

RESTRUCTURING PARAMETERS AND COMPLEX PREDICATES  
-- A TRANSFORMATIONAL APPROACH --

by

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ABSTRACT

This thesis discusses the two types of complex predicate -- morphologically-complex predicates (Type I) and 'restructured' predicates composed of morphologically-independent predicates (cf. Rizzi (1982); Type II). It introduces and develops a theory of complex predicates/words. The theoretical framework is a recent development of the transformational grammar--the principles-parameters approach to Universal Grammar (UG) (cf. Chomsky (1986a and b)).

We view complex predicates as derived through transformations operating on minimal elements. Type II complex predicates are obtained through a head-to-head transformation, which we call The Restructuring Rule (RR). The RR affects categories in a certain way, linking them, and thereby giving rise to Type II complex words, whose properties and syntax characterize the 'restructuring' phenomenon discussed in the literature. Type I complex predicates are obtained through head-movement; for both empirical and theoretical reasons, head-movement is reunderstood as having a more restricted function than the one assumed in the literature: Head-movement is instantiated as adjunction but not substitution. Head-adjunction creates the segments of both target and trigger minimal categories, forming chains called H-chains. Empirical data suggest that Type I complex predicates are also formed through RR accompanied by head-movement, which we call overt RR. Consequently, complex predicates are obtained through head-movement, (move-head), RR (affect-category), or overt RR (move-category); complex predicates form three different types of complex word according to their syntactic derivations. Move-head operates on terminal strings (heads), affect-category on heads in X-bar theory's sense (X-heads), and move-category on both heads and X-heads. Those head-to-head transformations imply a certain concept of tree structure (that differs from the usual concept of tree structure), under which a head and the X-head projected from the head are independent entities of each other, subject to different principles of grammar. The proposed head-to-head transformations assume the projection principle on X-heads and the theta-criterion on X-heads, which apply to both lexical (X-)heads and functional (X-)heads such as C and I, and which apply to categories but not to segments derived through head-movement.

As for the motivations of head-to-head transformations, we suggest, under a certain theory of transformation called a licensing theory of



transformation, that head-movement is motivated by certain morphological dependency of a head. In contrast to the current assumption, the targets of head-movement are viewed as very restricted: Heads move to lexical heads that L-mark (but not to functional heads) and the latter (targets) govern the former (the Revised Head Movement Constraint). This restricted property of head-movement is viewed as obeying the ECP in terms of antecedent-government. RR (affect/move-category) is motivated by the certain categorial dependency of an X-head, whose effects are read off at LF. RR is governed by the Lexical properties of predicates or of Lexical items, and a trigger of RR is semantically and/or phonologically poorer than its target. RR triggers 'overlapping' among categories and positions within an RR domain, and/or change configurational structure, obeying certain RR conventions. Those notions of RR and head-movement lead to certain morphological, syntactic and semantic differences among the three different types of complex words/predicates. The levels of rule application vary; depending on the parameterization of the levels of rule application, the syntax of complex predicates differ.

The proposed notions of RR and head-movement not only explain the 'restructuring' phenomenon and Type I complex predicates, but also offer new and deep insight into various linguistic phenomena and constructions discussed in the literature: I-V amalgamation, Aux-to-COMP construction in Italian, ACC-ing construction, V-2 order and Aux-inversion, whiz deletion, passive and causative constructions, 'neg-raising' (also cf. Korean 'restructuring') and a configurationality issue. The discussions on these constructions/phenomena (in Chapter 4) show that specific instantiations of a phenomenon in various languages are surface language-specific instantiations of the deep operations of head-to-head transformations.

Some consequences and results of our discussions are: First, 'restructuring,' which is understood as V-to-V RR effects, is neither language-specific nor restricted to pro-drop languages (cf. Kayne's (1980) conjecture). Second, syntactically-derived morphologically-complex words are ambiguous: they are derived either by overt RR or by head-movement; the proposed notions of RR and head-movement explain certain differences between the two types of Type I complex predicate in morphology, syntax, and semantics. Third, the proposal advocates a certain version of the weak lexicalist position and the autonomy thesis of syntax with respect to morphology and to semantics, suggesting an independently-motivated morphological component that interacts with the syntactic component. Fourth, the proposal results in a very restricted theory of grammar, which includes the wide interpretation of the projection principle (together with the projection principle on X-heads), which applies to A or A-bar positions, and which also holds at a certain sublevel of PF (morphological structure). The wide interpretation of the projection principle leads us to reconsider the usual assumption that X-bar theory holds only at D-structure and suggest that X-bar theory holds at every level of syntactic representation (D- and S-structure, LF, and a sublevel of PF).

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\*\*\*\*\*

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The footnotes and examples in Chapters 1, 2, and 5 are numbered separately; in Chapters 3 and 4 the footnotes and examples of each Section are numbered separately.

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## CHAPTER 1: THEORETICAL FRAMEWORK

### 1.0. Introduction

This essay introduces and develops a type of transformation within the current theory of transformational grammar presented in Chomsky (1981;1986a and b) and in related works.<sup>1</sup> The type of transformation -- affect/move-category (realized as the Restructuring Rule (RR)) -- is proposed in connection with some linguistic phenomena called 'restructuring' and/or reanalysis in the literature. The phenomena under consideration are related to 'complex predicate' constructions that contain 'restructured' or reanalyzed complex predicates or a certain type of morphologically-complex predicate; they are not described or explained in terms of the usual transformational rules, which are now called move-alpha. The phenomena raise some apparent theoretical difficulties: Move-alpha may not satisfactorily account for the phenomena, and universal principles are apparently incompatible with them. Since we cannot deny the phenomena, the theory should find a way to incorporate them satisfactorily within its descriptive and explanatory domain (cf. the notions of descriptive and explanatory adequacies in Chomsky (1965;78 & 27)).

---

<sup>1</sup> There are some alternative theories with some theoretical divergences from the theory we are assuming here: Generalized Phrase-Structure Grammar (cf. Gazdar, Klein, Pullum and Sag (1985)) and Lexical-Functional Grammar (cf. Bresnan (1982;ed.)). Both theories show some efforts toward eliminating transformation rules by enriching a phrase-structure component with meta rules or by enriching a lexical component with lexical rules. Lexical-Functional Grammar follows Relational Grammar (cf. Fillmore (1968); Perlmutter (1983;ed.); Perlmutter and Rosen (1984;ed.)) in which grammar is based on the notion of grammatical functions but not on configurational structure. The goal of this thesis is, however, to understand certain linguistic phenomena through transformations (movement).

