_{Subj}-only buy-NEG-PAST
 'Only two students didn't buy my book.'
 [Takami 1998:92]
- b. ?Gakusai-ga paati-de san-nin odotta (koto)
 student-NOM party-at 3-CL_{Subj} danced
 'Three students danced at the party.'
 [Nakanishi 2003]
- c. Haksayngtul-i cakitul-cha-ro se-myung oassta
 students-NOM self-car-by 3-CL_{Subj} came
 'Three students came by their own cars.'

In the above, the intervening elements between the subject and the stranded NQ are all those merged vP-internally, as an instance of an object (10a) or low adverbials (10b, 10c). Hence, their appearance before the stranded NQ should bring about inconsistent ordering statements before and after their movement (cf. (9b)). Despite this, their presence does not render the

sentence obsolete, another problem CL fails to account for.

2.3. Cyclical Spell-Out Movement and a Puzzle

In the proceeding two subsections, we have been concerned with the sentences that CL fails to apply in the context of subject scrambling. Now in this section, we will see problems involved with "object scrambling." Note that in the CL analysis presented so far an object is assumed to move through the edge of vP, whether the object scrambling takes place for its own sake or is accompanied by subject scrambling ((4) and (5), respectively). This sort of object movement is indeed supported by Chomsky's Phase Impenetrability Condition (PIC), which demands that a phase-internal element should escape the phase only through its edge.

The following example in Korean observes the imposed phase cyclicity, along the same line with the Japanese examples discussed above.

- (11) a. Maykcwu-lul₁ John-i₂ pwunmyenghi t₂ t₁ sey-pyeng masiessta
beer-ACC John-NOM evidently 3-CL_{Obj} drank
'Evidently, John drank three bottles of beer.'
[O₁ S₂ H-Adv t₂ t₁ NQobj V]
b. [vP O₁ [v S t₁ NQobj V v]]
Ordering in vP: O<S<NQobj<V<v
c. [CP O₁ S₂ H-Adv [vP t₁ [v t₂ t₁ NQobj V v]] T C]
Ordering in CP: O<S<H-Adv<NQobj<V<v<T<C [Ordering Consistent✓]

In (11b), the object first moves to the edge of vP, creating a PF-ordering of Obj-Subj-NQobj-V-v. Since this ordering is kept intact in the higher domain of CP (11c), the sentence is correctly predicted to be grammatical. On the other hand, if the object were assumed to move directly to CP, the grammaticality of the sentence would remain unexplicable. See the derivations (12) on this assumption, where the two ordering statements in vP and CP conflict with each other, and as a result, yields a wrong prediction.⁷⁾

7) As a reader may calculate, a sentence such as (i a) also demands vP-internal scrambling of an object. If the object moves directly to the domain of CP, as in (1b-c), the resulting derivation will crash because of the inconsistent linearization between the two Spell-out domains.

- (i) a. Maykcwu-lul₁ John-i t₁ sey-pyeng masiessta
beer-ACC John-NOM 3-CL_{Obj} drank
'John drank three bottles of beer.'
b. [vP S [v O NQobj V v]]
Ordering in vP: S<O<NQobj<V<v
c. [CP O₁ S₂ [vP t₂ [v t₁ NQobj V v]] T C]
Ordering in CP: O<S<NQobj<V<v<T<C [Ordering Contradiction!!]

- (12) a. [_{vP} S [_v O NQobj V v]]
 Ordering in vP: S<O<NQobj<V<v
 b. [_{CP} O₁ S₂ H-Adv [_{vP} t₂ [_v t₁ NQobj V v]] T C]
 Ordering in CP: O<S<H-Adv<NQobj<V<v<T<C [Ordering Contradiction!!]

Although appealing, and although independently supported by the PIC, this approach of CL runs afoul with many examples, as noted by Moon (2007), Kim (2007) and Son (2010). A Korean sentence below represents one such problem for the phase cyclic analysis of CL ((13a) and (14a) due to Moon 2007):

- (13) a. John-i₁ maykcwu-lul₂ pwunmyenghi t₁ t₂ sey-pyeng masiessta
 John-NOM beer-ACC evidently 3-CL_{Obj} drank
 [S₁ O₂ H-Adv t₁ t₂ NQobj V]
 b. [_{vP} O₂ [_v S t₂ NQobj V v]]
 Ordering in vP: O<S<NQobj<V<v
 c. [_{CP} S₁ O₂ H-Adv [_{vP} t₂ [_v t₁ t₂ NQobj V v]] T C]
 Ordering in CP: S<O<H-Adv<NQobj<V<v<T<C [Ordering Contradiction!!]

(13b) illustrates the relative orderings among the vP-internal elements when the object scrambles to vP edge. This ordering, however, cannot be maintained after the subject undergoes movement over the transposed object in CP (13c). Thus, the sentence (13a) turns out to be ungrammatical, contrary to the fact.

The following example presents another instance where the imposed object movement brings about a wrong result: Consistent ordering throughout vP and CP, as shown in (14b) and (14c), points to the well-formedness of the sentence, a wrong prediction.

