

# 'RESTRUCTURING' IN KOREAN\*

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The Italian 'restructuring' phenomenon discussed by Rizzi (1982) and others raises an important theoretical problem on the status of categories in configurational structure, which is our main concern in this paper. We have two goals: First, based on Korean data containing a certain class of auxiliary verbs which trigger 'restructuring' in Italian, we show that 'restructuring' is universal and should be explained in terms of core grammar (UG). Second, we propose, under the principles-parameters theory of UG, that 'restructuring' effects are derived from V-to-V transformation we call RR, which is characterized as follows (under an assumption that categories and terminal strings are independent entities so that rules can affect either categories or terminal strings): (1) RR, which is triggered by a certain class of auxiliary predicates, affects categories. (2) V-to-V RR creates complex minimal/maximal projections in a certain sense: Minimal or maximal projections within an RR domain do not constitute inherent barriers or induce the Minimality Condition.

## 0. Introduction

In this paper, we show that Korean exhibits a certain aspect of the 'restructuring' phenomenon in Italian that is discussed in Rizzi (1982). A 'restructuring' phenomenon in Korean suggests that 'restructuring' may be a universal phenomenon that should not be explained by a nontransformational or language-specific process. To explain 'restructuring' as a universal phenomenon under the *Barriers* framework (cf. Chomsky 1986b), we propose a transformational rule, which affects categories (minimal projections).

\* This paper is part of my doctoral dissertation (Choe 1988, *Restructuring parameters and complex predicates—A transformational approach—*) and was read at the annual summer meeting of the Korean Linguistic Society. The formalization of the rule (Restructuring Rule) proposed here differs from that in Choe (1988) for clarification, but no conceptual core is changed. I thank the audiences at Seoul National University and Seogang University for comments on earlier longer versions of this paper; I also thank an anonymous LR reviewer for comments on this work.

## 1. Reanalysis

To explain idiom chunks such as *take advantage of*, Chomsky (1974)<sup>1</sup> first suggests a possibility of nontransformational optional restructuring processes that may reanalyze syntactic structure in the following way.<sup>2</sup>

- (1) a. Bill [<sub>V</sub> took] [<sub>NP</sub> advantage] [<sub>PP</sub> of Mary].  
 b. Bill [<sub>V</sub> took advantage of] Mary.

Chomsky (1975; fn 24, 240) further discusses another case of reanalysis to explain the following contrast.

- (2) a. \*Who did John *believe the claim* that Tom saw?  
 b. Who did John *make the claim* that Tom saw?

In (2a) the phrase *the claim that..* forms a complex NP that blocks *wh*-movement (cf. complex NP constraint) whereas in (2b) the phrase *the claim that..* does not block *wh*-movement. Thus a reanalysis approach to (2b) could suggest that V-NP (where NP → NP CP) is reanalyzed into V-CP.

Under the principles-parameters theory of UG, the projection principle would raise a problem with reanalysis. If reanalysis is not syntactic or transformational in that the outputs of reanalysis form D-structure so that only the outputs of reanalysis are visible to the projection principle, reanalysis (cf. 1b) would not violate the projection principle (cf. Chomsky 1981: 29 and 38). A nontransformational approach to reanalysis would not be problematic if the phenomenon is language-specific or minor/peripheral.

## 2. The Italian 'restructuring'

There is, however cross-linguistic evidence that the phenomenon is uni-

<sup>1</sup> "The Amherst Lectures," Lectures given at the 1974 Linguistic Institute, University of Massachusetts, Amherst; Université de Paris VII (cited from Rizzi (1982)).

<sup>2</sup> This reanalysis process is motivated to explain the two passive counterparts of (1) in (i).

(i) a. Advantage was taken of Mary by Bill.

b. Mary was taken advantage of by Bill.

(ia) would be possible if the structure of *take advantage of* is as shown in (1a); (ib) would be possible if the structure of *take advantage of* is as shown in (2b) (cf. fn. 35 in Rizzi (1982: 46)).

versal and (arguably) productive: First, Rizzi (1982) extensively discusses a productive phenomenon requiring reanalysis in Italian, based on an array of facts observed in the construction with certain verbs that are classified in a semantically significant way.<sup>3</sup> One typical set of examples, which is given below, is related to cliticization.

(3) *control verb*:

a. Piero decidera [<sub>CP</sub> di parlarti di parapsicologia].

“Piero will decide [<sub>CP</sub> to speak *to you* about parapsychology].”

b. \*Piero *ti* decidera [<sub>CP</sub> di parlare di parapsicologia].

(4) *(semi-) auxiliary verb*:

a. Piero verri [<sub>CP</sub> a parlarti di parapsicologia].

“Piero will come [<sub>CP</sub> to speak *to you* about parapsychology].”

b. Piero *ti* verri [<sub>CP</sub> a parlare di parapsicologia]. (cf. Rizzi 1982:1)

In Italian (in Romance languages in general), pronouns are cliticized (cf. 3a) and cliticization is clause-bounded (cf. 3b)). In (3a), the clitic *ti* (*to you*) appears in the embedded clause; when *ti* appears in the matrix clause, the sentence is ungrammatical, as shown in (3b). However, when a matrix verb belongs to a certain class of verbs (modals, aspectual, and motion verbs; ‘semantically weak’ (semi-) auxiliary verbs (cf. Strozer 1981, Rizzi 1982, Picallo 1985 and reference therein), which we will call Vx’s, cliticization may not be clause-bounded, as shown in (4b).

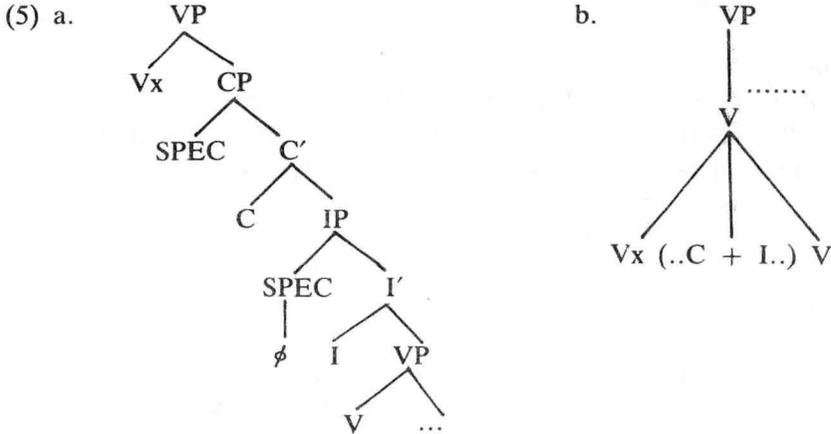
The most interesting aspect of this phenomenon is that but for the contrast between (3b) and (4b), we would expect the syntactic structure of (3) and (4) to be identical, as would be the case of (1-2), given Rizzi’s argument that both control verbs and Vx’s select CPs that are infinitive.<sup>4</sup> Rizzi attributes this phenomenon to reanalysis by analogy with Chomsky (1974, 1975)

<sup>3</sup> Rizzi discusses that in that construction, the behavior of syntactic processes such as cliticization, auxiliary change, and cleft sentence formation differs from that in other constructions with significant generalizations. Here because of space limits, we will not discuss every aspect of ‘restructuring’ that Rizzi discusses but will discuss only one aspect of ‘restructuring’, i.e., clitic climbing. Therefore we will not discuss how our proposal explains the other aspects of ‘restructuring’ here.

Rizzi also argues that ‘restructuring’ does change configurational structure by discussing examples in which part of a ‘restructuring’ domain may not move. However, see Strozer (1981) for an alternative approach that does not need to motivate reanalysis to explain them.

<sup>4</sup> See Rizzi (1982: 33-36) for arguments that Vx’s select a clausal complement (CP), like control construction, and that Vx-V sequences do not form V at D-structure. One argument concerns the fact that ‘restructuring’ takes place even when a *wh*-element appears between the

and proposes a restructuring rule triggered by  $V_x$ 's that "optionally reanalyzes a terminal substring  $V_x$  [...]  $V$  as a single verbal complex, hence automatically transforming the underlying bisentential structure<sup>5</sup> into a simple sentence (cf. Rizzi 1982: 5 and 36)."<sup>6</sup>



Elements between  $V_x$  and  $V$  lie under the  $V$  node and every projection between  $V_x$  and  $V$  is deleted. Thus, the  $V$  in (5b) is a verbal complex that may contain more than one minimal projection. Given (5b), clitic climbing in (4b) is explained under the assumption that cliticization is clause-bound since after the restructuring rule applies, the VP structure of (4b) is (5b).

Let us call the (Italian) phenomenon that requires reanalysis and that is triggered by a certain class of verbs 'restructuring'. Given that the Italian phenomenon that requires reanalysis interacts with Italian-specific syntactic

two verbs,  $V_x$  and  $V$ .

- (i) Su questo punto, non *ti* saprei [che dire].

'On this point, I *you* wouldn't know [what to tell].' (cf. (136a) in Rizzi (1982: 36))

In (i) clitic climbing is observed (the clitic *ti* that is base-generated in the embedded clause appears in the matrix clause), which says 'restructuring' takes place. See Rizzi (1982) for arguments that clitic climbing in  $V_x$  construction signifies that 'restructuring' takes place (but also see Burzio (1986) for some apparent counterexamples to Rizzi's argument).

<sup>5</sup> Rizzi (1982) notes that  $V_x$ 's may be either raising or control verbs. Thus, the embedded subject NP is either trace or PRO.

<sup>6</sup> The following represents our interpretation of Rizzi's restructuring rule in the present framework (cf. Chomsky 1986a and b); it does not affect the conceptual core of Rizzi's rule.

processes such as clitic climbing and auxiliary change (cf. fn. 3), Rizzi suggests that the restructuring rule is Italian-specific. However, there have been studies on 'restructuring' effects in other Romance languages (e.g., Spanish and Old French). 'Restructuring' effects in other languages other than Italian suggest that 'restructuring' is not language-specific and that 'restructuring' may be a universal phenomenon that should be explained in terms of transformations (i.e., in terms of UG). Note also that Italian 'restructuring' differs from the English phenomenon in (2) in a theoretically/empirically interesting way: 'restructuring' is triggered by a semantically-significant class of verbs and therefore the environment of 'restructuring' is predicted.