There are obviously two ways to overcome these difficulties: One is to modify or even to abandon otherwise well-motivated universal principle(s) and the other is to propose new types of transformational rules for the phenomena which least conflict with principles of the theory and yet provide some new understanding of both the phenomena and Universal Grammar (UG). In this essay, we take the latter approach -- proposing a new type of transformational rule -- since otherwise well-motivated principles should not be abandoned if possible. In fact, the phenomena themselves also come under the scope of the principles of the theory, at least in their core aspects; the rules we will propose interact with the core principles of UG. This Chapter, therefore, presents some aspects of the theory as the starting point of our discussions.

### 1.1. Theoretical Framework<sup>2</sup>

The first thesis of the theory is: The object of the study is internalized languages (I-languages)<sup>3</sup> and therefore 'systems of mental representation and computation of the language faculty.' The language faculty is a distinct system of the mind/brain with an initial state of language faculty (= So) common and unique to human beings (a modular approach to the mind/brain). Given appropriate experience, the faculty obtains some relatively stable steady state Ss from So (cf. the rationalist/Humboltian tradition). The attained Ss (which includes I-languages) and So are 'real elements of particular mind/brains, aspects of the physical world, where we

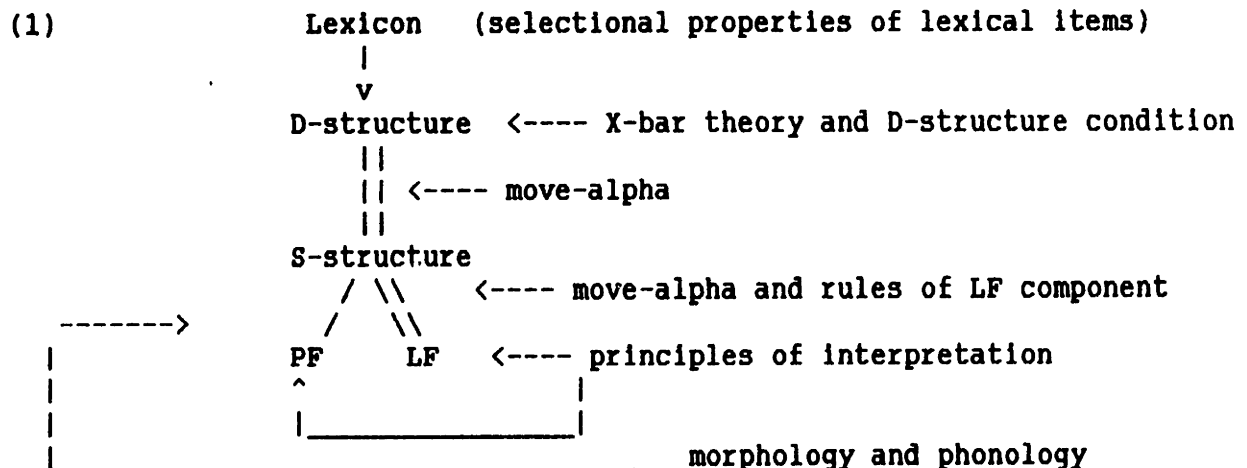
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<sup>2</sup> The discussion in this section is mostly based on Chomsky (1981; 1986a and b; class lectures, Fall, 1986; Spring, 1987).

<sup>3</sup> By I-language, Chomsky (1986a; 21-22) means to refer to Jespersen's 'notion of structure' which is 'definite enough to guide the speaker in framing sentences of his own ... free expressions.'

understand mental state and representations to be physically encoded in some manner' (Realism toward So and Ss).

From a linguist's point of view, UG is the linguistic theory of So and particular grammars are theories of various I-languages. UG we assume consists of move-alpha and universal principles associated with parameters -- the principles-parameters approach to UG (= So); So consists of principles associated with parameters and Ss is obtained through parameter-fixing processes. Move-alpha and the principles of UG have their own sub-component(s) of grammar (Lexicon, syntax, LF-syntax (= LF component), PF component), which are represented below; grammar has four levels of representation -- D-structure, S-structure, PF level of representation and LF level of representation (cf. Chomsky and Lasnik (1977); Chomsky (1981; 1986a)).<sup>4</sup>



D-structure derives from properties of lexical items and from X-bar theory, subject to the principles of UG; Move-alpha links D-structure with S-

<sup>4</sup> In (1), except for the Lexicon and PF component, three other levels of representation and move-alpha connecting them form a syntactic component. Move-alpha is assumed to belong to syntax-proper within the model (1). However, move-alpha is also proposed as a rule in the Lexicon (cf. Keyser and Roeper (1984)) or as a rule connecting 'morphological S-structure' with LF (cf. Pesetsky (1985)). Later, we will suggest that an instantiation of transformation (head-movement accompanied by the Restructuring Rule) can link S-structure with (a selevel of) PF.

structure and S-structure with the LF level of representation; morphology and phonology link S-structure and the PF level of representation (cf. Chomsky (1986a;156)). The levels of PF and LF representations are taken as the interface between formal structure (language) and other cognitive systems, 'yielding direct representations of sound on the one hand and meaning on the other hand.'

This model suggests that each expression of a language is assigned a structure  $Z = (D, S, L, P)$  where D, S, L and P are the representations at the levels of D-structure, S-structure, LF, and PF. Elements of Z are appropriately related; each element at each representation is connected by move-alpha and its distribution is constrained by universal principles and conditions on representations. UG consists of several modules of grammar that contain principles of UG and operate mostly on the (double-lined) components in (1):

- (2) a. X-bar theory
- b. theta-theory
- c. Case theory
- d. government theory
- e. movement theory<sup>a</sup>
- f. binding theory and control theory

Each component in (1) and each module in (2) are discussed in the next subsection with an emphasis on movement theory.

---

<sup>a</sup> Instead of bounding theory (cf. Chomsky (1981)), we add a module called movement theory. (It is likely that bounding theory is subsumed in government theory (and movement theory), given the framework of Barriers (Chomsky (1986b).) Movement theory (with trace theory) we will assume includes the A-chain conditions, the Subjacency Condition, the empty category principle (the ECP; a condition on traces). UG also includes principles operating on movement such as Strict Cyclicity (STC) and the Structure-Preserving Hypothesis (SPH; cf. Emonds (1976)), both of which are probably derivative (see Freidin (1978) for a discussion that STC is derived from independently-motivated principles of grammar and therefore is a theorem; see Chapter 2 for a discussion on the derivative nature of SPH).