- (14) a. *??Maykcwu-lul₁ haksayng-tul-i₂ pwunmyenghi t₂ sey-myeng masiessta
 beer-ACC student-PL-NOM evidently 3-CL_{Subj} drank
 [O₁ S₂ Adv t₂ NQsubj t₁ V]
 b. [_{vP} O₁ [_v S NQsubj t₁ V v]]
 Ordering in vP: O<S<NQsubj<V<v
 c. [_{CP} O₁ S₂ Adv [_{vP} t'₁ [_v t₂ NQsubj t₁ V v]] T C]
 Ordering in CP: O<S<Adv<NQsubj <V<v<T<C [Ordering Consistent ✓]

For these sentences to be predicted correctly, the object must move directly to the higher domain of CP, rather than passing by the vP edge on its way. Only then, the

resulting derivations will correctly align with what CL predicts. (15) and (16) below demonstrate this for the sentences (13) and (14), respectively.

- (15) a. John-i₁ maykcwu-lul₂ pwunmyenghi t₁ t₂ sey-pyeng masiessta
 John-NOM beer-ACC evidently 3-CL_O drank
 [S₁ O₂ Adv t₁ t₂ NQobj V]
 b. [vP S [v O NQobj V v]]
 Ordering in vP: S<O<NQobj<V<v
 c. [CP S₁ O₂ Adv [vP t₁ [v t₂ NQobj V v]] T C]
 Ordering in CP: S<O<Adv<NQobj<V<v<T<C [Ordering Consistent✓]
- (16) a. *??Maykcwu-lul₁ haksayng-tul-i₂ pwunmyenghi t₂ sey-myeng t₁ masiessta
 beer-ACC student-PL-NOM evidently 3-CL_{Subj} drank
 [O₁ S₂ Adv t₂ NQsubj t₁ V]
 b. [vP S NQsubj [v O V v]]
 Ordering in vP: S<NQsubj<O<V<v
 c. [CP O₁ S₂ Adv [vP t₂ NQsubj [v t₁ V v]] T C]
 Ordering in CP: O<S<Adv<NQsubj <V<v<T<C [Ordering Contradiction!!]

Now, the problem that CL faces is this: If it maintains the object movement in a cyclical way, the (un)grammaticality of (13) and (14) cannot be accounted for. On the other hand, if it releases the restriction, the other sentences discussed thus far will be inexplicable.

With the option for the object to move directly to CP, we now become curious about a derivation for a sentence like the following since it could be derived in three ways depicted in (17b), (17c), and (17d).

- (17) a. *??Haksayng-tul-i maykcwu-lul sey-myeng masiessta
 student-PL-NOM beer-ACC 3-CL_{Subj} drank
 'Three students drank beer.'
 b. [CP S₂ [vP O [vP t₅ NQ_S [vP to ...]]]]
 c. [CP S₂ O₁ [vP to₅ t₅ NQ_S [vP to ...]]]]
 d. [CP S₂ O₁ [vP t₅ NQ_S [vP to ...]]]]

In (17b), the object has scrambled to the edge of vP, and is pronounced there. In (17c), it

transposed to PF when it has arrived at CP (presumably to satisfy the EPP). Since both the derivations are consistent with the linear ordering in (18a), they both seem to be viable

options. However, considering the Phase Impenetrability Condition (PIC) of Chomsky, the direct movement to CP performed by the object in (18c) is surprising.⁸⁾ Note that vP is a phase and the direct movement from VP to CP contravenes the PIC.

The same sort of problem is also observable from the examples in (13-14). For these, direct movement of the object from VP to CP is a must, as demonstrated in (15) and (16). To circumvent this problem with the PIC, one might posit (19) in place of (18c) (cf. M&A 2007:656).

(19) [CP S₂ O₁ [vP t'₁ t₂ NQ_S [vP t₁ NQ_{O...}]]]]

In (19), the object has undergone cyclical movement to CP via the edge of vP, in accord with the PIC. However, even with this structure, sentences such as (13) still remain puzzling. For instance, take (13a), with its derivation in (14). After the object scrambles to the edge of vP, the ordering in vP becomes O<S<NQ_{obj}<V<v. Since this ordering is in conflict with the one in CP, the object in vP-edge must be somehow 'invisible' (and its trace in VP is visible instead) to make the two orderings consistent. How is this possible? How does the object in vP-edge act as if it were not there but present in its original position at the time of CL computation? Thus, CL faces insurmountable difficulties when faced with such contradictory examples.

To sum up section 2, I have drawn out three mysteries germane to the discussions of the FNQs. Any research dealing with FNQs in the environment of scrambling is bound to these problems, and should seek to resolve them. Along the paths to seek desirable answers, a discussion of M&A (2007) is in order since it gives us an insight over the whole picture from an entirely different point of view. In what follows, I will deal with this matter.

3. Double Scrambling and Prosodic Phrasing

Miyagawa (1989) claims that the sentence (20) below is ungrammatical because of the locality requirement; that is, the subject cannot scramble in Japanese (Saito 1985), and hence no subject trace exists in support of the stranded NQsubj.