### 3. 'Restructuring' in Korean

Since some Romance languages are discussed to exhibit 'restructuring' effects, which suggests that 'restructuring' may be universal, it is interesting to see whether Korean also exhibits 'restructuring' effects. Given the Italian 'restructuring' that is triggered by certain auxiliary verbs, it is reasonable to ask whether Korean also exhibits 'restructuring', because Korean employs auxiliary verbs that are semantically similar to Italian Vx's. In this section, we show, unlike Rizzi who suggests that 'restructuring' is language-specific, that a certain aspect of 'restructuring' found in Italian (and in English (cf. 2)) is also found in Korean.

#### 3.1. Auxiliary verbs in Korean

Consider first a class of verbs in Korean that semantically correspond to Vx's in Italian. The verbs in (6a) below, which always form *V-e V* sequences, as shown in (6b),<sup>7</sup> are either aspectual or motion verbs. These verbs are called helping verbs (auxiliary verbs) by H. B. Choi (1935: 254 and 390-397), who points out that they differ from the *do* auxiliary and that they do not function as main verbs.

<sup>7</sup> Note that the verbs in (6a) may be used as main verbs with different main verb meanings. When they are used as main verbs, they cease to have the auxiliary (aspectual or motion) meanings of Vx's. For more auxiliary/helping verbs that do not take the *V-e* phrase but are Vx's, see Choi (1935) and below.

- (6) a. *auxiliary (helping) verbs in Korean*:<sup>8</sup>  
*o-* (come); *ka-* (go); *tul-* (enter); *ci-* (beome); *na-* (happen); *nay-* (muster); *cwu-* (give(ben)); *tay-* (go all the way); *po-* (attempt/try); *peli-* (finish); *ssah-* (keep/continue); *noh-* (keep/leave), *twu-* (hold/store) (cf. Choi 1935, Hyunmwunsa Korean Dictionary)
- b. *thokki-lul cap-a po-ass-ta.*  
 rabbit-obj take-Inf attempt-past-em  
 "[0] attempted to take a rabbit."

Let us call the verbs in (6a) *Vx*'s, as well will show that they are 'restructuring' verbs like Italian *Vx*'s. Syntactically speaking, *Vx*'s seem to select infinitive CP complements, like control construction:

- (7) *auxiliary (helping) verb*:
- a. [*thokki-lul cap- {\*keyss/\*ass/a}*] *po-ass-ta.*  
 rabbit-obj take- {fut/past/Inf} attempt-past-em  
 "[0] attempted to take a rabbit."
- control verb*:
- b. [*thokki-lul cap- {\*keyss/\*ass/ulye} -ko*] *kyelsimha-ess-ta.*  
 rabbit-obj take- {fut/pat/Inf} -comp decide-past-em  
 "[0] decided to take a rabbit."

The sentences in (7a) and (7b), however, behave differently with respect to certain syntactic phenomena in Korean, which we will discuss in the next subsection.

### 3.2. The two requirements on the distribution of (negative) quantifiers and their scope markers

In Korean, (negative) quantifiers (e.g., *amwu-to* (*nobody*)) have scope

<sup>8</sup> In Korean glosses, the Yale Romanization system is employed. When necessary, the following abbreviations are used in glosses: TOP—topic marker; CON—contrastive marker; comp—complementizer; em—(sentence) ending marker; pres—present tense marker; fut—future tense marker; past—past tense marker; xH—honorific suppletive form of x; Inf—infinitive or [–Tense] marker; sub—subjective case marker; and obj—objective case marker. As for the glosses of case markers, we use the terminology 'subjective' and 'objective', which we assume correspond to NOM and ACC, respectively. Topic, subjective, and objective markers have morphological variants according to their phonetic environments: *nun/un*, *ka/i*, and *lul/ul*; we ignore these variants, using *nun*, *ka*, and *lul* only.

markers (*an-*) construed with them, like the French *ne .. personne* where *ne* functions as the scope marker of *personne* (cf. Kayne 1981). As Choe (1987) notes, there are two requirements on the distribution of (negative) quantifiers and their scope markers in Korean. One is that (negative) quantifiers and their scope markers should appear in the same clause; the other is that with quantifiers rightward inverted, their scope markers should appear on the matrix INFL. We call the first requirement the clause-mate requirement and the second one the matrix requirement.

The clause-mate requirement is observed, as shown below.<sup>9</sup>

(8) *clause-mate requirement:*

- a. Chelswu-nun [Yenghi-ka *amwu-to* cohaha-ci *an-nun-ta-ko*]  
                   -TOP                  -sub nobody like-to not-pres-em-comp  
 sayngkakha-n-ta.  
 think-pres-em  
 "Chelswu thinks that Yenghi *neg* likes *nobody*."  
 = Chelswu thinks that there is nobody such that Yenghi likes the person.
- b. \*Chelswu-nun [Yenghi-ka *amwu-to* cohaha-n-ta-ko]  
                   -TOP                  -sub nobody like-pres-em-comp  
 sayngkakha-ci *an-nun-ta*.  
 think-to not-pres-em  
 "Chelswu *neg* thinks that Yenghi likes *nobody*."
- c. *amwu-to* [Chelswu-ka [0] cohaha-n-ta-ko] sayngkakha-ci *an-nun-ta*.  
 nobody                  -sub like-pres-em-comp think-to not-pres-em  
 "Nobody *neg* thinks that Chelswu likes [0]."  
 = There is nobody such that the person thinks that Chelswu likes [0].

<sup>9</sup> It should be noted that the linking of *an-* and *amwu-to* and 'neg-raising' in English (cf. (i) below; also cf. Horn 1971, Seuren (1974, Lakoff 1974, etc...)) differ.

(i) a. I think that it is not rainy.

b. I do not think that it is rainy.

(ii) a. I believe you *havn't* remembered to button your fly *in years*.

b. I *don't* believe you have remembered to button your fly *in years*.

(from Horn (1971))

While the meanings of (ia and b) are the same and *not* goes with *in years* in (iia and b), the meanings of (8a and b) differ although the English version of the Korean *think* verb in (8) is a neg-raising verb in English; (8a) with *an-* in the embedded clause is grammatical whereas (8b) with *an-* in the matrix clause is not (also cf. the contrast between (8c) and (8d)). In addition, generally speaking, 'neg-raising' may be observed even when an embedded clause is finite, as shown in (i-ii), whereas in general 'restructuring' effects are not observed when an embedded clause is finite.

- d. \**amwu-to* [Chelswu-ka [0] cohaha-ci *an-nun-ta-ko*]  
 nobody -sub like-to not-pres-em-comp  
 sayngkakha-n-ta.  
 think-pres-em  
 “Nobody thinks that Chelswu *neg* likes [0].”

In (8a and c), the quantifier *amwu-to* and its scope marker *an-* appear in the same clause and the sentences are grammatical: In (8a) *amwu-to* and *an-* appear in the embedded clause and *amwu-to* has narrow scope (NS), but not wide scope (WS); in (8b) they appear in the matrix clause and *amwu-to* has wide scope, but not narrow scope. However, sentences (8b and d) in which *amwu-to* and *an-* do not appear in the same clause do not make sense. With the same scope fact as (8), the clause-mate requirement is also observed whether or not the embedded clause is finite, as we see the control sentence paradigm in (9) below, which has the same grammaticality as the paradigm in (8).

- (9) a. Chelswu-nun [*amwu-to ani-manna-lye-ko*] kyelsimha-ess-ta.  
 -TOP nobody not-meet-Inf-comp decide-past-em  
 “Chelswu decided *neg* to meet nobody.” (NS)
- b. \*?Chelswu-nun [*amwu-to manna-lye-ko*] kyelsimha-ci *an-ass-ta*.  
 -TOP nobody meet-Inf-comp decide-to not-past-em  
 “Chelswu *neg* decided to meet *nobody*.” (\*?WS/\*NS)
- c. *amwu-to* [i kumtan-uy yelmay-lul mek-ullye-ko] kyelsimha-ci  
 nobody this forbidden fruit-obj eat-Inf-comp decide-to  
*an-ass-ta*.  
 not-past-em  
 “Nobody *neg* decided to eat this forbidden fruit.” (WS)
- d. \**amwu-to* [i kumtan-uy yelmay-lul *ani-mek-ullye-ko*.  
 nobody this forbidden fruit-obj not-eat-Inf-comp  
 kyelsimha-ess-ta.  
 decide-past-em  
 “Nobody decide *neg* to eat this forbidden fruit.” (\*WS)

The matrix requirement has to do with sentences with dislocated elements that exhibit the phenomenon Choe (1987: 88) calls Korean rightward inversion; Korean rightward inversion is exemplified in (10).<sup>10</sup>

<sup>10</sup> Although Choe calls the phenomenon in (10) Korean rightward inversion, inversion in (10) differs from inversion in Romance languages in various respects (cf. Choe 1987). Korean

- (10) a. o-ass-ta, Chelswu-ka.  
 come-past-em -sub "Chelswu came."  
 b. Chelswu-nun [Yenghi-ka cohaha-n-ta-ko] sayngkakha-n-ta,  
 -TOP -sub like-pres-em-comp think-pres-em  
 kkos-lul.  
 flower-obj  
 "Chelswu thinks that Yenghi likes flowers."