### 1.1.1. X-bar theory

The first module of grammar, X-bar theory, assumes certain projections of categories projected from terminal strings (lexical or nonlexical items; cf. Chomsky (1981)) in the Lexicon. Cross-categorially, each projection shares some core skeletal identity, having a (SPEC)ifier, and (comp)lements selected by lexical items because of their semantic properties or by nonlexical items because of their unique selectional properties. The core of X-bar theory is the X-bar schema, which applies cross-categorially in a uniform way (cf. Chomsky (1986b)):<sup>6</sup>

(3) The X-bar schema:<sup>7</sup>

- a.  $X' \rightarrow X \text{ comp}^*$  (comp\* = zero or more occurrences of comps)
- b.  $XP \rightarrow \text{SPEC } X'$

where X is either a lexical category (based on the features [+/-N, +/-V]) or a nonlexical category such as (C)OMP and (I)NFL, which includes Tense, AGR and Modals.

X is called a head of its projection, and the head is projected to be X phrases (XP's) containing its comp(s) and SPEC. Either lexical items ((N)oun (= [+N, -V]); (V)erb (= [-N, +V]); (A)djective (= [+N, +V]); and

---

<sup>6</sup> Since the advent of X-bar theory (cf. Chomsky (1970)), our understanding of X-bar theory has been deepened by Jackendoff (1977b), who suggests that complements and specifiers are maximal. The most current development is found in Chomsky (1986b) who suggests that not only lexical but also nonlexical categories (C (cf. Bresnan (1972)) and I) are projected in an identical way, at least for their core projections. The other current versions of X-bar theory include Kayne's (1984) binary branching hypothesis and Abney's (1987) DP hypothesis. Those versions do not necessarily contradict our position with (3). See also Muysken (1982) and Muysken and Riemsdijk (1986; eds.) for other recent approaches to X-bar theory.

<sup>7</sup> Chomsky (1986b) assumes that the number of SPECS may be zero or more. Here we assume that the number of SPECS of X is one (in unmarked cases). The number of SPECS may, however, be parameterized with respect to certain categories in certain languages; it has been suggested that the number of SPECS in CP projections is more than one in Italian and in Old English.

The alternative analyses of the projections of nonlexical categories (I and C) are:

(i) [<sub>C</sub> X {[+/-WH]/for}] where X is a phrase moved to C (cf. Chomsky (1981;53)).

(ii) [<sub>CP</sub> NP INFL VP] (cf. Chomsky (1981;21); Emonds (1986))

(P)reposition (= [-N,-V]); Chomsky (1981)) or nonlexical items are projected to form their maximal projections (NP, VP, AP, PP, IP, or CP). D-structure we assume is obtained through selectional properties of nonlexical and lexical items, which are specified in the Lexicon, and through the X-bar schema in (3).

A 'selectional' property of a lexical item (e.g., V) determines the theta-roles or semantic categories (cf. agent, patient, or proposition) it takes. We call this selectional property 'semantic selection' (s-selection). Each selected semantic category is realized as a certain syntactic category. We call this categorial selection/realization c-selection. When a lexical item s-selects a semantic category C, it redundantly c-selects its syntactic category through the algorithm -- the canonical structural realization of C (= CSR(C)): CSR(patient) = NP; CSR(proposition) = CP (or NP) (cf. Grimshaw (1979;1981); Pesetsky (1982); Chomsky (1986a)). In addition, a principle of determining logical subject theta-roles and logical object theta-roles (cf. Marantz (1984)) plays a role in grammar.\* The logical subject and object theta-roles differ both semantically and syntactically: A logical subject theta-role is assigned in the SPEC of XP (in which X is lexical) while logical nonsubject theta-roles are assigned to the sister nodes of X; logical subject theta-roles are compositionally determined (by VP) (cf. Marantz (1984)) but logical nonsubject theta-roles are not.

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\* We may need a parameter, given 'deep' nominative-accusative languages, and 'deep' ergative languages in Marantz's (1984; chapter 6) sense. In the former type of language, agent is a logical subject theta-role; theme or patient is a logical object theta-role. In the latter type of languages, agent is a logical object theta-role while theme or patient is a logical subject theta-role.

D-structure is obtained through CSR(C) and X-bar theory. Since X-bar theory also licenses the SPEC position of every projection, D-structure may contain base-generated empty categories (other than PRO or pro; cf. Chomsky (1981)) that are not derived by CSR(C); when a lexical item does not select a logical subject theta-role, the SPEC of IP is not assigned an argument. (Maximal phrases that require theta-roles are arguments; other maximal phrases are expletives.)<sup>9</sup> The positions to which theta-roles can in principle be assigned are called A-positions. Other base-generated positions derived by X-bar theory are called A-bar positions; those A-positions that are assigned theta-roles (or that are theta-marked) are theta-positions. The following condition on D-structure (cf. Chomsky (1986a;97-8)) constrains the distribution of arguments at D-structure.

- (4) If a position X is T-governed by a, then X is occupied by an argument if and only if X is theta-marked by a.  
 def. = a T-governs b if b is the complement of the head a or the subject of the predicate a.

D-structure is then a 'pure' representation of theta-structure where all and only theta-positions are filled by arguments through selectional properties of lexical items. Grammatical functions (GFs) such as subject-of, object-of are also defined in terms of syntactic configurations through X-bar theory. Thus D-structure is also a level of representation at which 'the GF's relevant to assignment of theta-role and only these have arguments bearing them (GF-theta).'

In addition to this D-structure condition, UG includes the Projection Principle -- a core principle within the configuration-based theory of

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<sup>9</sup> Chomsky (1981;325) notes that there are quasi-arguments such as weather-it, in addition to (true) arguments; true and quasi-arguments are assigned theta-roles, unlike expletives (nonarguments). True and quasi-arguments have potentially referential functions and expletives lack such functions. See Rizzi (1982;1986a) for some discussion of the role that the tripartite distinction of maximal phrases plays in the occurrence of pro in Italian.



grammar -- giving rise to a restricted structure  $Z$  across the syntactic levels of representation.<sup>10</sup>

(5) The Projection Principle:

Representations at each syntactic level (i.e., LF and D- and S-structure) are projected from the Lexicon (through CSR(C)), in that they observe the s-selection properties of lexical items.

The projection principle and a general property of X-bar theory play a core role in deriving D-structure, virtually eliminating any phrase structure rules (categorical component in the (Extended) Standard Theory; cf. Chomsky (1965)) that represent a rule system of D-structure (cf. Chomsky (1981; 1986a); also cf. Stowell (1981)).