8) Locality conditions require "short movement" in successive stages, leading to convergence in the final stage. Chomsky (2001) strengthens this notion of cyclic derivation as a "Phase Impenetrability Condition", defined as follows:

Phase Impenetrability Condition

In phase α , with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

- (20) *Gakusei-ga sake-o san-nin nond.
 student-NOM sake-ACC 3-CL_{Subj} drank
 'Three students drank beer.'

Miyagawa & Arikawa (2007) strengthens this view, with experimental phonological evidence showing that speakers of this utterance actually construe the subject NQ in (20) as part of the object phrase.⁹⁾ Taking this view as it stands, we may think of the sentence (20) to have a structure like (21) (abstracting away the precise subject position).

- (21) [CP [vP S [vP ...[O NQ_{Subj}]...]]]

Given this structure, the ungrammaticality of the above sentence is understandable because the combination of the object and the NQ_{Subj} in (21) necessarily yields a semantic clash; the object *sake* is liquid, but the classifier on the subject NQ is to count people.

However, note that the object phrase [O NQ_S] cannot be a primitive form in syntax. It could be a derivative formed in the course of the syntactic derivation, or it might be present during a certain phase of abstraction (either on a psychological or a phonological level). Nevertheless, it cannot be a basic syntactic form created at the point of an initial merge for the reasons below. Firstly, syntactic operations normally take a set of well-selected lexical items at an initial step. In (21), however, the object and the NQ are simply a wrong match. The wrong pair for an initial merge is ad hoc. Secondly, in literature, a quantifier is believed to mark an original site of its associate NP (e.g. Sportiche 1988, Haig 1980, Saito 1985, etc.). But in this structure, the NQ_{Subj} is not associated with the subject in vP at all. Thirdly, as M&A (2007) reports, some speakers accept such sentences as (20) (reluctantly, though) provided a certain degree of intonation break before the NQ_{Subj}. If so, there must be a subject trace to the left of the NQ, at least, for them (to be in consistent with the locality requirement). Fourthly and lastly, Miyagawa's claim of 'no subject trace' in (20) is crucially based on Saito's (1985) observation that the subject in Japanese cannot scramble. However, in the presence of the strong evidence for the other direction (Kurata (1991), Sohn (1995), Bošković (2004a), Ko (2007)), this approach is no longer viable. As Bobaljik (2003:10) correctly notes, the sentence (20) could involve "double scrambling" of the sort in (22), scrambling of the object followed by subject scrambling.

- (22) Double Scrambling (cf. Bobaljik 2003:10, Ko 2007)
 [CP S [vP O [vP [ts NQ_S] [vP ...to....]]]]

9) M&A (2007) merely observes this phonological fact, but did not work out the details of how their observation can be theorized in a way to explain its ungrammaticality. This paper is an attempt to theorize their observation.

With the replacement of the structure (21) with (22), all the suspicions listed above desirably disappear. Unfortunately, however, this conclusion pushes us back to square one: that is, if double scrambling of the sort in (22) is permissible and turns out to be an optimal structure for the sentence (20), then what mechanism would be responsible for the ungrammaticality of this sentence?

I conjecture a plausible answer to this tantalizing question could be teased out from M&A's (2007) explanation itself for those sentences with 'singularly' scrambling. Consider (23), a well-formed example:

- (23) a. Sake-o gakusei-ga san-bon nonda.
 sake-ACC student-NOM 3-CL₀ drank
 'Students drank three bottles of beer.'
 b. [CP O [_{vP} S [_{vP} ...[to NQ₀]...]]]

After the object has scrambled from VP to CP, the sentence (23a) becomes like (20) in that heterogeneous forms, an NP and a stranded NQ, sit next to each other, potentially yielding a configuration in which a semantic mismatch would arise. Despite this destructive configuration, the sentence (23a) survives. M&A (2007) accounts for the well-formedness relying on the dichotomy of the phrasal structure. That is, in (23b), the object NQ and the nearby subject occupy separate projections, one in VP and the other in vP. This configuration then keeps the NQ_{obj} to be construed inside the VP, independently of the preceding subject in vP.

This line of reasoning can be naturally extended to the previous example of (20) and its structure in (22), with a desirable consequence of eliminating the dubious structure that M&A might have conceived. Take a look at the derivation (22) again, which I believe is responsible for the ill-formedness of (20). The sentence (20) is repeated here, with its two potential structures discussed above.

- (24) a. *Gakusei-ga sake-o san-nin nonda.
 student-NOM sake-ACC 3-CL_S drank
 b. [CP S [_{vP} O [_{vP} [ts NQ_S] [_{vP} ...to....]]]]]
 c. [CP [_{vP} S [_{vP} ...[O NQ_S]...]]]]