The matrix requirement is observed in sentences taking finite embedded clauses and in control sentences.<sup>11</sup>

- (11) *matrix requirement*:
- a. \*Chelswu-nun [ani-manna-n-ta-ko] sayngkakha-n-ta, amwu-to.  
 -TOP not-meet-pres-em-comp think-pres-em nobody  
 "Chelswu thinks that Yenghi *neg* meets *nobody*."  
 b. ?Chelswu-nun [Yenghi-ka manna-n-ta-ko] sayngkakha-ci  
 -TOP -sub meet-pres-em-comp think-to  
 an-nun-ta, amwu-to.  
 not-pres-em nobody  
 "Chelswu *neg* thinks that Yenghi meets *nobody*." (WS)  
 c. [ku-ka i kumtan-uy yelmay-lul mek-ess-ta-ko] sayngkakha-ci  
 he-sub this forbidden fruit-obj eat-past-em-comp think-to  
 an-ass-ta, amwu-to.  
 not-past-em nobody  
 "*Nobody neg* thought that he ate this forbidden fruit." (WS)  
 d. \*[ku-ka i kumtan-uy yelmay-lul ani-mek-ess-ta-ko]  
 he-sub this forbidden fruit-obj not-eat-past-em-comp  
 sayngkakha-ess-ta, amwu-to.  
 think-past-em nobody

rightward inversion is rather similar to rightward dislocation in Japanese, which is illustrated below.

- (i) Kimi Taroo ga kekkonsita koto sitte iru Hanako to  
 you married that knowing are with (cf. Kuno 1978: 640)

Kuno suggests that (i) is generated not by a transformation but by 'a process that adds after-thoughts to the end of a sentence.' However, see Choe (1987; 88) for arguments that null operator A-bar movement is responsible for Korean rightward inversion (and probably for (i) in Japanese).

<sup>11</sup> The LR reviewer points out that (12b) is 'extremely marked' especially with the marked word order (due to inversion) whereas (9b) is not totally ungrammatical. However, according to our judgments on (9 and 12b), the degree of grammaticality especially with respect to the scope of *amwu-to* differs (if we put aside some marked order effect in (12b)): (9b) is worse than (12b).

“Nobody thought that he neg ate this forbidden fruit.”

- (12) a. \*Chelswu-nun [*ani-manna-lye-ko*] kyelsimha-ess-ta, *amwu-to*.  
 -TOP not-meet-Inf-comp decide-past-em nobody  
 “Chelswu decided *neg* to meet nobody.”
- b. ?Chelswu-nun [*manna-lye-ko*] kyelsimha-ci *an-ass-ta*, *amwu-to*.  
 -TOP meet-Inf-comp decide-to not-past-em nobody  
 “Chelswu *neg* decided to meet nobody.” (WS)
- c. [*i kumtan-uy yelmay-lul mek-ulye-ko*] kyelsimha-ci *an-ass-ta*,  
 this forbidden fruit-obj eat-Inf-comp decide-to not-past-em  
*amwu-to*.  
 nobody  
 “Nobody neg decided to eat this forbidden fruit.” (WS)
- d. \*[*i kumtan-uy yelmay-lul ani-mek-ulye-ko*] kyelsimha-ess-ta,  
 this forbidden fruit-obj not-eat-Inf-comp decide-past-em  
*amwu-to*.  
 nobody  
 “Nobody decided *neg* to eat this forbidden fruit.”

In (11b and c) and in (12b and c), *an-* appears in the matrix clause, and no matter where *amwu-to* appears at D-structure, the sentences are grammatical and *amwu-to* has only wide scope. On the other hand, (11a and d) and (12a and b) are not interpretable, whether or not the clause-mate requirement is satisfied at D-structure.

### 3.3. A ‘restructuring’ effect in Korean

Interestingly, those two requirements are not observed in a certain construction containing *Vx* (cf. *Vx*’s in (6a)), which we call *Vx* construction here:<sup>12</sup>

<sup>12</sup> The LR reviewer points out that *V-ci an-INFL* in (13b and c) may be derived from *V-ci ani ha-INFL*. Whether this is the case is of no importance for our purposes: If the verb *ha-* in (i) should be considered to select a CP complement, it seems to behave like *Vx*’s, as shown in (i):

- (i) Chelswu-nun [<sub>CP</sub> *amwukes-to mek-ci*] *ani-ha-ess-ta*  
 -TOP nothing eat-to neg-do-pres-em  
 “(Lit.)Chelswu *neg do* to eat *nothing*.”

Since in (i) the clause-mate requirement does not seem to affect the grammaticality (cf. 14 below), we can suggest that *ha-* in (i) is a *Vx*, which does not induce any effects of the two requirements. If *ha-INFL* in (i) should be considered to be an auxiliary like *did* in *John did win*, our argument is also not affected.

- (13) a. Chelswu-nun [*amwu-kes-to ani-mek-e*] po-ass-ta.  
 -TOP nothing-prt not-eat-Inf attempt-past-em  
 "Chelswu attempted *neg* to eat *nothing*." (WS)
- b. Chelswu-nun [*amwu-kes-to mek-e*] po-ci *an*-ass-ta.  
 -TOP nothing-prt eat-Inf attempt-to not-past-em  
 "Chelswu *neg* attempted to eat *nothing*." (WS)
- c. *amwu-to* [i kumtan-uy yelmay-lul mek-e] po-ci *an*-ass-ta.  
 nobody this forbidden fruit-obj eat-Inf attempt-to *not*-past-em  
 "*Nobody neg* attempted to eat this forbidden fruit." (WS)
- d. *amwu-to* [i kumtan-uy yelmay-lul *ani-mek-e*] po-ass-ta.  
 nobody this forbidden fruit-obj not-eat-Inf attempt-past-em  
 "*Nobody* attempted *neg* to eat this forbidden fruit." (WS)

In (13b and d) with the same paradigm as (8/9b and d), even though the sentences do not satisfy the clause-mate requirement, they are grammatical and *amwu-to* has wide scope. The role of *an-* as a scope marker is also lost in (13a and d): Whether *an-* appears in the matrix clause or the embedded clause, *amwu-to* has only wide scope. This aspect is observed no matter how many clausal boundaries appear between *amwu-to* and *an-* as long as intermediate verbs are Vx's:

- (14) a. ..[[*amwu-kes-to mek-e*] po-a] tay-ci *an*-ass-ta.  
 ...nothing eat-Inf attempt-Inf keep-Inf not-past-em  
 "Chelswu *neg* kept attempting to eat *nothing*." (WS)
- b. *amwu-to* [[...*ani-mek-e*] po-a] tay-ess-ta.  
 nobody .. not-eat-inf attempt-Inf keep-past-em  
 "*Nobody* kept attempting *neg* to eat this forbidden fruit." (WS)
- c. ..[[[[*amwu-kes-to mek-e*] po-a] tay-e] peli-e]  
 .... nothing eat-Inf attempt-Inf keep-inf finish-Inf  
 cwu-ci *an*-ass-ta.  
*ben-Inf* not-past-em  
 "Chelswu *neg* finished to keep attempting to eat *nothing* for somebody." (WS)
- d. *amwu-to* [[[[...*ani-mek-e*] po-a] tay-e] peli-e] cwu-ess-ta.  
 nobody .. not-eat-Inf attempt-Inf keep-Inf finish-Inf *ben*-past-em  
 "*Nobody* finished to keep attempting *neg* to eat this forbidden fruit for somebody." (WS)

In addition, the matrix requirement is not observed in Vx construction, either;

- (15) a. Chelswu-nun [*ani-mek-e*] po-ass-ta, *amwu-kes-to*.  
 -TOP not-eat-Inf attempt-past-em nothing  
 “Chelswu attempted *neg* to eat *nothing*.” (WS)
- b. Chelswu-nun [mek-e] po-ci *an-ass-ta, amwu-kes-to*.  
 -TOP eat-Inf attempt-to not-past-em nothing  
 “Chelswu *neg* attempted to eat *nothing*.” (WS)
- c. [i kumtan-uy yelmay-lul mek-e] po-ci *an-ass-ta amwu-to*.  
 this forbidden fruit-obj eat-Inf attempt-to *not*-past-em nobody  
 “*Nobody neg* attempted to eat this forbidden fruit.” (WS)
- d. [i kumtan-uy yelmay-lul *ani-mek-e*] po-ass-ta, *amwu-to*.  
 this forbidden fruit-obj not-eat-Inf attempt-past-em nobody  
 “*Nobody* attempted *neg* to eat this forbidden fruit.” (WS)

Although *an-* does not appear in the matrix clauses, the sentences in (15a and d) (cf. 11/12a and d) are grammatical and *amwu-to* has wide scope.<sup>13</sup>

To summarize, the control and Vx constructions in Korean behave differently with respect to the distribution of quantifiers and their scope mark-

<sup>13</sup> As the LR reviewer points out, in (i), which is a control sentence in English, the effect of the clause-mate requirement is not observed.

(i) Chelswu-nun [ [0]<sub>i</sub> *amwu-to* manna-0-ki]-lul wonha-ci *an-nun-ta*.  
 -TOP nobody meet-Inf-comp-obj want-to *not-pres-em*  
 “Chelswu *neg* wants to meet *nobody*.”

(ii) \*?Chelswu-nun [ |Yenghi-ka/[0]<sub>i</sub> | *amwu-to* manna-0-ki -lul wonha-ci  
 -TOP -sub nobody meet-inf-comp-obj want-to  
*an-nun-ta*.  
 not-pres-em

“Chelswu *neg* wants Yenghi to meet *nobody*.”

The grammaticality of (i) may suggest that the verb *want* in Korean is a Vx unless it is an ECM verb (cf. ii); in fact, the verb *want* in Italian is also a typical Vx. However, there is evidence showing that in Korean *want* might not be a Vx, as shown in (iii): The matrix requirement and the clause-mate requirement are not met in (iiia and b) and (iiib and b) are not grammatical although they differ in acceptability.

(iii) a. ??Chelswu-nun [*ani-manna-0-ki*]-lul wonha-n-ta, *amwu-to*  
 -TOP *neg-meet-Inf-comp-obj* want-pres-em *nobody*  
 “Chelswu wants *neg* to meet *nobody*.”

b. \*?*amwu-to* [Chelswu-lul *ani-manna-0-ki*]-lul wonha-n-ta  
 nobody -obj *neg-meet-Inf-comp-obj* want-pres-em  
 “*Nobody* want to *neg* meet Chelswu.”