### 1.1.2. Theta-theory and Case theory

The second module is theta-theory. A core principle is the theta-criterion, which is a condition on the proper theta-assignment at LF:<sup>11</sup>

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<sup>10</sup> The projection principle formulated in terms of CSR(C) in (5) represents a strong version of the projection principle below (cf. Chomsky (1981;38)), which applies not only to subcategorized internal theta-positions but also to nonsubcategorized external theta-positions:

(i) The projection principle:

(a) if  $b$  is an immediate constituent of  $x$  at  $L_1$ , and  $x = a'$  (bar-projection of  $a$ ), then  $a$  theta-marks  $b$  in  $x$

(b) if  $a$  selects  $b$  in  $x$  as a lexical property, then  $a$  selects  $b$  in  $x$  at  $L_1$

(c) if  $a$  selects  $b$  in  $x$  at  $L_1$ , then  $a$  selects  $b$  in  $x$  at  $L_2$

(d) def. = If  $a$  directly or indirectly theta-marks  $b$ ,  $a$  selects  $b$ .

(As for the notion of direct and indirect theta-marking, see Chomsky (1981;38)).) A weak version of the projection principle states as follows:

(ii) Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the Lexicon, in that they observe the subcategorization properties of lexical items (see Chomsky (1981;29)).

<sup>11</sup> This formulation is virtually identical to Freidin's (1978;537) theta-criterion (i), which represents a one-to-one relation between lexical NP's (arguments) and argument positions (theta-positions):

(i) Functional Relatedness:

In a sentence  $SI$ , each lexical NP with nonnull semantic content must fill some argument position in the logical form of  $SI$ .

Functional Uniqueness:

In a sentence  $S_1$ , no lexical NP may fill more than one argument position for any given predicate in the logical form of  $S_1$ .

- (6) Each argument is assigned its theta-role in one and only one theta-position, and each theta-position contains one and only one argument. (cf. Chomsky (1986a); (21) below)

A module which is closely linked with theta-theory is Case Theory; the linking is through the Visibility Condition (the VC; elements are visible for theta-marking in LF only if they are assigned Case). Case theory includes the Case Filter in (7),<sup>12</sup> which constrains the distribution of overt arguments at S-structure, which is linked to PF:

- (7) \*NP if NP has phonetic contents and has no (abstract) Case (cf. Chomsky (1981;49))

The fundamental properties of Case-assignment are as follows (cf. Chomsky (1981;170)):

- (8) a. NP is assigned (NOM)inative if governed by INFL(AGR)  
 b. NP is assigned (ACC)usative if governed by V  
 c. NP is assigned (GEN)itive in [<sub>NP</sub> -- X']  
 d. NP is assigned (OBL)ique if governed by [-N] other than INFL(AGR) and V

NOM and ACC, which are structural Case, are assigned by Case-governors which bear Case features (cf. Chomsky (1986b;24)), and are parallel to the notions of grammatical relations (grammatical subjects/objects); they are

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See also Chomsky's (1981;335) formulation of the theta-criterion that has the same effects as (1) or (6) but makes use of the notion of chain.

We may also have the following formulation: Each argument bears one and only one theta-role, and each theta-role is assigned to one and only one argument (Chomsky (1981;36)). This formulation (one-to-one relation between arguments and theta-roles) appears to be too strong since some arguments may be assigned more than one theta-role. One well-known example is:

- (11) John deliberately rolled down the hill. (cf. Gruber (1965/1976); Jackendoff (1972))

The subjects of motion verbs such as roll (e.g., John in (11)) have a dual role when they are animate: a theme and an agent role. Note that the theta-criterion formulated in (6) does not rule out a dual role. It may be, however, that in (11), John is assigned an 'adjunct theta-role' (agent) in Zubizarreta's (1982) sense from INFL, in addition to a theta-role (theme) from the predicate rolled down from the hill.

<sup>12</sup> The Case Filter (7) will be reformulated below in terms of the notion of chain.

assigned through configuration/government and are not theta-related. GEN and OBL are inherent Cases, which are theta-related (cf. Chomsky (1986a)). If inherent Case is assigned by a head to NP, then that head theta-marks NP,<sup>13</sup> while structural Case is assigned independently of theta-marking.<sup>14</sup> Case-assignment is linked to PF with respect to its morphological realization and to LF with respect to the visibility of LF theta-marking (the VC).

### 1.1.3. Government theory

Government theory consists of the various notions of government, which play crucial roles in Case Theory, theta-theory, binding theory, and movement theory: Case is assigned under (Case-)government; theta-roles are assigned under (theta-)government; binding conditions license governed elements (cf. 34); every link of chains cannot cross more than one government-barrier (cf. fn. 27); and traces are 'properly' governed (cf. 27). The central notion of government is defined in terms of the notion of *m-command* (cf. Aoun and Sportiche (1983)) and in terms of two concepts of barrier (9i and ii):<sup>15</sup>

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<sup>13</sup> As for the Uniformity Condition on inherent Case marking, see Chomsky (1986b); the notions of Case-marking include the notions of Case assignment and Case realization.

<sup>14</sup> In English, structural Case assignment may need the notion of string adjacency since NP cannot be assigned ACC below:

(i) \*John give to Mary a book.

Inherent Case, on the other hand, may need the notion of domain-adjacency in Travis's (1984) sense -- a weaker adjacency requirement -- if of in (ii) below is considered as a realization of inherent Case (GEN).

(ii) I persuade John [of the importance of going to college.] (cf. Chomsky (1986a;191 & fn. 130))

<sup>15</sup> The MC (9ii) plays a role in the theory of government but not in the theory of movement (for example, not in the Subjacency Condition, a condition on movement).

- (9) a governs b if a m-commands b, and (i) there is no barrier between a and b and (ii) b is not protected by a head.  
 def. = a m-command b if and only if a does not dominate b and every x, x a maximal category, that dominates a dominates b.

The first concept of barrier (9i) is defined in terms of blocking category (BC), which in turn, is defined in terms of L-marking; BCs are maximal categories which are not theta-marked by a lexical category (not L-marked; cf. fn. 16 below). A maximal category is a barrier if it ( $\neq$  IP) is a BC (inherent barrier) or if it immediately dominates a BC (inherited barrier). This concept of barrier implies that VP is a BC (and an inherent barrier) since INFL is a nonlexical category and therefore does not L-mark VP. According to the second concept of barrier, which is called the Minimality Condition (the MC, 9ii), any projection is a barrier for an element b if it immediately dominates a head X and b (minimality barrier). The notion of government also implies that if lexical a governs b, then a governs its

SPEC and its head<sup>16</sup> (or that *a* governs anything which is not protected by the MC).