In the structure of double scrambling (24b), the stranded subject NQ and the scrambled object are crucially *within the same maximal projection*, vP. In the light of the previous account of (23a) (with its derivation in (23b)), this entails that the subject NQ is now wrongly hooked up to the object in the same projection, a destructive configuration. Given this environment, a semantic mismatch ensues, and the sentence crashes. This analysis, indeed, is in accord with M&A's (2007) report that speakers construe the

subject NQ as part of the object phrase in a way schematized in (24c). What they have missed, however, is that the NQ_{sub} is a 'stranded' element, not the one initially merged with the object. In other words, the structure (24c) is a derived (or restructured) one from (24b), and speakers evaluate the sentence on the basis of (24c) at a certain level of abstraction. This being correct, one question immediately arises; What is the nature of the object phrase in (24c), [O NQ_S], a derived one from (24b), and what forces the component parts to collapse into one, yielding the ungrammaticality?¹⁰⁾

I suggest that 'prosodic phrasing' is at work here. The term prosodic phrase (henceforth P-phrase) is hard to define. One reason the P-phrase is so elusive is that it lacks any uniform or direct linguistic correlates. Nevertheless, there is a general consensus among phonologists that prosodic phonology relates phonological aspects of prosody to syntax and syntactic phrase is important in predicting prosodic phrasing

10) Prior to challenging this non-trivial question, let us first formulate the restructuring process observed above by the statement in (25):

(25) Restructuring

$$[XP\ NP_i\ [XP\ NQ\ x]] \rightarrow [XP\ [DP\ NP_i\ NQ]\ x]$$

What (25) states is that when an NP and an NQ share the same maximal projection XP, they undergo restructuring and create a new DP (or NP) constituent. There is a restriction, though, for the restructuring to take place, as shown by the contrast between the two Korean sentences below:

- (26) a. *??Haksayng-tul-i maykcwu-lul sey-myeng masiessta

student-PL-NOM beer-ACC 3-CL_S drank

'Three students drank beer.'

[CP S [vP O [vP [ts NQ_S] [VP ...to....]]]]

- b. Haksayng-tul-i maykcwu-lul sey-myeng-i masiessta

student-PL-NOM beer-ACC 3-CL_S-NOM drank

'Three students drank beer.'

[CP S [vP O [vP [ts NQ_S] [VP ...to....]]]]

The sentence (26b) differs from (26a) only in the presence of the Nominative Case marker on the NQ_{sub} , which brings about a dramatic change in its grammaticality. This indicates that Restructuring has taken place in (26a), but not in (26b). Importantly, note that in the latter the object and the NQ_{sub} do not match in Case. The NQ_{sub} is marked with Nominative Case in conflict with that of the object, which I suppose explains the absence of the fusion in (26b). (27) below is a revision, reflecting this observation:

(27) Restructuring (revised)

$$[XP\ NP_i\ [XP\ NQ\ x]] \rightarrow [XP\ [DP\ NP_i\ NQ]\ x] \text{ unless the NP-NQ sequence differs in the Case.}$$

(Selkirk 1986, Nespor and Vogel 1986, Heyes 1989, Odden 1990, Abney 1990, Kim 2010, among others). For instance, in Korean, each of the syntactic phrases in (28) is divided into two separate P-phrases, as indicated by curly brackets.

- (28) a. S
- | | | |
|---------------------------|-----------|--------|
| NP | VP | V |
| {haksayngtul-i} | {kong-ul} | chsst |
| students-NOM | ball-ACC | kicked |
| 'Students kicked a ball.' | | |
- b. VP
- | | | |
|----------------------------------|-------------|--|
| NP | V | |
| {hayan nwun-ul} | {balpnunta} | |
| white snow-ACC | step | |
| '(pro) steps on the white snow.' | | |

In (28a), the maximal syntactic phrases NP and VP constitute a P-phrase independently. In (28b), as the complement NP becomes (phonologically) heavy within VP, it forms a P-phrase on its own independently of the prosodic word under V. In both instances, a prosodic boundary reflects a syntactic boundary.

The prosody-syntax congruency is not always so tight, however (Nespor and Vogel 1986, Selkirk 1982, Ferreira 1993, Shattuck-Hufnagel and Turk 1996, Kim 2010). The actual realization of prosodic boundary in a sentence depends on several factors, such as the syntactic structure, but also the length of the resulting prosodic constituents, with overly long and overly short constituents being disfavored (as already noted in (28b) above). A prosodic phrase typically consists of one or two content words together with the function words associated with them, and typically contains between three and seven syllables (for instance, Delais-Roussarie 1995, measured 3.8 syllables on average per prosodic phrase in French). According to Kim 2010, two words are the most optimal size for a single P-phrase in Korean and three words are considered to be heavy. This statement is understandable because a content word in Korean is mostly made up of at least two syllables (with a small number of exceptions) and a function word in this language is affixed to its associated content word (e.g., *hakkyo* 'school' + *ey* 'to' --> *hakkyo-ey* 'to school'), making a three word unit an unbearable phonological size.¹¹⁾ (29) below illustrates this (adapted from Kim 2010:2 with a slight modification).