Here, we assume, based on the grammaticality of (i), that *want* is a Vx but that the ‘restructuring’ effects may vary depending on sentence patterns based on the distribution of *amwu-to* and *an-* (cf. i, iiia, and iiib). The reason why we have the contrast between (i) and (iiib) although the clausemate requirement is not met in both sentences is not our immediate concern here.

ers while both constructions contain infinitive CP clauses. We suggest, to explain the facts in (13-15) which would require reanalysis (cf. (8/9) versus (13) and (11/12) versus (15)), that Korean exhibits 'restructuring', as in Italian, and that both in Korean and in Italian 'restructuring' is triggered by a certain class of auxiliary verbs (e.g., aspectual or motion verbs).

### 3.4. The structure of Vx construction

At this point, one might suspect that the Vx+V sequence in (13-15) differs from the Vy+V sequence where Vy is a control verb (or a verb selecting a finite CP complement) in that the Vx+V sequence forms a complex verb at D-structure whereas Vy selects CP, allowing PRO or overt subject in the embedded subject position. There are, however, many pieces of evidence that Vx's select clausal complements or CPs, like control verbs.

First, there is evidence that implies that the complement of Vx is at least clausal (IP):

- (16) a. *cap-usi-e po-si-ess-ta/ cap-a-tul po-ass-ta*  
 take-H-Inf attempt-H-past-em/take-Inf-pl attempt-past-em  
 "[0] attempted to take [0]."  
 b. *Chelswu-ka [ {ku/caki} -ka cap-a] po-ass-ta*.  
 -sub {he/self} -sub take-Inf attempt-past-em  
 c. *Chelswu-nun cangnan-ulo [yelepen thokki-lul cap-a]*  
 -TOP fun-for *several times* rabbit-obj take-Inf  
*po-ass-ta.*  
 attempt-past-em  
 "For fun, Chelswu attempted take a rabbit several times."

As shown in (16a), the Vx-e phrase may contain agreement elements that can be considered as realizations of INFL; as shown in (16b), embedded subjects may overtly appear, which suggests that the SPEC of INFL projection is required; and two adverbials *may* appear with different scope, as shown in (16c): The scope of *yelepen (several times)* is confined within the embedded clause and that of *cangnan-ulo (for fun)* within the matrix clause.

Second, there is also evidence that Vx's select CP's but not defective clauses.

- (17) a. \**Chelswu-nun [ {ku/caki} -lul thokki-lul cap-a] po-ass-ta.*  
 -TOP he/self-obj rabbit-obj take-Inf attempt-past-em  
 "Chelswu attempted to take a rabbit."

- b. Chelswu-nun [thokki-lul cap-a]-lul po-ass-ta.  
 -TOP rabbit-obj take-Inf-obj attempt-past-em  
 “Chelswu attempted to take a rabbit.”

As shown in (17a), ECM (Exceptional Case Marking) is not allowed in Vx construction, which implies that the complement of Vx is CP. If ECM is obtained when a clausal complement is defective in that it is not CP in a certain sense,<sup>14</sup> then Vx's must select CPs. The fact that the clausal complement can be Case-marked, as shown in (17b), further suggest that Vx's select CPs.<sup>15</sup> Furthermore, verbs with modal expressions in Korean, which select CPs that contain semantically rich overt complementizers (cf. *V-l-swu iss-* (V-Inf-comp be; can); and *V-e-ya ha-* (V-Inf-comp do; must/should)), trigger ‘restructuring’.<sup>16</sup> The ‘restructuring’ effects in the sentence with modal verbs are illustrated below (cf. fn. 13):<sup>17</sup>

- (18) a. Chelswu-nun [amwu-to mosi-l-swu] ep-0-ta.  
 -TOP nobody serveH-Inf-comp not/be-pres-em  
 “Chelswu *neg* could serve *nobody*.”  
 b. [Chelswu-lul ani-manna-0-ya] ha-n-ta, amwu-to.  
 -obj not-meet-Inf-comp do-pres-em nobody  
 “*Nobody* should *neg* meet Chelswu.”

<sup>14</sup> Chomsky (1981) suggests the rule of S-bar deletion (CP-deletion) for ECM construction that deletes S-bar (CP; a barrier of government from the matrix verb) to explain Case marking from the matrix verb. On the other hand, the *Barriers* framework (cf. Chomsky (1986b)) suggests that ECM verbs select IP complements.

<sup>15</sup> In fact, there is no clear reason why CPs but not IPs can be Case-marked. One possible reason is Case resistance principle (CRP) proposed by Stowell (1981) if a clausal complement is CP and C does not assign Case (but cf. Stowell (1981) for a CRP approach to clausal complements). IP would not be Case-marked since INFL is a Case-assigner under CRP.

<sup>16</sup> The matrix verbs (*iss-* and *ha-*) have no modal meanings themselves but obtain them through their complementizers (*-swu* and *-to*) that are subcategorized for by the matrix verbs.

<sup>17</sup> It should be noted that although *V-e-to toy-* (V-Inf-comp become; may) is also a modal expression, it does not show ‘restructuring’ effects because both the matrix and clause-bounded requirements are observed, as shown in (i).

- (i) a. \*Chelswu-nun [amwu-to mosi-e-to] toy-ci an-nun-ta.  
 -TOP nobody serveH-Inf-comp become-to not-pres-em  
 “Chelswu *neg* may serve *nobody*.”  
 b. \*[pwumonim-lul ani-mosi-e-to] toy-n-ta, amwu-to.  
 parents-obj not-serveH-Inf-comp become-pres-em nobody  
 “*Nobody* may *neg* meet [his] parents.”

Unlike Choe (1988), we suggest that *-toy* does not trigger ‘restructuring’. The suggestion is not unreasonable, given that the verb *-toy* has a rich permissive meaning, which implies that *-toy* is by no means semantically weak enough to trigger ‘restructuring’.

In (18a and b), for example, the clause-mate and matrix requirements are violated but the sentences are grammatical. The data in (18) confirm that CP does not block 'restructuring' and that 'restructuring' verbs select CPs.<sup>18</sup>

Third, the idea that Vx selects CP can further be confirmed by the fact that the control construction that contains a CP complement also has the same properties as Vx construction discussed above (cf. 16 and 17).<sup>19</sup>

- (19) a. *cap-usi-lye-ko kyelsimha-si-ess-ta/ cap-ulye-ko-tul*  
 take-*H*-Inf-comp decide-*H*-past-em/ take-Inf-comp-*pl*  
*kelsimha-ess-ta*  
 decide-past-em  
 "[0] decided to take [0]."  
 b. *Chelswu<sub>1</sub>-ka [ {ku/caki}<sub>1</sub> {ka/\*lul} thokki-lul cap-ulye-ko]*  
 -sub he/self-sub/obj rabbit-obj take-Inf-comp  
*kyelsimha-ess-ta.*  
 decide-past-em  
 "Chelswu decided to take a rabbit."  
 c. *Chelswu-ka [thokki-lul cap-ulye-ko]-lul kyelsimha-ess-ta.*  
 -sub rabbit-obj take-Inf-comp-obj decide-past-em  
 "Chelswu decided to take a rabbit."

<sup>18</sup> There is another piece of evidence that CP does not block 'restructuring.' The Korean version of *try* (a typical control verb in English) — (*nolyek*)*ha-* — selects a complement taking a clear overt complementizer (*-ko*) and shows 'restructuring' effects, as shown below:

- (i) a. *Chelswu-nun [amwukes-to ha-lye-ko] (?nolyek)ha-ci an-ass-ta.*  
 -TOP nothing do-Inf-comp try-to not-past-em  
 "Chelswu *neg* tried to do *nothing*."  
 b. *amwu-to [kukes-lul ani-ha-lye-ko] ??(\*nolyek)ha-ess-ta.*  
 nobody it-obj not-do-Inf-comp try-past-em  
 c. *Chelswu-nun [ani-ha-lye-ko] (?nolyek)ha-ess-ta, amwukes-to.*  
 -TOP not-do-Inf-comp try-past-em nothing  
 d. *[kukes-lul ani-ha-lye-ko] ??(\*nolyek)ha-ess-ta, amwu-to*  
 it-obj not-do-Inf-comp try-past-em nobody

(The 'restructuring' effects with *-lye-ko ha-* (*-Inf-comp do-* = *try*) are stronger than those with *nolyekha-* (*try*), which confirms that semantically weak predicates tend to trigger 'restructuring'.) In (ia and b), the clause-mate requirement is not met and in (ic and d), the matrix requirement is not met. Although (ia and c) show strong 'restructuring' effects whereas (ib and d) show weak 'restructuring' effects, we may consider *-lye-ko ha-* and *nolyekha-* are 'restructuring' verbs, attributing the weak acceptability to other reasons.

<sup>19</sup> The degree of grammaticality of (19d) varies depending on idiolects.

As shown in (19a), the CP infinitive complement may include agreement elements (*-usi-(H)* and *-tul (pl)*); and the embedded subject may overtly appear, as shown in (19b).<sup>20</sup> While ECM is not allowed (cf. 19b), the embedded clause is Case-marked (cf. 19c).

At this point since V and the infinitive marker are morphologically amalgamated, one might also suspect that the VP node is not syntactically active or does not exist (in Korean). This suspicion disappears when we see VP topicalization (20a) or VP clefting (20b) that applies in Vx construction;<sup>21</sup>

- (20) a. [<sub>VP</sub> i san-lul ollu-ki-nun] nay-ka ha-e po-a-se  
 this mountain-obj climb-to-TOP I-sub do-Inf attempt-Inf-since

<sup>20</sup> As Yang (1985) notices (also cf. Choe 1988), in Korean control construction may allow overt embedded subjects with certain predicted control interpretations. The control construction in Korean allows agreement elements although the embedded clause is infinitive. The status of null subjects in both control and Vx sentences is not our immediate concern. But see Huang (1984) for some attempts to identify null arguments in Chinese. See also Rizzi (1986) for null arguments in Italian and English and Borer (1986) for a theory of anaphoric AGR that can explain the control interpretation in infinitival clauses with overt agreements.