#### 1.1.4. Movement theory

Movement theory includes move-alpha, which is characterized as follows (cf. Chomsky (1986b)): (A) Move-alpha may be either adjunction or substitution depending on landing sites; (B) it may be either syntactic move-alpha, which links D-structure with S-structure, or LF-move-alpha, which links S-structure with the LF level of representation (cf. May (1977;1985); Huang (1982)), depending on the level of rule application; and (C) only (and any) maximal or minimal projections are visible for move-alpha (cf. Chomsky (1986b;4)).

Some properties of move-alpha are currently assumed to follow from some independently-motivated principles of UG. First, because of the

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<sup>16</sup> In Chomsky (1986b;13 & 70), this implication is stipulated in the notion of L-marking in terms of the notion of agreement.

c. L-marking:

*a* L-marks *b* if and only if *a* is a lexical category and *b* agrees with the head of *x* that is theta-governed by *a*.

d. theta-government:

*a* theta-governs *b* if and only if *a* is a zero-level category that theta-marks *b*, and *a, b* are sisters.

e. sisterhood:

*a* and *b* are sisters if they are dominated by the same lexical projection.

'agreement' refers to SPEC-head agreement within categories CP and IP (subject-INFL agreement and SPEC-C agreement); the notion of agreement assumes that category *b* agrees with itself and with its head (cf. Chomsky (1986b;24)). Thus when V L-marks IP (in ECM environments; cf. Chomsky (1986b;23)) or CP, it also L-marks its head, and its specifier; the extraction of an element out of the head of an L-marked category or its SPEC may be possible across an L-marked category even when the element is not theta-marked (cf. the ECP in (27)). As for some specific extraction data out of the heads and out of the SPECS of L-marked projections, see Chomsky (1986b;84) and Chomsky (1986b;25-26), respectively. Also note that Rizzi (1982; Chapter 3) and Kayne (1984; Chapters 1 and 5) suggest, under the analysis of COMP in (1) of fn. 7, that if V governs S' (= CP), then it also governs its head, the COMP, and can assign Case to (and therefore govern) a phrase in COMP (= SPEC of CP).

projection principle and the theta-criterion, substitution does not apply to a theta-position. Adjunction does not apply to maximal categories which are assigned theta-roles as a consequence of theta-theory because adjunction creates a barrier to (lexical) theta-marking (cf. Chomsky (1986b)). Thus, because of theta-theory, only the SPEC of IP or the SPEC of CP is available as a landing site of substitution since the SPEC of IP (A-position) may fail to be a theta-position and since the SPEC of CP is not an A-position. Only a nonargument XP (IP (in nonECM environments; fn. 16) or VP) can be a landing site of adjunction since it is not theta-marked by a lexical item. Second, head and maximal positions or categories are available for the landing sites of heads and maximal projections, respectively, in accordance with a certain version of the Structure-Preserving Hypothesis (SPH; cf. Chomsky (1986b)).

Movement theory assumes trace theory, which implies coindexing between elements and their traces: [<sub>XP</sub> a<sub>i</sub>] ... [<sub>XP</sub> t<sub>i</sub>]. Traces are motivated for two reasons: the projection principle and the theta-criterion. Consider (10) under the assumption that every element in an A-position (arguments or expletives) bears an index at D-structure:

- (10) a. [e] was killed [John<sub>i</sub>]  
       b. [John<sub>i</sub>] was killed [t<sub>i</sub>]

Because of the D-structure condition and the projection principle, in (10a), the argument John is base-generated in the t<sub>i</sub> position (theta-position) since the verb kill s-selects a logical object theta-role. Suppose that a passive morpheme is attached to the verb kill at D-structure (cf. Chomsky (1986a;157))<sup>17</sup> and that it has properties of absorbing the

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<sup>17</sup> Technically, the projection principle applies after the application of passive affixation, which may mean that a passive morpheme is base-generated at D-structure. In Section 4.3., we argue that the passive morpheme is actually base-generated as a matrix predicate.

Case of a direct object and the theta-role of a subject (cf. Burzio's Generalization (= BG))<sup>18</sup> so that an argument cannot appear in the subject position in passive construction. Then John is assigned a theta-role but not Case in (10a).

Consider another case of A-movement:<sup>19</sup>

- (11) a. [e] is likely [<sub>IP</sub> [John<sub>i</sub>] to be happy]  
 b. [John<sub>i</sub>] is likely [<sub>IP</sub> [t<sub>i</sub>] to be happy]

In (11b), John<sub>i</sub> is not assigned Case since to (INFL without AGR) is not a Case-assigner (cf. 8a); even if the matrix predicate can govern it, it is not a Case assigner, being [+A, -V] (cf. 8). Because of the Case Filter (7), John in (10) and (11) should move to a Case position, i.e., subject position, which is assigned NOM (through object-to-subject movement (10) and through subject-to-subject movement (11)). In (10), the logical object argument moves from the object position to the subject position; in (11), the logical subject argument moves from a subject position to another subject position. These two connected elements, John and its trace, are in a Case position and in a theta-position, respectively.

In terms of the connection between A-positions, the linear history of A-movement (called NP-movement or move-NP in the literature) is called A-chain. The connection between A-positions is represented in terms of coindexing between arguments and their traces, which are dominated by A-

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<sup>18</sup> A verb assigns an external theta-role if and only if it assigns ACC to NP (cf. Burzio (1981); Chomsky (1981)); see also Chapter 4 for our version of Burzio's Generalization (cf. Choe (1987a)).

<sup>19</sup> The predicate be likely is currently assumed to (c-)select an IP; if it (c-)selects a CP, then the traces in (11b) would not be governed, violating the condition (the ECP; cf. 27 below) that traces are 'properly' governed. See, however, Section 4.1. for our discussion on the IP selection in Exceptional Case Marking and raising constructions.

positions. A-chains thus instantiate abstract representations of arguments at S-structure in terms of the connection between A-positions:

- (12) A-chain = (John<sub>i</sub>, t<sub>i</sub>)<sup>20</sup>  
                   |      |  
               Case position  theta position

The final landing site, which is a Case position, is the head of an A-chain; the trace, which lies in a theta-position, is the tail of an A-chain. We assume that theta-roles and Case are properties of A-chains and that A-chains are Case-/theta-marked if A-chains contain exactly one theta-(marked) position and one Case(-marked) position (cf. fn. 33). Given the notion of A-chain, the VC is formulated as (13) (cf. Chomsky (1986a;135)):

- (13) The Visibility Condition (the VC):  
       A position in a Case-marked A-chain is visible for theta-marking.