11) 밤 --> 야밤, 밸--> 족발

(29)	VP	V
	V'	
	NP	V
	N'	
	AdjP	N'
		N
	{maewu arumtaun}	{yeoca-rul mannassta}

In (29), the complement of the verb, *maewu arumtaun yeoca* 'very beautiful woman', is too heavy to form a single P-phrase; it contains eight syllables. Consequently, the three words in the NP are broken, and its last word is shipped to the following P-phrase. In this instance, a prosodic structure overrides a syntactic structure

There are some useful diagnostics in isolating the P-phrases. A tone and an intonation break are two of them. Each P-phrase contains one and only one high tone, an observation captured by the Obligatory Contour Principle (Myers 1994).¹²⁾ Since an intonation break normally takes place each time a new P-phrase is created, it also serves as an important cue to mark a P-phrase boundary. For instance, the utterance in (29) carries two high tones, each of which constitute a center of the P-phrase. And an intonation break may occur between the two P-phrases. (30) below illustrates this:

- (30) a. H H
 {maewu arumtaun} {yeoca-rul mannassta}
 b. {maewu arumtaun} (BREAK) {yeoca-rul mannassta}

In the light of this, note that the restructuring, as stated in (27), is a direct reflex of prosodic phrasing. As the NP and the NQ belong to the same syntactic phrase, they are subject to become a single P-phrase. In addition, as two words are the most optimal size to make a P-phrase, the NP and the NQ in (27) are subject to Restructuring. Witness how Restructuring works with the example (26a), a Korean counterpart of Japanese (24). Its derivation is illustrated in (31) below in a step by step fashion.

- (31) a. [vp maykwu-lul masi-]
 b. [vp haksayng-tul-i sey-myeng [vp maykwu-lul masi-] v]

12) The OCP is one of the central constraints on autosegmental representations which prohibits adjacent identical elements from occurring at the melodic level (Leben 1973, 1978, McCarthy 1986, Odden 1986). Applying the original concept of the OCP to tone, Myers 1994 proposes the constraints in (i) below.

(i) The Obligatory Contour Principle
 * {H H}, where the P-phrase is the domain.

- c. [_{vP} maykwu-lul [_{vP} haksayng-tul-i sey-myeng [_{vP} to masi-] v]]
- d. [_{CP} haksayng-tul-i [_{vP} maykwu-lul [_{vP} ts sey-myeng [_{vP} to masi-] v]] -essta]

In (31a), the object *maykwu-lul* 'beer' and the verb *masi-* 'drink' are merged to form a VP. The two words are pronounced within a single P-phrase. As a new head is introduced, the subject *haksayng-tul-i* 'students' and its associate NQ_{sub} *sey-myeng* '3-CL_{people}' are added to the VP to create a vP. The two elements in the higher vP form another P-phrase (see (31b)). When the object scrambles to the outer specifier of vP, as in (31c), the syntactic phrase vP becomes too heavy to constitute a single P-phrase. The three words within vP are, thus, divided into two different P-phrases, as in (32a) or in (32b). [According to Kim, forthcoming, a two-word P-phrase is preferred to occur first in the linear order, and in such case (i.e., (32b)), the one-member P-phrase {sey-myeng} joins the verb *masi-* 'drink' to make a new P-phrase. A single member P-phrase is less favored, though not unacceptable.]

- (32) a. { maykwu-lul } { haksayng-tul-i sey-myeng }
- b. { maykwu-lul haksayng-tul-i } { sey-myeng }

No violation has occurred up to this step. However, when the subject moves to CP, as in (31d), a red flag is on. See that the object and the NQ_{sub} are the only two elements left in vP, giving rise to a configuration where Restructuring takes place. Once this happens, with the ensuing P-phrasing {*maykwu-lul sey-myeng*}, the NQ_{sub} is now interpretably associated with the object in the identical P-phrase, giving a source of the awkwardness.¹³⁾

In this section, I showed that M&A's (2007) account of 'singularly' scrambling is directly applicable to 'double' scrambling. All that we needed was an understanding of how the two elements within the same maximal projection, viz., the object and the NQ_{sub} in a row, are combined and act as a single unit at a certain abstract level. As we have witnessed, such a conflation is a result of prosodic phrasing, which turns two sub-component prosodic words into a unit within a single P-phrase. In the subsequent section, I will show how this line of reasoning appropriately explains the problems addressed in section 2.

4. (Un)grammaticality As a Corollary of the Interplay Between Syntax and Phonology

4.1. Subject/Object-Asymmetry Under the Prosodic Accounts

First of all, the current analysis straightforwardly explains the case of 'singularly' scrambling

13) The grammaticality improves if the sentence is P-phrased in such a way as {*haksayng-tul-i maykwu-lul*} {*sey-myeng masiessta*}. I will address this P-phrasing in section 4.1.

exemplified in (23), repeated below:

- (33) a. Sake-o gakusei-ga san-bon nonda.
sake-ACC student-NOM 3-CL_S drank
'Students drank three bottles of beer.'
b. [CP O [_{vP} **S** [_{vP} ...[to NQ_o...]]]]