<sup>21</sup> Although (as the reviewer points out,) *-ki* is usually considered to be a nominalizer, we assume here that *V-ki* can also be a tenseless V form in Korean since when V is focused and separated from INFL elements, it appears in the form of *V-ki*, as shown in (i).

- (i) Chelswu-ka kukes-lul ha-ki-nun ha-ess-ta.  
 -sub it-obj do-to-CON do-past-em  
 "Chelswu did *do* it (but...)."

In languages with VP topicalization such as Breton (VSO language), topicalized VP's contain tenseless V forms according to Anderson and Chung (1977):

- (ii) [<sub>VP</sub> Deskin Brezhoneg] a reomp.  
 to-learn Breton prt do-1pl  
 "We are learning Breton."

It is interesting to note that the tenseless V forms in VP topicalized sentences in Breton are also argued to be nominalized forms (cf. Anderson 1981). Thus it seems either that topicalized VP's are, in general, nominalized for some reason or that nominalized V forms happen to be phonetically identical to tenseless V forms in both Breton and Korean. In any case, even if one consider *-ki* in (20) as a nominalizer, our argument does not seem to be affected.

As for the *V-ki* form, one should also be careful to differentiate (iiia) from (iiib).

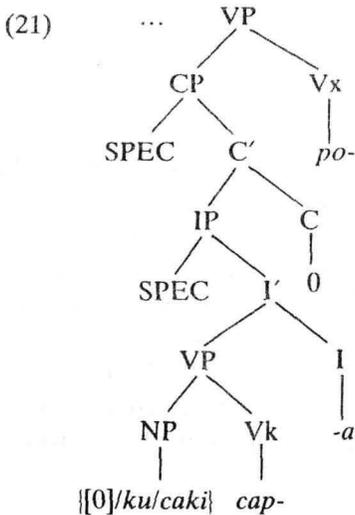
- (iii) a. [<sub>VP</sub> san-lul ollu-ki]-nun (ha-0-ki-ka) swip-0-ta.  
 mountain-obj climb-to-TOP do-Inf-comp-sub easy-pres-em  
 "As for climbing mountains, it is easy to do it."  
 b. [<sub>CP</sub> (i) san-lul ollu-0-ki]-nun swip-0-ta.  
 this mountain-obj climb-Inf-comp-CON easy-pres-em  
 "It is not easy to climb (this) mountain."

As shown in (iiib), ...*V-ki* may represent CP no matter what we call *-ki* (a nominalizer, a complementizer, or an Inf element) and as shown in (iiia), *V-ki* may represent VP.

- al-ci-man elyewun il-ka an-i-0-ta.  
 know-to-as difficult thing-sub not-be-pres-em  
 "As for climbing this mountain, it is not a difficult thing, as I know it from attempting to do it."
- b. Chelswu-ka mail ha-e tay-nun il-i-lan  
 -sub everyday do-Inf keep-comp thing-be-as for  
 [<sub>VP</sub> i san-lul oll-a po-ki]-i-ta.  
 this mountain-obj climb-Inf attempt-to-be-pres-em  
 "What Chelswu keeps doing everyday is to attempt to climb this mountain."
- c. [<sub>VP</sub> thokki-lul cap-ki-nun] ku-ka ha-lye-ko kyelsimha-ess-ten  
 rabbit-obj take-to-TOP he-sub do-Inf-comp decide-past-comp  
 il-i-0-ta.  
 thing-pres-em  
 "As for taking a rabbit is the thing that he decided to do."

In both (20a) and (20b), the *do* pro-verb appears in the original position of VP and the embedded VPs are either topicalized or clefted. Note also that the VP node is syntactically active in control construction, as is shown in (20c) in which VP is topicalized.

Given the evidence discussed above, V<sub>x</sub> construction must be syntactically represented in the following way at a certain level of representation (at least before a rule for 'restructuring' applies).



([0]=obligatory control PRO; cf. Williams 1980)

The above structure confirms that *Vx* is a predicate (it is base-generated as a predicate) although it is syntactically defective in that its CP complement does not behave as a clause with respect to certain syntactic processes. Thus we may call *Vx* *auxiliary predicate*.

### 3.5. Conclusion

It seems clear that in Korean, as in Italian, both control verbs and *Vx*'s select infinitive CP complements but that the *Vx* construction behaves as if it were mono-clausal with respect to the two requirements discussed in subsection 3.2.. The contrast between control/*think* and *Vx* constructions with respect to the two requirements (cf. (8-9) and (11-12) versus (13-15)) shows that 'restructuring' shows up in Korean, which suggests that 'restructuring' is a universal phenomenon that should be explained in terms of core grammar. Although Chomsky originally assumes that reanalysis is a non-transformational and nonproductive minor process and Rizzi assumes that 'restructuring' is language-specific, given that Korean and Italian 'restructuring' is productive in that the environment of 'restructuring' is predictable, UG should include a syntactic process that explains 'restructuring'. The next section points out a problem<sup>22</sup> with the reanalysis approach to 'restructuring' and proposes a transformational rule to explain 'restructuring' under the principles-parameters theory of UG (cf. Chomsky 1981, 1986a and b).

## 4. Proposal

### 4.1. Affect-category

One crucial problem with the reanalysis approach to 'restructuring' is that it violates the projection principle, as many have already pointed out (cf. Strozer 1981, Piccolo 1985,..). Thus let us suppose that 'restructuring' is obtained not by reanalysis but by a process that affects categorial projections so that those affected projections are not visible with respect to syntactic processes. The idea that rules can affect *nodes* or *trees* are not new, given the idea of node deletion or tree pruning (cf. Ross 1967). The idea of syntactic processes that *affect* elements also is not new, given the idea of affect-alpha by Lasnik and Saito (1984). The next question then is what is

<sup>22</sup> For more other problems with reanalysis, see Choe (1988) for other approaches to 'restructuring', and their problems (see also Rizzi 1982).

affected: minimal or maximal projections?

At this point, it is interesting to see some aspects of polysynthetic languages, which give us some insight into the answer. Let us examine data in a polysynthetic language (Chichewa) below that contain nonauxiliary (e.g., causative) and auxiliary verbs:

- (22) *abusa a-na-dy-ets-a mbuzi udzu.* (V-Vc)  
 goatherds SP-past-*eat-caus*-asp goats grass.  
 "The goatherds *made* the goats *eat* the grass." (cf. (19) in Baker 1988: 155)
- (23) a. *Ndi-ka-pemp-a pamanga.* (Vx-V)  
 1sSP-*go-beg-sap* maize  
 "I am going to *beg* maize."  
 b. *Kati madzi banu dza-man-e-ni ine.*  
 If wateryour *come-refuse-sap-imper* me  
 "If it is your water, *come* [and/in order to] *refuse* me."  
 c. *Ku kasungu si-ku-nga-chok-er-e bangu woipa.*  
 from neg-pres-*can-come-appl-asp* people bad  
 "Bad people *cannot come* from Kasungu." (cf. Watkins 1937: 98 and 101; also cf. (127a and b) in Baker 1988: 204)

There are two empirically and theoretically interesting aspects that we can observe from the above data. One is that the matrix verbs in (23) are called auxiliary verbs in that language (according to Watkins 1937: 92-104), like 'restructuring' predicates (Vx's) in Italian and in Korean. The other is that the morpheme order in causative construction (V-Vc) and that in (23) (Vx-V) differ: In (22) the embedded verb precedes the matrix one (Vc) whereas in (23) the matrix verb (Vx) precedes the embedded one.

From these observations, we can suggest two things. First, if Baker's (1988) head-movement approach to certain complex predicates in polysynthetic languages (nonlexicalist approach to morphologically-complex predicates) is right, Vc-V can be considered as derived by leftward head-movement, observing Williams's Righthand Head Rule (RHR; Williams 1981).<sup>23</sup> Second, in a language that employs morphologically-complex V-V predicates, predicates that may trigger 'restructuring' (i.e., Vx's in the language) undergo rightward amalgamation, instead of leftward head-

<sup>23</sup> *Righthand Head Rule* is informally stated as follows: In morphology, the head of a word is the righthand member of that word.

movement.<sup>24</sup>

Given that  $V_x$  and  $V$  are morphologically amalgamated in Chichewa and given the two points discussed above, we can suggest that 'restructuring' is derived from a transformation that affects minimal projections and that it may be accompanied by morphological amalgamation that is not governed exclusively by morphological principles such as the RHR. Assuming the idea that 'restructuring' effects are not derived from the change in structure but from a certain type of visibility of projections, we suggest, based on the Chichewa data, that it is derived from affect-category (or affect-node) that affects minimal projections in a certain way.

#### 4.2. Tree structure

At this point, consider a transformation in Chomsky (1957: 112).

- (24) a. structural analysis: NP — aux — V — NP  
       structural change: X1 — X2 — X3 — X4 →  
                               X4 — X2 + be + en — X2 — by + X1  
 b. John loves Mary. → Mary is loved by John.

In (24), structural analysis and structural change are based on the notion of analyzability defined in terms of the 'is a' relation (cf. Chomsky 1955/75). When NP is affected, its terminal string is also affected (cf. 24). In other words, the tree structure in (25) is considered one entity with respect to transformations (also cf. Lasnik and Kupin 1977).

- (25)  $X^i$  (where  $i$  is minimal or maximal)    a. XP                    b. X  
       |                                            |                                    |  
       a                                            a                                    a

The concept of tree structure within the current transformational grammar also assumes that  $X$  and  $a$  form one entity with respect to syntactic processes.

<sup>24</sup> In fact, in Chichewa, except when a matrix verb is an auxiliary verb, affixation is usually leftward in passive, causative and applicative constructions (cf. Watkins 1937). Choe (1988) suggests, based on cross-linguistic evidence, that the morphological amalgamation obtained by head-movement is leftward (cf. fn. 23) but that the morphological amalgamation accompanied with 'restructuring' is rightward.