The VC in (13) suggests that abstract representations of arguments (A-chains) must be Case-marked to be theta-marked.

However, consider sentence (14), in which an expletive is in a Case position but an argument is not.

- (14) There<sub>i</sub> is a man<sub>i</sub> in the garden.

The trivial A-chain (a man) does not contain a Case position: Since a predicate does not assign a logical subject theta-role, it does not assign Case to its object. According to the VC, the A-chain is not theta-marked at LF (theta-positions are not licensed). To have the A-chain (a man) visible for theta-marking, we postulate an expletive-argument pair in terms of coindexing, as shown in (14). Thus in LF, in order for the theta-position to be visible for theta-marking, the argument coindexed/linked with an expletive moves to the expletive position, eliminating the exple-

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<sup>20</sup> See also Chomsky (1986b) for the notion of 'extended' (A-)chain that includes A-chain and SPEC-INFL agreement under a certain assumption on indexing (chain coindexing) and under a certain notion of head-movement.



tive. Expletive-argument pairs (obtained through coindexing (or linking) between arguments and expletives) we assume are obtained at D-structure, subject to another D-structure condition (cf. fn. 21 below).

(15) D-structure condition:

A D-structure A-position is occupied by a, a non-empty, if and only if a is linked to an argument. (Chomsky (1986a;134))

(4) and (15) imply that expletives cannot appear at D-structure without being linked to arguments.

Consider (16), in which A-movement does not start from a theta-position.<sup>21</sup>

(16) There<sub>i</sub> is likely [ t<sub>i</sub> to be a man<sub>i</sub> in the garden].



In (16), there does not lie in a Case position at D-structure, so there should move to the matrix subject position to form A-chain (there<sub>i</sub>, t<sub>i</sub>) so that its chain can be Case-marked. However, a man, which forms a trivial A-chain, lies in a theta-position but not in a Case position for the same reason as in (14). Thus the a man position is not visible for theta-marking. As in (14), the A-chains (there, t) and (a man) are complementary: the A-chain (there, t) contains a Case position but the A-chain (a man) contains a theta-position. Notice also that not all heads of A-chains headed by arguments coindexed with expletives lie in theta-positions. In (17), the argument a man linked with the tail of the A-chain (there, t1) does not lie in a theta-position.

(17) There<sub>i</sub> is likely [ t1<sub>i</sub> to be a man<sub>i</sub> believed [ t2<sub>i</sub> to be happy ]]



<sup>21</sup> Expletive-argument pairs at D-structure are optional; if the D-structures of (14 and 16) do not contain expletives, then A-movement is motivated, deriving (i and ii).

(i) A man<sub>i</sub> is t<sub>i</sub> in the garden.

(ii) A man<sub>i</sub> is likely [ t<sub>i</sub> to be t<sub>i</sub> in the garden].

In (17), the A-chain (there, t1) is Case-marked and the A-chain (a man, t2) is theta-marked, as in (14 and 16). Thus we may assume that expletive-argument linking (maximal CHAIN in Chomsky (1986a)) is linking of two A-chains headed by an expletive and by an argument at S-structure: Suppose the notion of CHAIN<sup>22</sup> containing the tail of an expletive A-chain and the head of an argument A-chain. Then the two A-chains are linked by a CHAIN as shown below:

- (18) A-chains ( $a_1, \dots, a_n$ ) and ( $b_1, \dots, b_m$ ) (where  $a_1$  is an expletive;  $b_1$  is an argument;  $0 < n, m$ ) are linked by CHAIN ( $a_n, b_1$ ), then ( $a_1, \dots, a_n, b_1, \dots, b_m$ ) is a maximal CHAIN (obtained through expletive-argument linking) at S-structure (cf. Chomsky (1986b;132)).

In LF, the heads of argument A-chains linked to expletive A-chains at S-structure move to expletive positions to eliminate expletives and to be visible for theta-marking. The  $b_1$  in (18) moves to the expletive ( $a_1$ ) position, forming an A-chain, which we call a maximal A-chain. Thus at LF, we have only maximal A-chains that are visible for theta-marking. A-chains at S-structure may or may not be theta-/Case-marked but maximal A-chains at LF are both Case- and theta-marked. Given (18), the chains in (17) are schematized as follows:

- (19) a. (there<sub>1</sub>, t1<sub>1</sub>) [= A-chain] + (t1<sub>1</sub>, a man<sub>1</sub>) [= CHAIN] + (a man<sub>1</sub>, t2<sub>1</sub>)  
 [= A-chain] = (there<sub>1</sub>, t1<sub>1</sub>, a man<sub>1</sub>, t2<sub>1</sub>) [= maximal CHAIN; expletive-argument linking] --- S-structure
- b. (a man<sub>1</sub>, t1<sub>1</sub>, t1<sub>1</sub>, t2<sub>1</sub>) [= maximal A-chain] --- LF<sup>23</sup>

Maximal A-chains cover all abstract representations of arguments (at LF)<sup>24</sup> that are theta- and Case-marked. Given the notion of maximal A-

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<sup>22</sup> In Chomsky (1986a;132)), A-chains at S-structure are also called CHAINS.

<sup>23</sup> We may assume that a man moves successive-cyclically to eliminate expletives and their traces as well if there is some feature-matching between elements and their traces.

<sup>24</sup> One main problem of maximal A-chains (at LF) derived from expletive-

chains at LF, we have the following maximal A-chain conditions, which represent one of the core conditions of movement theory.

- (20) Given maximal A-chain ( $a_1, \dots, a_n$ )
- a.  $a_i$  c-commands  $a_{i+1}$  where  $i < n$ <sup>25</sup>
  - b.  $a_1$  is in a Case position and  $a_n$  is in a theta-position. (cf. Chomsky (1986a;137))

This condition constrains the LF level of representation, which contains all and only abstract representations of argument (maximal A-chains) without containing expletives, unlike D-structure, which contains expletives linked/coindexed with arguments; LF is a 'purer' representation of theta-structure than D-structure.

Given the VC in (13), the notion of maximal A-chain leads us to reformulate the theta-criterion in terms of the notion of maximal A-chain, which contains exactly one argument (because of the D-structure conditions and because of the LF-movement of arguments to expletive positions) and holds of the LF level of representation (also cf. 6).<sup>26</sup>

(21) the theta-criterion:

An maximal A-chain has one and only one visible theta-position. (cf. Chomsky (1986a;135))

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argument linking (maximal CHAINS) involves scope. Williams (1984a) notes that an indefinite NP of there-construction does not have scope over elements which c-command it.