The following illustrates derivational process of the example above in a stepwise fashion (cf. (33b) above is a representational structure at the final stage of Spell-out).

- (34) a. [_{vP} sake-o san-bon non-]
b. [_{vP} gakusei-ga [_{vP} sake-o san-bon non-] v]
c. [_{vP} sake-o [_{vP} gakusei-ga [_{vP} to san-bon non-] v]]
d. [CP sake-o [_{vP} t'_O [_{vP} gakusei-ga [_{vP} to san-bon non-] v]] -da]

In (34a), the object *sake-o* 'beer', together with its associated NQ *san-bon* '3-CL_{bottle}', is merged with the verb *non-* 'drink' to form a VP. The three prosodic words within the VP may project as a single P-phrase despite its heaviness. However, situation becomes different as the subject *gakusei-ga* 'students' is introduced to a higher phrase vP (see (34b)). The subject may attract the first word of the VP to form the most optimal size of a P-phrase, i.e., a binary form with two prosodic words in it, thereby creating {*gakusei-ga sake-o*} {*san-bon non-*}. In (34c), the object has scrambled to the outer edge of vP while stranding its associate NQ inside VP. At this point of derivation, the subject and the scrambled object become adjacent within the same maximal projection vP, incurring such P-phrasing as {*sake-o gakusei-ga*} {*san-bon non-*}. Crucially, note here that the stranded NQ_{obj} and the preceding subject do not share the same maximal projection and are realized in distinct P-phrases. Since Restructuring condition is not met, the NQ_{obj} remains intact even in this configuration of adjacency. This holds true even after the object further scrambles to the domain of CP (see (34d)); the NQ_{obj} is shielded within the VP, and accordingly is interpreted with no interruption effect of the preceding subject. This explains the grammaticality of the sentence.

While leaving an explanation of 'double' scrambling to section 3 (see the discussions around (24), (31), and (32)), let us proceed to the so-called 'non-standard examples' such as (6), repeated here as (35):

- (35) a. ?Gakusei-ga sake-o [PAUSE] SAN-NIN nonda
student-NOM sake-ACC 3-CL_S drank
'Three students drank sake.'
b. ?Gakusei-ga sake-o imamadeni/kinoo san-nin nonda
student-NOM sake-ACC so far/yesterday 3-CL_S drank

'Three students drank sake so far/yesterday.'

Recall that, according to M&A (2007), the otherwise ill-formed sentence (35a) improves significantly given an intonation break before the stranded NQ. Taking the intonation break to be a marker of a prosodic phrasal boundary, we may posit (36a) and (36b) to be a prosodic and syntactic structure, respectively, for the sentence (35).

- (36) a. {Gakusei-ga sake-o} {SAN-NIN nonda}
b. [CP S₂ O₁ [vP t'₁ t₂ NQ_S [vP t₁ NQ_{O...}]]]]

In the above structure, the object first scrambles to the edge of vP, and then further moves to the higher phase CP. Following this movement, subject movement takes place across the preposed object (with no clear reason).¹⁴⁾ Unlike the standard forms we dealt with in the previous section, Restructuring does not ensue throughout the derivation here. See (37) for the relevant derivations:

- (37) a. [vP gakusei-ga san-nin [vP sake-o non-] v]
b. [vP sake-o [vP gakusei-ga san-nin [vP to non-] v]]
c. [CP sake-o [vP t'₀ [vP gakusei-ga san-nin [vP to non-] v]]]
d. [CP gakusei-ga sake-o [vP t'₀ [vP ts san-nin [vP to non-] v]]]

In the lower phase of vP, the NQ_{subj} *san-nin* '3-CL_{people}' is always hooked up to its host NP, the subject *gakusei-ka* 'students' ((37a) and (37b)). Hence, Restructuring does not take place. On the other hand, the Extension Condition of Chomsky (1995, 2000) demands that the object moves first to CP before the subject moves, pushing a Spell-out derivation (37d) via (37c). When the words are finally spelled out, the preposed object *sake-o* 'beer' becomes adjacent to the NQ_{subj}, but crucially they reside in distinct projections, one in CP and the other in vP. This configuration results in such P-phrasing in (36a), where the object and the NQ_{subj} are organized into separate P-phrases. Then, the NQ_{subj} is interpreted with no bleeding effect, resulting in its grammaticality.¹⁵⁾

14) Given the assumption that object scrambling takes place for the reason of the EPP in (36b), the movement performed by the subject here is odd because of its optionality with no obvious driving force. The movement might be associated with some discourse effects such as 'topic'. In his article about 'phases', Chomsky (2001:34) deals with an issue of why a DP optionally undergoes a movement out of VP (in the context of Holmberg's generalization). According to him, if the DP is inside the VP, it may only have the interpretation *Int'* (cf. *Int'* roughly corresponds to Holmberg's (1999) [+Focus]). If a [-Focus] DP finds itself with *Int'*, an interpretation incompatible with its form, the sentence becomes deviant if the DP stays where it is. To escape out of this problem, it moves to some area above where it will obtain the right interpretation *Int*, [+Focus]. I will not delve into this issue further here.