The question is now whether terminal strings are also affected when minimal projections (*X*'s) are affected by a rule. Here we suggest, assuming the structure in (26), that *X* and *a* are not considered to form an entity with respect to transformations.

- (26) 
$$\begin{array}{l} X \\ | \\ a \end{array} \quad [\alpha N, \beta V, \dots]$$
- $$[\alpha S_1, \dots, \beta S_n, -/+P, \dots, \delta \dots]$$
- where *P* indicates a bundle of phonetic features; *S<sub>i</sub>* ( $0 < i < n+1$ ) morphological, syntactic, and semantic features; and  $\delta$  other lexical idiosyncrasies; and where *X* represents a bundle of categorial features

In (26), *X* and *a* are different entities; *X<sub>i</sub>* is a bundle of categorial features and *a* a bundle of features other than categorial features (but cf. Chomsky 1965). To differentiate one from another, let us call *X* *X*-head and *a* dominated by *X*-head. An *X*-head minimal projection (*X*) may also be considered a position for a terminal string (lexical item); a head (*a*) may also be considered to have a theta-assigning property. Let us further suggest that *X* and *a* are independent from each other in another sense: they may undergo different syntactic transformations or may be subject to different principles.<sup>25</sup> In other words, *X* and *a* are independent entities in syntax.

There is, however, an apparent example showing that *X* and *a* are not independent entities: *X* and *a* behave as if they form one entity with respect to the notion of *c*-command: When *X* *c*-commands *Y*, *a* also *c*-commands *Y* and vice versa. However, this is apparently so because the notion of *c*-command is defined in terms of 'the first branch node' (cf. Reinhart 1976).

#### 4.3. The Restructuring Rule (RR)

Given the assumption in (26), we suggest that 'restructuring' is derived from an *X*-head-to-*X*-head (category-to-category) transformation (not a head-to-head transformation) that can be named affect-category, which we

<sup>25</sup> Under this assumption, Choe (1988) suggests that head-movement applies to terminal strings (head-to-head or terminal string-to-terminal string transformation). Terminal strings are subject to morphological principles whereas projections of minimal categories are subject to *X*-bar schema based on the lexical properties of terminal strings. Along these lines, Choe further suggests that *wh*-movement and NP-movement are processes by which (*wh*-) arguments change their positions and NP's or XP's dominating (*wh*-)arguments do not move.

call the Restructuring Rule (RR for short). Given the idea of affect-category, we suggest a projection principle on X-heads by analogy with the projection principle.

(27) *The projection principle on X-heads:*

X-heads (i.e., [ $\alpha$  N,  $\beta$  V], I, C, ...) are preserved at every syntactic representation, i.e., D-structure, S-structure, and LF in that the s-selectional/theta-assigning properties of heads dominated by those X-heads are observed (cf. Chomsky (1986a) for the notion of s-selection).

This principle confirms that no minimal projections (X's) are deleted or changed during derivations unless transformations affect them with some universal validity. Under (27), to introduce a mechanism of 'restructuring', we propose hypothetical features [ $+/-$  Categorical Dependency] (= [ $+/-$  CD]), which indicates categorial dependency among projections in a certain sense. Given these features, we propose the notion of a *categorial dependency link*:

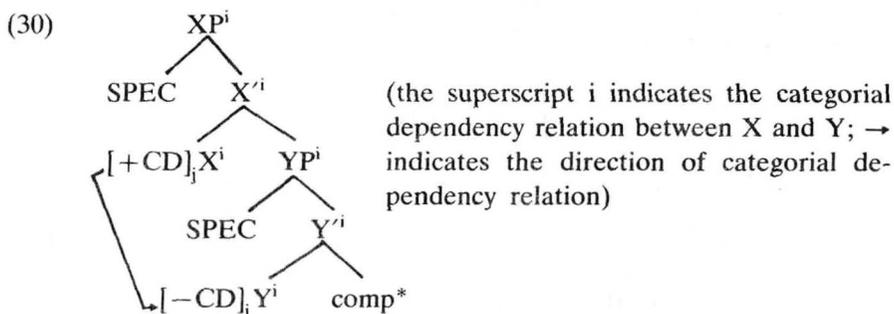
- (28) a. X and Y form a *categorial dependency link* iff X governs the projection of Y.  
 b. If X governs the projection of Y, X and Y are [ $+CD$ ]<sub>j</sub> and [ $-CD$ ]<sub>j</sub>, respectively, where  $0 < j < n+1$ .

By using the notion of categorial dependency link, we formulate the Restructuring Rule in terms of superscripting that applies to minimal projections (X-heads) under consideration.

(29) *The Restructuring Rule (RR):*

- a. Superscript X-heads that are under a categorial dependency link (top to bottom)  
 b. Index (superscript) percolation within RRed projections (because of X-bar conventions/feature percolation conventions)

Superscripting thus indicates a *categorial dependency relation* with a certain sense (that is represented as [ $+CD$ ]<sub>j</sub> — [ $-CD$ ]<sub>j</sub> where  $0 < j < n + 1$ ), which we will clarify shortly. The rule as stated in (29) will be considered to derive the structure shown in (30).



The superscripts of  $X$  and  $Y$  are obtained through (29a) and those of other projections through (29b).

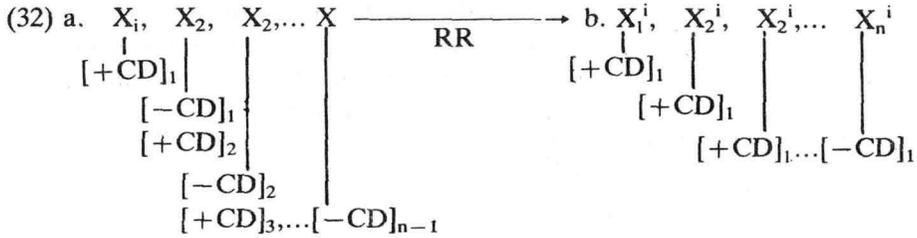
As an RR effect, we suggest the following:  $[+CD]_j X^i$  and  $[-CD]_j Y^i$  form a complex  $X$ -head in a technical sense, which we call an R-complex  $X$ -head and which we represent as  $\{X^i, Y^i\}$ , and  $[+CD]_j XP^i$  and  $[-CD]_j YP^i$  form an R-complex multi- $X$ -head (or an R-complex  $X$ -head) projection. The intuitive idea is that R-complex projections but not members of R-complex projections are visible with respect to certain syntactic processes or that the projection of  $X$  is dependent upon  $YP$  so that only  $YP$  is visible with respect to syntactic processes.

The rule in (29), however, overgeneralize 'restructuring' and it applies only to adjacent minimal projections. Therefore we need to restrict it and the rule needs to be generalized to apply to nonadjacent minimal projections (e.g., between  $V_x$  to  $V_k$  across  $C$  and  $I$  in (21)). The first hypothesis is that superscripting applies only to certain environments or that RR is sensitive to target-trigger links that are obtained from the lexical properties of a certain class of verbs. In other words, certain predicates (or certain lexical items) are specified in the Lexicon as defective in that their categorial projections are categorially dependent upon the categorial projections of other predicates, forming a categorial dependency relation. Thus, RR can be redefined in terms of target and trigger as follows.

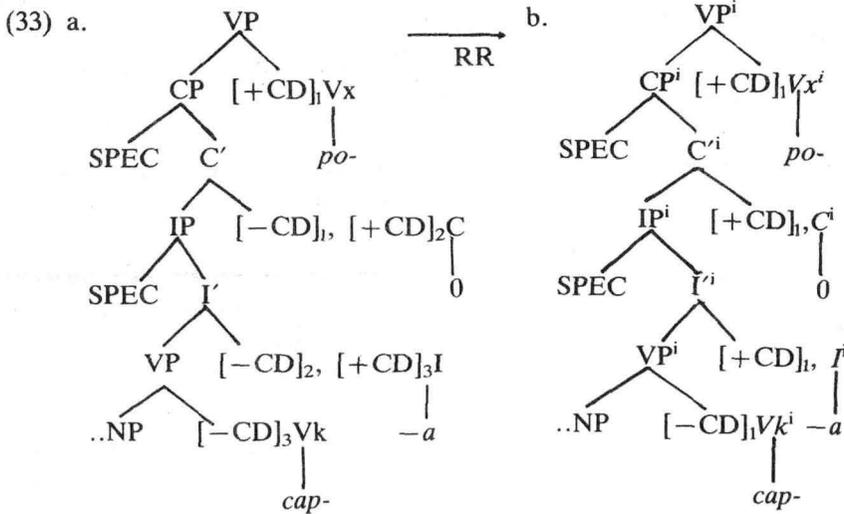
(31) RR:

- a. Superscript every intermediate  $X$ -head between a target and a trigger including the target and trigger (= make all the categorial dependency links between a trigger of RR and its target the categorial dependency relation of the trigger).
- b. Index (superscript) percolation within RRed projections (because of  $X$ -bar conventions/feature percolation conventions)

The output of the RR in (31) can be schematized as follows in which  $X_j$  is structurally higher than  $X_{j-1}$ .<sup>26</sup>



For a concrete example of RR, consider a case of Korean ‘restructuring,’ in which  $Vx$  is the trigger of RR and  $Vk$  the target of RR.



<sup>26</sup> There may be two ways the rule applies. Superscripting may apply top to bottom across cyclic nodes ignoring Strict Cyclicity. Or superscripting may apply bottom to top in a cyclic way. For example, if  $X$ 's represent  $V$  or  $N$  (whose projection forms a cyclic domain), which can be called cyclic  $X$ -heads, then in the cyclic node of  $X_{n-1} [+CD]_{n-1}$ , superscripting between  $X_{n-1} [+CD]_{n-1}$  and  $X_n [-CD]_{n-1}$  obtains the dependency relation of  $X_{n-1} [+CD]_{n-1}$ ; in the cyclic node of  $X_{n-2} [+CD]_{n-2}$ , RR obtains the dependency relation of  $X_{n-2} [+CD]_{n-2}$ , and so on. Finally, when we get the cyclic node of  $X_1 [+CD]_1$ , we obtain the dependency relation of  $X_1 [+CD]_1$ . If the second option is right, RR obeys Strong Cyclicity but at the level of interpretation, only when targets and triggers are correctly superscripted, consistent with the lexical properties of triggers, the effects of RR are interpreted. However, see Choe (1988: 45-6) for the discussion of the licensing theory of transformation, which suggests that transformation applies when it is motivated. Which is right can be either an empirical or a theoretical question, which we will not pursue here.