- (i) a. There must be someone in his house. (from Williams (1984a;152))  
 b.  $\lambda x_1$  [ someone<sub>1</sub> [ there must be  $x_1$  in his house ] ]  
 c. [ must [ someone<sub>1</sub> [  $x_1$  in his house ] ] ]

As shown in (i), someone does not have scope over must; if someone moves to the subject position at LF to eliminate there, the scope representation of (b) can be obtained. However, see Choe (in progress) for discussions on why the scope problem does not arise in there-construction.

<sup>25</sup> This condition derives from trace theory (cf. Fiengo (1977)), which prevents lowering move-alpha in syntax.

<sup>26</sup> Chomsky (1986a) formulates the theta-criterion in terms of the notion of CHAIN. Since the theta-criterion applies at LF and since maximal CHAINS form maximal A-chains through A-movement at LF, we use the notion of maximal A-chain in formulating the theta-criterion.

The theta-criterion (21) in terms of the VC expresses the one-to-one relation between maximal A-chains (abstract representations of arguments) and visible theta-positions: Each maximal A-chain contains exactly one visible theta-position and each visible theta-position appears in one and only one maximal A-chain.

There is one more notion of chain derived from movement: A-bar chain. Chains headed by elements in A-bar positions are A-bar chains. In (22) below,  $t_1$  lies in a Case and theta-position, forming a maximal A-chain, but ( $what_1$ ,  $t_1$ ) forms an A-bar chain since the head what lies in an A-bar position.

(22)  $What_1$  does [<sub>IP</sub> Mary [<sub>VP</sub> like  $t_1$ ]].

Scope motivates A-bar movement; wh-phrases (operators) require scope, which is read off at the LF level of representation. The second type of operator movement is LF-adjunction to IP or VP (Quantifier Raising; May (1985)), creating segments, as in (23), under the theory of segment in adjunction structure (cf. May (1985) and Chomsky (1986b); also cf. Chapter 2). In (23),  $a$  adjoins to a category  $b$ ; adjunction creates segments  $b_1$  and  $b_2$ , which form a category.

(23) ... [ $b_1$  a [ $b_2$  ...  $t_1$  ...]]

(We discuss more on the configuration in (23) in Chapter 2.)

Movement is constrained by conditions on representations of such maximal A-chain conditions; it is also constrained by conditions on movement such as the Subadjacency Condition that bars movement across more

than one barrier. The Subjacency Condition<sup>27</sup> explains some island effects (cf. Ross (1967)) and some CED effects (cf. Huang (1982)):

- (24) a. \*the man<sub>i</sub> who [<sub>IP</sub> [<sub>NP</sub> pictures of t<sub>i</sub>] are on the table]  
 b. \*to whom<sub>i</sub> did [<sub>IP</sub> they leave [<sub>PP</sub> before speaking t<sub>i</sub> ]]

The NP in (24a) and the PP in (24b) are BCs and barriers since the NP subject is not L-marked (INFL is not a lexical category), and since the PP, an adjunct (noncomplement), is not L-marked (adjuncts are not theta-marked). The IPs in (24) therefore become inherited barriers, because they immediately dominate BCs (subject NP or adjunct PP). Thus, movement in (24) crosses two barriers and violates the Subjacency Condition.

Movement theory also includes the Empty Category Principle (the ECP), which restricts the distribution of traces. The principle originally intends to capture the subject-object asymmetry shown in the contrast in (25a) and (26a).

- (25) a. Who<sub>i</sub> do you think [<sub>CP</sub> t<sub>i</sub> (\*that) [<sub>IP</sub> t<sub>i</sub> left]].  
 b. Who t<sub>i</sub> left.  
 (26) a. Who<sub>i</sub> did you think [<sub>CP</sub> t<sub>i</sub> (that) [<sub>IP</sub> Mary hit t<sub>i</sub>]].  
 b. Who<sub>i</sub> did you hit t<sub>i</sub>.

The ungrammaticality of (25a) is attributed to the fact that the trace in the subject position is not properly licensed, unlike the trace in the object position in (26a). The contrast between (25a) and (26a) with that

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<sup>27</sup> By analogy with QR in LF, Chomsky suggests that operators adjoin to VP, subject to the Subjacency Condition in (1).

(1) If ( $a_i, a_{i+1}$ ) is a link of a chain, then  $a_{i+1}$  is 1-subjacent to  $a_i$   
 def. =  $b$  is n-subjacent to  $a$ , if and only if there are fewer than  $n+1$  barriers for  $b$  (cf. Chomsky (1986b;30))

Thus the derivation of (22) is as follows:

(1) [<sub>CP</sub> what<sub>i</sub> does [<sub>IP</sub> Mary [<sub>VP</sub> t<sub>i</sub> [<sub>VP</sub> like t<sub>i</sub> ]]  
 VP is an inherent barrier (because it is not L-marked) and IP becomes an inherited barrier since IP immediately dominates VP (a BC) when movement crosses VP and IP. Thus what moves to VP, then it moves to the SPEC of CP; two movement processes do not cross a barrier since a segment VP<sub>i</sub> does not constitute a BC (and barrier) and IP (by its defectiveness) is not an inherent barrier although it is a BC. As a result, every link of the A-bar-chain (what, t, t) does not cross a barrier. Below, we abstract away operator-movement to VP from our discussion.

suggests that the notion of theta-government is responsible for the grammaticality of (25-26a) since the only difference between them is that the  $t_i$  in object position in (26a), but not in subject position in (25a), is governed by a theta-governor. The contrast between (25a) and (25b) also shows that another type of government may 'properly' license a trace: antecedent-government.<sup>28</sup> In (25b), Who governs its trace but in (25a) who does not govern its trace because of that (that induces the MC). Thus, given the appropriate definition of government (cf. 9 and fn. 16), the ECP is stated as follows:<sup>29</sup>

(27) The Empty Category Principle (the ECP):

A trace [ $\bar{a}$   $t_i$ ] must be 'properly governed,' where  $\bar{a}$  properly governs  $b$  if and only if  $\bar{a}$  governs  $b$  and (a) or (b)

- a.  $\bar{a}$  theta-governs  $b$  (theta-government (cf. fn. 16))
- b.  $\bar{a}$  is coindexed with  $b$  (antecedent government).

The ECP also rules out adjunct-extraction out of an adjunct, as in (28).

(28) \*How<sub>i</sub> did you leave [<sub>PP</sub> before [<sub>IP</sub> PRO fixing the car  $t_i$  ]].