15) The examples (35a) and (35b) are not perfectly grammatical. They are marginal, at best. A similar sort of marginality also arises in NPI-movement, *wh*-scrambling, and adjunct movement when the movement contains 'extra' steps not necessary

The correctiveness of this analysis is corroborated by the fact that the insertion of high adverbs in place of the pause also induces mitigation effects of similar sort, as demonstrated in (35b). Taking such high adverbs as *imamadeni* 'so far' and *kino* 'yesterday' to be the ones introduced in the higher phase domain, we find that the objects in (35a) and (35b) are clearly in the domain over the vP-external adverbs. As the object and the NQ_{subj} occur in the separate XPs, they are realized in distinct P-phrases. The configuration then confines the subject NQ to be interpreted only inside vP with no reference to the preceding object. This gives a reason why such sentences as (35b), along with (35a), are marked as acceptable.

4.2. Revisit to High/Low-Adjunct Asymmetry

Ko's (2007) CL analysis dictates that no vP-internal elements should intervene between the subject and its associated NQ. A high adverb, being introduced vP-externally, can freely appear between the subject and its associated NQ, but such an intervention is impermissible for a low adverb. The following paradigm, repeated from (7), illustrates this with relevant derivations for each sentence:

- (38) a. Haksayngtul-i pwunmyenghi sey-myeng maykcwu-lul massiessta
 students-NOM evidently 3-CLS beer-ACC drank
 [CP S₁ H-Adv [vP t₁ NQ_S [vP O V]]]
 b. ?*Haksayngtul-i chunhunhi t₁ sey-myeng maykcwu-lul massiessta
 students-NOM slowly 3-CLS beer-ACC drank
 [CP S₁ L-Adv₂ [vP t₁ NQ_S [vP t₂ [vP O V]]]]]

Although CL works well for such examples as above, it has nothing to say for the following sort of data, all of which contain a vP-internal element as an intervener:

- (39) ((39a) in Japanese; (39b, c) in Korean)
- a. Gakusei-ga watasi-no hon-o futa-ri-sika kaw-ana-katta
 student-NOM my-GEN book-ACC 2-CLS-only buy-NEG-PAST
 'Only two students bought my book.'
 - b. (?)Haksayngtul-i chayk-ul 2-myeng-man sassta
 students-NOM book-ACC 2-CLS-only bought
 'Only two students bought a book.'
 - c. (?)Haksayngtul-i cakitul-cha-ro se-myeng oassta
 students-NOM self-car-by 3-CLS came
 'Three students came by their own cars.'

for feature checking (see Sohn 1995, Son 2001 and Bošković 2004 for data and discussions).

Now, turning to the Restructuring analysis presented in this paper, let us see if it can appropriately deal with these puzzling data. From the current view, both examples in (38) should be acceptable since there is no NP within the vP that will undergo Restructuring with the vP-internal NQ_{subj}. If this is so, what renders (38b) awkward? The awkwardness must be due to the presence of the low adverb, the sole factor setting (38b) apart from (38a). As is well-known, low adjuncts like instrumental and manner adverbs are semantically related to the activity or state denoted by the verb, indicating their positions around VP. With respect to the Spell-out site of the low adverb in (38b), one might reasonably conjecture two scenarios. It could be the one transposed out of VP, or it might be added directly to CP in its Spell-out position. On either scenario, however, the presence of a low adverb in the CP domain is inconceivable. Adjuncts do not bear features to be checked, and hence their movement cannot proceed without incurring a violation of the Last Resort. Direct insertion of the vP-internal elements to CP is groundless: It runs counter to the semantics of the low adjuncts. I suppose that is why such examples as (38b) are awkward.¹⁶⁾

Now, take a look at the examples in (39). Here, the intervening elements between the subject and its associate NQ_{subj} are all those merged vP-internally. As such, these sentences are hopeless under CL (because of the derivational inconsistency): these examples should be ruled out on a par with those ones in which the subject is split from its associated NQ by the object (e.g., (24)). On the other hand, the current approach well explains such examples as (39a) and (39b), though (39c) is not crystal clear. Take a look at (39b) first (cf. the same analysis applies to (39a)). It can have either structure in (40) after the higher phase CP is built:

- (40) a. [CP S [vP O-ACC [vP ts NQ-man_{subj} [vP to V-] v]]-T]
 b. [CP S O-ACC [vP t'_O [vP ts NQ-man_{subj} [vP to V-] v]]-T]

In (40a), after the subject moves to TP to check the EPP, the object and the stranded NQ_{subj} become adjacent under one identical category vP, potentially creating an environment of Restructuring. However, crucially, note that the object and the NQ_{subj} bear distinct grammatical markers, which means that they are non-agreeable under one identical (syntactic and prosodic) unit. Thus, Restructuring is banned (cf. (26-27)). As the subject NQ is marked with its own affix (functioning as a delimiter), it types its syntactic role independently of its host NP.¹⁷⁾ Consequently, the example survives. The

16) For some speakers, if not all, the examples in (35a) and (35b) are unacceptable as much as (38b). Crucially, all these examples have in common one feature; that is, 'extra steps' of derivation (see the footnote (10) and (11)).