The superscripts of the X-heads are obtained through (31a) and those of other projections are obtained through (31b). Effects of RR are as follows: *cap-a po-* and *V-I-C-V* become an R-complex word and an R-complex X-head, respectively. In (33)  $\{Vx^i, I^i, C^i, Vk^i\}$  represents an R-complex X-head (V) and  $\{VxP^i, IP^i, CP^i, VkP^i\}$  represents an R-complex X-head projection (VP) whereas *cap-a po-* represents an R-complex word (note that the notion of R-complex word is purely terminological). Thus they behave as if they represent a mono-clausal VP or as if there were only a projection of *Vk* especially with respect to certain syntactic processes. The projections of  $Vx^i$ ,  $C^i$ , and  $I^i$  are configurationally visible but not visible with respect to certain syntactic processes. Likewise, in Italian,  $VP^i$ ,  $CP^i$ , and  $IP^i$  are not visible with respect to cliticizations so that clitic climbing across  $CP^i$  is legal in the case of (4b).

#### 4.4. The effects of RR

Putting aside the problem of *take advantage of*, it is easy to see that Subjacency matters in the case of English *wh*-movement sentences in (2); in the case of cliticization in Italian, if cliticization is movement (cf. Kayne 1975, Rizzi 1982), it would also obey Subjacency, too. If Subjacency is based on the notion of barriers,<sup>27</sup> one can suggest, instead of assuming that  $XP^i$  is not visible with respect to syntactic processes, that  $XP^i$  does not constitute an (inherent) barrier (cf. fn. 29 and (38) below).

Korean 'restructuring' can also be explained in terms of the defectiveness of  $XP^i$  with respect to the notions of barrier and government. In fact, Choe (1987) suggests, assuming that *an-* is linked to INFL,<sup>28</sup> that the clause-mate

<sup>27</sup> Chomsky (1986: 30) formulates Subjacency in terms of n-subjacency in the following way (also cf. (38) and fn. 29 for the definition of barrier):

(i) if  $[a_i, a_{i+1}]$  is a link of a chain, the  $a_{i+1}$  is 1-subjacent to  $a_i$

def. =  $b$  is n-subjacent to  $a$  iff there are fewer than  $n+1$  barriers for  $b$  that excludes  $a$ .

<sup>28</sup> Note that with finite V forms, *an-* may appear in the pre-V or pre-INFL position (cf. *ani-po-* (not-V) and *V-ci an-INFL* (V-to not-INFL)) whereas with tenseless V forms, *an-* may appear only in the pre-V position (cf. *ani-V-e* (not-V-Inf) and *\*V-ci ani-e* (V-to not-Inf)). This may be so probably because V and Inf (-e) is not usually separated (cf. *\*V-to X-Inf* where X is CON, or a particle (or a delimiter)). Here, we assume that in the case of *ani-V-e*, *ani-* may be linked to INFL (Inf) or to V, appearing in the following morphological structures:  $[ani-[[V]-Inf]]$  or  $[[ani-[V]]-Inf]$ . Here, we consider only the cases in which *an-* is linked to INFL in tenseless V forms, putting aside the cases in which *an-* is linked to V (*ani-V-INFL* or  $[[ani-V]-Inf]$ ), note that given the two requirements, the place in which *an-* appears matters for our purposes. Note, however, that the meaning of *an-* in the pre-V position differs from that in the post-V position, which is not our immediate concern here. Compare (ii) with (13b) for example.

and matrix requirements are observed because of an LF scope condition stated as follows:

- (34) *LF scope condition*: A quantifier should be governed by its scope marker in LF (to have appropriate scope).

Choe (1987) argues that rightward inverted elements in Korean are base-generated as the heads of rightward inversion sentences as in the relative construction in which the head of the relative construction is base-generated on the right side of the construction at D-structure. Choe also argues that Korean rightward inversion is derived from null operator movement in syntax, as shown in (35):

- (35) a.  $[_{CP} [_{IP} t_i \text{ an-}_i ] (OP_i)] \text{ amwu-to}_i$   
 b.  $[_{CP} \dots [_{IP} \dots [_{VP} \dots [_{CP} [_{IP} t_i ] \dots ] \dots ] \text{ an-}_i ] (OP_i)] \text{ amwu-to}_i$

At LF, when *an-* appears in the matrix clause, as shown in (35), *an-* governs  $OP_i$  or  $\text{amwu-to}_i$  (one may assume, following Choe (1988) who argues that CP is not a barrier in the environment of (35) that contains a null operator, that *an-* governs  $\text{amwu-to}$  across CP in (35)). Thus, the LF scope condition explains the grammaticality of the structures in (35), in which the matrix requirement is met. Note also that when QR to IP or to VP applies, *an-* can govern  $\text{amwu-to}$  without any problem when  $\text{amwu-to}$  and *an-* are in the same clause, as shown in (36), in which the clause-mate requirement is met.

- (36) a.  $[_{IP} \text{ amwu-to}_i [_{IP} t_i [_{VP} V \dots ] \text{ an- } \dots ]$   
 b.  $[_{IP} [_{VP} \text{ amwu-to}_i [_{VP} t_i V \dots ] ] \text{ an- } \dots ]$   
 c.  $[_{IP} \text{ amwu-to}_i [_{IP} t_i [_{VP} \dots [_{CP} \dots [_{VP} V \dots ] ] \dots ] \text{ an- } \dots ]$

Thus, the LF scope condition also explains the grammaticality of the structures in (36).

However, when the matrix or clause-mate requirements are not met, we would have the structures in (37), for example, in which *an-* does not govern  $\text{amwu-to}$  since there are at least two barriers (VP (inherent barrier) and IP (inherited barrier); cf. fn. 29) and intervening X's such as C and V induce the Minimality Condition (the MC).

- (ii) ....mek-e ani-po-ass-ta  
 eat-Inf neg-attempt-past-em

- (37) a. (\*)  $[[CP \dots [VP^{(i)} \dots [CP^{(i)} \dots [IP^{(i)} t_i ]an_i- I^{(i)} ]$   
 $\dots C^{(i)} ] \dots V^{(i)} ] \dots ] (OP_i)] amwu-to_i$  (cf. 11-12a)
- b. (\*)  $[IP amwu-to_i [IP t_i [VP^{(i)} \dots [CP^{(i)} \dots [IP^{(i)} \dots [VP^{(i)} V ]$   
 $an_i- I^{(i)} ] C^{(i)} ] V^{(i)} ]]]$  (cf 8-9d)

The ungrammaticality of the structures in (37) is explained by the scope condition: when structures violate the scope conditions (cf. 34), they are ungrammatical. Thus the effects of the two requirements can now be considered to be obtained because of the scope condition.

Based on the above discussion, as for 'restructuring' effects shown in (13-15) and (18), we can now suggest the following: If RR applies between a matrix verb and an embedded verb, then intermediate projections in the RR domain ( $CP^i$ ,  $IP^i$  and  $VP^i$  in (37)) are not visible so that they can not constitute barriers and therefore the two requirements are ignored in the 'restructuring' construction.  $C^i$ ,  $I^i$ , and  $V^i$  also do not induce the MC.

Given the above discussion, to clarify the notion 'visibility', we suggest the following definition of barrier in terms of complex X-head and simplex X-head where simplex X-head indicates X-head that is not superscripted.<sup>29</sup>

- (38) *barrier*;  $\delta$  is a barrier for  $\beta$  iff (a) or (b):
- a.  $\delta$  immediately dominates  $\alpha$ ,  $\alpha$  a BC for  $\beta$  (inheritance)
  - b.  $\delta$  is a BC for  $\beta$  (inherence)
- BC*:  $\delta$  is a BC for  $\beta$  iff
- (i)  $\delta$  is not L-marked,
  - (ii)  $\delta$  is a simplex or complex X-head projection and
  - (iii)  $\delta$   $\gamma$ -dominates  $b$ .
- $\gamma$ -domination*:  $\alpha$   $\gamma$ -dominates  $\beta$  iff every  $[aCD]_j$  X-head projection (linked by an instantiation of RR) that dominates  $\alpha$  dominates  $\beta$ ; a simplex X-head projection has only one instantiation of an X-head projection with the feature  $[-CD]$ , i.e., itself, (cf. Chomsky 1986b)

<sup>29</sup> (38) is a modification of Chomsky's definition given below:

- (i)  $\delta$  is a barrier for  $\beta$  iff (a) or (b):
  - a.  $\delta$  immediately dominates  $\alpha$ ,  $\alpha$  a BC for  $\beta$  (inheritance);
  - b.  $\delta$  is a BC for  $\beta$ ,  $r \neq IP$  (inherence).

(ii)  $\delta$  is a BC for  $\beta$  iff  $\delta$  is not L-marked and  $\delta$  dominates  $\beta$ . (Chomsky 1986: 14)  
 Note that we eliminate the condition  $\delta \neq IP$  for inherence; see Choe (1988) for reasons why the condition is not necessary under the formulation in (38).

The notion of *barrier* given above (especially cf. (38ii)) says that only R-complex or simplex X-head projections can be BC's (and therefore inherent barriers)<sup>30</sup> and that within the domain of RR, no non-complex or non-simplex X-head projections may be (inherent) barriers. The above definition of barrier guarantees that clitic climbing is legal in Vx construction in which RR applies between Vx and the most deeply embedded V(cf. 39a below); it also guarantees that *wh*-movement in (2b) does not violate Subjacency stated under the framework of *Barriers* (cf. fn. 27): When *make* triggers V-to-N RR, NP<sup>i</sup> is a member of a complex X-head projection {VP<sup>i</sup>, NP<sup>i</sup>} and therefore does not cause a complex NP constraint violation (cf. 39b).