17) The example (39b) becomes ungrammatical when the delimiter *-man* 'only' is removed, supporting the current analysis.

same explanation holds for the structure (40b), but in this case, the EPP is checked by the object, rather than by the subject (cf. M&A 2007:656). Since this structure involves subject scrambling to CP, with no clear motivation, it necessarily incurs a certain degree of awkwardness, similarly to the examples in (35). This way, such a sentence as (39b) can be judged as either perfect or marginal, pending on which structure a speaker builds in their mental grammar.¹⁸⁾

As for (39c), it is unclear how the sentence turns out acceptable when it involves a low adjunct (see that (38b) is severely bad with a low adverb).¹⁹⁾ However, as a reader may figure out by now, this sentence is fine insofar as Restructuring is concerned, giving a credit to the current analysis over CL.

4.3. Object Scrambling: Strictly Cyclic Movement

As noted in section 2.2, CL analysis faces an insurmountable problem concerning the (medial) landing site of the object. Although CL dictates vP-internal scrambling of the object, it has to be released for a number of examples. Under the current approach, this problem does not arise: the object movement proceeds cyclically in a unified way, in compliance with the PIC for all cases. For instance, take the examples (13), repeated below, which were troublesome under CL.

- (41) a. John-i₁ maykwu-lul₂ pwunmyenghi t₁ t₂ sey-pyeng masiessta
John-NOM beer-ACC evidently 3-CLO drank
'Evidently, John drank three bottles of beer.'
- b. *??Maykwu-lul₁ haksayng-tul-i₂ pwunmyenghi t₂ sey-myeng t₁ masiessta
beer-ACC student-PL-NOM evidently 3-CLS drank
'Evidently, three students drank beer.'

A relevant step of the derivation is illustrated below for the sentence (41a):

- (42) [vP O [vP S [vP to NQ_{obj} V] v]]

After the object has scrambled to the outer edge of vP, the subject and the object NQ appear next to each other. However, being organized into separate projections, they are not subject to Restructuring. The NQ_{obj} is encapsulated inside VP, and hence is interpreted with no reference to the preceding subject.

On the other hand, the subject NQ in (41b) is susceptible to Restructuring, as (43b)

18) For unclear reasons, the degree of awkwardness varies among different speakers.

19) Instrumental adjuncts somehow pattern differently from other low adjuncts such as manner adverbs or locative adverbs. See Nakanishi (2003) for interesting data.

below shows:

- (43) a. [vP O [vP S NQ_{subj} [vP t₀ V] v]]
b. [CP S H-Adv [vP O [vP t_s NQ_{subj} [vP t₀ V] v]]]
c. [CP O S H-Adv [vP t'₀ [vP t_s NQ_{subj} [vP t₀ V] v]]]

After the object lands at the outer edge of vP via scrambling (43a), the subject moves to CP to check the EPP (43b). At this point of derivation, the object and the stranded NQ_{subj} become adjacent within one identical category vP, giving rise to a proper environment of Restructuring. Consequently, semantic mismatch ensues, and the sentence crashes. Note that in order to create the configuration of Restructuring cyclic movement of the object to the edge of vP is crucial. It is not merely a way of moving upward but is an essential part of derivation, bringing about all the changes of the grammatical variations.

Finally, consider the following three derivations related to the sentence in (44a), the acceptability of which varies with the structures a speaker builds.

- (44) a. Haksayng-tul-i maykcwu-lul sey-myeng masiessta (Korean)
Gakusei-ga sake-o san-nin nonda (Japanese)
student-NOM sake-ACC 3-CLS drank
'Three students drank beer.'
b. *[CP S₂ [vP O t₂ NQ_S [vP t₁ ...]]]
c. ?(?) [CP S₂ O₁ [vP t₂ NQ_S [vP t₁ ...]]]
d. ?(?) [CP S₂ O₁ [vP t'₁ t₂ NQ_S [vP t₁ ...]]]

As we saw previously, the structure (44b) yields an ungrammaticality because of Restructuring that will take place within vP. The structure (44c), involving an one-fell swoop movement of the object from VP to CP, is out in violation of the PIC. The structure (44d), with the cyclic movement of the object, complies with the PIC and is predicted to be acceptable. Again, a derivation is strictly cyclic.

To sum up, Restructuring nicely deals with the various problems arising from the constructions of FNQs that were unconquerable under the previous approaches. It takes place as a consequence of phonological P-phrasing while bringing about all the changes in grammaticality to the related sentences. The PF operation is seen to exert a considerable impact on syntax and its interpretations at the LF interface. The PF operations actively and closely interact with each step of the syntactic derivations on-line basis, deriving an optimal form of the output. As we understand more and more of the PF-interface, we could come

nearer in resolving those puzzles that have been unanswered in the domain of syntax. Many of the puzzles, if not all, can be best explained by a conspiracy of the operations referring to the properties phonological as well as syntactic.

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