- (39) a. [VP<sup>i</sup> ..[CP<sup>i</sup> ..[IP<sup>i</sup> ..[VP<sup>i</sup> ]]] → [ {VP<sup>i</sup>, CP<sup>i</sup>, IP<sup>i</sup>, VP<sup>i</sup>} ... ]  
 b. [VP<sup>i</sup> ...[NP<sup>i</sup> ...]] → [ {VP<sup>i</sup>, NP<sup>i</sup>} ... ]  
 (where → means 'interpreted as')

The Korean data in (13-15) (cf. 37) can also be explained when we define the notion of government in terms of simplex and complex X-heads.

- (40) *government*:  $\alpha$  governs  $\beta$  if  $\alpha$  m-commands  $\beta$  and (i) there is no barrier between  $\alpha$  and  $\beta$  or (ii)  $\beta$  is not protected by a simplex or complex X-head (the Minimality Condition (= the MC)).

*m-command*:  $\alpha$  m-commands  $\beta$  if and only if  $\alpha$  does not dominate  $\beta$  and every  $\gamma$  that dominates  $\alpha$  dominates  $\beta$  where  $\gamma$  is either the highest member of complex X-head or a simplex X-head.

Given (38) and the formulation of the MC in (40ii), *an-* can govern *amwu-to* across VP<sup>i</sup>, IP<sup>i</sup> and CP<sup>i</sup> (cf. 37) for the following reason: First, VP<sup>i</sup> is not a BC (and therefore not an inherent barrier) and therefore IP does not become an inherited barrier (cf. 38). Second, V<sup>i</sup> and C<sup>i</sup> do not induce the MC since (40ii) guarantees that any X<sup>i</sup> projections, which are neither complex nor simplex X-heads, do not induce the MC. Finally, the notion of m-command in terms of complex/simplex X-heads also guarantees that the government domain of an element within an RR domain is the highest node within the RR domain.

<sup>30</sup> The formulation in (38a) does not prevent superscripted X-head projections from being inherited barriers outside of a certain RR domain. See Choe (1988) for some concrete examples in which an XP<sup>i</sup> is an inherited barrier.

So far, under the present RR approach to 'restructuring', we have explained Italian/Korean and English 'restructuring' without motivating reanalysis which changes structure. Our RR approach is theoretically desirable for two reasons. One is that the outputs of RR do not violate the projection principle (on X-heads). The other is that 'restructuring' is no longer understood as language-specific simply because it interacts with language-specific syntactic processes such as clitic climbing or requirements concerning the distribution of quantifiers and their scope markers. In the final section, we discuss two empirical facts in favor of our proposal.

## 5. Some Empirical Consequences

### 5.1. The *-key ha-* construction vs. the *-key mantul-* construction

The suggestion that RR is triggered by a certain class of lexical items that are (semantically weak) and that selects infinitive CP complements (cf. Rizzi 1982) are well confirmed by Korean data: In Korean, there are two types of pheriphrasal causative constructions: *-key ha-* (41a) and *-key mantul-* (41b) causativization where *ha-(do)* is an auxiliary verb that are semantically weak (and has no causative meaning itself) while *mantul-* (*make*) is not semantically weak (and has a causative meaning).<sup>31</sup>

- (41) a. Chelswu-ka tongsayng- {ka/lul/eykey} kongpwuha-0-*key ha-*ess-ta.  
           -sub brother-sub/obj/to study-Inf-comp do-past-em  
           "Chelswu made his brother study."  
       b. Chelswu-ka tongsayng- {ka/lul/??eykey} kongpwuha-0-*key*  
           -sub brother-sub/obj-to study-Inf-comp  
           *mantul-*ess-ta.  
           make-past-em

These two causative constructions are syntactically the same in that they select infinitival clauses that contain the overt complementizer *-key*.

However, there is a difference between them: In the *-key mantul-* causative construction, the clause-mate requirement and the matrix requirement

<sup>31</sup> The embedded subjects of *-key {ha/mantul}-* causative constructions may take three different case markers, as shown in (41) (cf. Yang (1976), especially when embedded verbs are intransitive; when a causative verb has the meaning of causation with some force (cf. *-key manutul-*), *-eykey* is not preferred (cf. 41b).

are observed, whereas in the *-key ha-* construction, they are not observed, as we see in the contrast between (42) and (43).

- (42) a. Chelswu-nun [Yenghi- {ka/lul/eykey} *amwukes-to* ha-0-key]  
           -TOP          -sub/obj/to      nothing      do-Inf-comp  
           ha-ci *an-ass-ta*.  
           do-to not-past-em  
           “Chelswu did not make Yenghi do nothing.”
- b. Chelswu-nun [Yenghi- {ka/lul/eykey} *ani-ha-0-key*] ha-ess-ta,  
           -TOP          -sub/obj/to      not-do-Inf-comp do-past-em  
           *amwukes-to*.  
           nothing
- (43) a. \*Chelswu-nun [Yenghi- {ka/lul/eykey} *amwukes-to* ha-0-key]  
           -TOP          -sub/obj/to      nothing      do-Inf-comp  
           *mantul-ci an-ass-ta*.  
           make-to not-past-em  
           “Chelswu did not make Yenghi do nothing.”
- b. \*Chelswu-ka [Yenghi- {ka/lul/eykey} *ani-ha-0-key*]  
           -sub          -sub/obj/to      not-do-Inf-comp  
           *mantul-ess-ta, amwukes-to*.  
           make-past-em      nothing

In (43a and b) the two requirements are not met and therefore (43a and b) are not grammatical. On the other hand, in (42), although they are not met, (42a and b) are grammatical.

We can attribute the contrast between (42) and (43) to ‘restructuring’, by analogy with the contrast between Vx and control constructions: V-to-V RR applies in the *V-key ha-* construction, triggering an R-complex predicate (so that the two requirements are not observed in the construction) whereas V-to-V RR does not apply in the *V-key mantul-* construction. If our approach is right, then in Korean, the verb *ha-* (*do*) is ambiguous three ways at least. It may function as the *do* auxiliary (or the *do* pro-verb), or a main verb or an auxiliary predicate (Vx). One more important point we can draw from the data in (42-43) is: It has been noted that ‘restructuring’ may take place only when matrix and embedded subjects are coreferential and we have seen such examples in the previous sections, but Korean data show that ‘restructuring’ may take place even when matrix and embedded subjects are not coreferential as long as embedded clauses are tenseless (infinitival).

**5.2. The morpheme order in head-final languages**

Under the present approach, we suggested, based on Chichewa 'restructuring' (cf. 23), that RR may be accompanied with morphological amalgamation. Let us call RR accompanied with morphological amalgamation overt RR. To explain rightward amalgamation that reflects string order (cf. the Vx-V order in (23)), we suggest that overt RR is an instantiation of move-category that gives rise to (overt) complex X-heads (e.g., XY<sup>i</sup>), preserving string order (the string-preserving property of overt RR). An XY<sup>i</sup> complex X-head represents a complex category that is a representation of the combined categorial features of X and Y: If X and Y represent categorial features [ $\alpha$  A1,  $\beta$  A2,...] and [ $\alpha$  B1,  $\beta$  B2,...] respectively, then XY represent categorial features [ $\alpha$  A1,  $\beta$  A2,  $\alpha$  B1,  $\beta$  B2,...].<sup>32</sup> The syntactic structure that over RR produces we suggest is as in (44c), as compared with three other logically possible cases: (44a) illustrates 'restructuring' structure; (44d) head-movement structure; and (44b) usual structure immune to both 'restructureing' and head-movement.

(44) *Chichewa (head-initial languages):*

a.	<u>X</u> <sup>i</sup> + Y <sup>i</sup>	b. <u>X</u> + Y	
	 a      b	 a      b	no morphological amalgamation
c.	<u>X</u> <sup>i</sup> Y <sup>i</sup> (= <u>XY</u> <sup>i</sup> )	d. <u>X</u> + Y	
	 a-b	 b-a <sub>i</sub> t <sub>i</sub>	morphological amalgamation
	[+CD]	[-CD]	

(where underlined X possess the specified feature in the bottom and X is hierarchically higher than Y)

In (44d) the morpheme order reflects a morphological principle (i.e., Right-hand Head Rule). On the other hand, in (44c) the morpheme order reflects string order at D-structure (the string-preserving property of RR). In other words, the morpheme order derived by overt RR reflects the head-parameter.

If syntactically-derived morphological amalgamation is derived either from

<sup>32</sup> We assume that at a certain level, the feature system of XY is subject to a certain version of Lieber's (1981) feature percolation conventions that may be called categorial feature percolation conventions. See Choe (1988) for some concrete discussion on this topic and also on the status of the SPECs and that of complements of X and Y when X and Y are overtly RRed.

head-movement or from overt RR, the morpheme order in head-final languages would differ from that in head-initial languages given that the morpheme order may reflect the head parameter. In head-initial languages given that the morpheme order may reflect the head parameter. In head-final languages, we would have the following four cases, under the present analysis:

(45) *Head-final languages:*

a. $Y^i + \underline{X^i}$          b      a	b. $Y + \underline{X}$          b      a	no morphological amalgamation
c. $Y^i \underline{X^i}$ (= $YX^i$ )       b-a	d. $Y + \underline{X}$       t <sub>i</sub> b-a <sub>i</sub>	morphological amalgamation
[+CD]	[-CD]	

Note that the above system shows that only *b-a* order is possible in head-final languages; the *b-a* order but not the *a-b* order is obtained in (45). In other words, this approach predicts that in head-final languages, no *a-b* order is found. The prediction seems to be borne out because we cannot find any counterexamples.<sup>33</sup>

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<sup>33</sup> In fact, the prediction derived from the string preserving property of overt RR applies to combinations between cyclic heads (V or N) but not to those between cyclic heads and noncyclic or functional heads. In other words, the prediction applies only to V/N or V/V combinations. See Choe (1988) for discussion of this point.

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