The  $t_i$  in (28) is not properly governed: The  $t_i$  position is not theta-governed because it is an adjunct position. The antecedent of  $t_i$  is too far from its trace  $t_i$  to be an antecedent-governor because it is separated from its trace by the two barriers PP and IP for the same reason as in (24b); therefore the sentence (28) is ruled out by both the Subjacency Condition and the ECP. The ungrammaticality is more severe in syntactic ECP violations than in Subjacency violations, probably because ECP violations are

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<sup>28</sup> Antecedent-government holds of a link ( $\bar{a}, b$ ) of a chain when  $\bar{a}$  governs  $b$ .

<sup>29</sup> The ECP is a disjunctive condition with heterogeneous notions of government. For this conceptual reason, there have been some efforts to reduce the ECP in terms of antecedent-government (the ECP as a chain phenomenon) (see Kayne (1984) and Chomsky (1986b)).

also Subjacency violations (but except for the cases of that-trace effects).

#### 1.1.5. Binding Theory and Control theory

In addition to conditions on abstract representations of arguments (maximal A-chains), each argument should be licensed in another way. The differing features [+/- (p)ronominal, +/- (a)naphic] arguments possess determine their licensing conditions: The interpretation of [+p] elements such as they depends upon that of another element or it is free; the interpretation of [+a] elements such as each other depends upon that of another element; [-a, -p] elements such as the men do not depend upon anything in interpretation since they have their own semantics (cf. Higginbotham (1983;1985b)). We call such dependency among arguments referential dependency (Higginbotham (1983); Chomsky (1986a)). Referential dependency among arguments has the following binding properties in terms of the notion of local domain that contains the governor of an argument:<sup>20</sup>

- (29) (A) an anaphor (= [+a, -p]) is A-bound in a local domain (IP or NP)
- (B) a pronominal (= [-a, +p]) is A-free in a local domain
- (C) an r-expression (= [-a, -p]) is A-free <sup>21</sup>

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<sup>20</sup> The notions of bind and free are defined in terms of the notions of coindexing and 'c-command':

- (1) a. a is X-bound by b if and only if a and b are coindexed, b c-commands a, and b is in an X-position.

- b. a is (X-)free if and only if it is not (X-)bound. (cf. Chomsky (1981;184-5))

The notion of government is defined in terms of m-command (cf. Aoun and Sportiche (1983)); the notion of X-bind is defined in terms of c-command (cf. Reinhart (1976)).

<sup>21</sup> Consider the following where (there<sub>i</sub>, t<sub>i</sub>) is an A-chain; (t<sub>i</sub>, a man<sub>i</sub>) is a CHAIN:

- (i) There<sub>i</sub> is likely [ t<sub>i</sub> to be a man<sub>i</sub> in the garden].

In (i), a man is bound by t or there violating binding property C, but the sentence is grammatical. Thus, assuming that binding is essentially a theory of referential dependency, we might have the following condition:

- (ii) Binding of an argument by a nonargument is not subject to binding

The properties in (29) (as formulated in Chomsky (1981)), which are assumed to apply at S-structure, imply that there are no [+a,+p] overt elements by definition, since an element cannot be simultaneously A-free and A-bound in a local domain unless the element is immune to binding (cf. PRO).

There are null counterparts of these elements that also share the same properties as (29) depending on their features. NP trace is [+a] in nature; it is always bound because of the maximal A-chain condition (20a) (and probably because of the Subjacency Condition also). Null subject in Romance languages (Italian and Spanish), which is called *pro*, is null pronominal since it is A-free in a local domain (cf. Rizzi (1982;1986a)). In addition, a trace (a variable) left by a scope-assigning element (an operator) behaves like an r-expression (cf. Strong Cross-Over).<sup>22</sup>

(30) \*Who<sub>i</sub> does he<sub>i</sub> think that Mary hit t<sub>i</sub>.

The sentence (30) is ungrammatical since t<sub>i</sub>, an r-expression, is A-bound. Consider also (31) below.

- (31) a. The man<sub>i</sub> [ {who<sub>i</sub>/OP<sub>i</sub>} [ Mary hit t<sub>i</sub> ] ] is tall.  
b. The man (who) Mary hit is tall.

The projection principle says that there must be an empty category in the object position of hit since it s-selects a patient role. In (31), who or a null (wh-)operator moves to the SPEC of CP. Since the man is in an A-position, t<sub>i</sub> is A-bound, which contradicts the binding property of a

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theory (cf. Chomsky (1986a;143)).

We may, however, restate condition C: An r-expression is A-free maximal-CHAIN-externally, so that binding does not apply maximal-CHAIN-internally. Or we may take there to be unindexed and replaced at LF, thereby forming the proper link (Noam Chomsky (p.c.) and Howard Lasnik (p.c.)).

<sup>22</sup> Variables also show Weak Cross-over or obey the Bijection Principle (Koopman and Sportiche (1982)), which shows a one-to-one relation between 'variables' and operators. On the notion of variable, see Koopman and Sportiche (1982).



variable in (30). Thus, we have a condition (32) below for a variable, which applies only when r-expressions are linked to operators.

(32) an r-expression must be A-free in the domain of its operator

According to the feature system, we also expect (null) [+a,+p] elements. In fact, there is an instantiation of a type of empty category that is neither an NP-trace nor pro nor a variable.

(33) John decided [<sub>CP</sub> [<sub>IP</sub> [e] to leave]].

Because of the projection principle (theta-theory) and the notion of government (Case theory), the embedded subject position in (33) must be a theta-position but must not be filled by an overt argument. We expect an argument in the e position since leave selects a logical subject theta-role because of its selectional property. But an overt element cannot appear in the e position since the position is not governed: to (INFL) is not a governor, and decided cannot govern the e position since it selects CP, which prevents it from governing the e position (CP becomes an inherited barrier); to (INFL) is not a (Case-)governor. Thus, owing to the Case Filter,<sup>22</sup> non-governed theta-positions are not filled by arguments, while the projection principle says that there must be syntactically-realized positions for selected theta-roles. We call this type of empty category PRO. Given the feature system of arguments and binding properties, PRO is

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<sup>22</sup> A maximal A-chain headed by PRO contains no Case position even if it contains a theta-position.

(i) John was promised [ PRO<sub>i</sub> to be allowed [ t<sub>i</sub> to leave]].

Instead of invoking the Case Filter, we may assume that the VC applies only to maximal A-chains headed by governed arguments; the VC does not apply to maximal A-chains headed by PROs, but applies to maximal A-chains headed by pro's, variables, or NPs. Then whether or not the heads of maximal A-chains lie in Case positions depends on whether they are governed or not. Under that assumption, (ii) is ruled out probably because the Case realization of John is not properly interpreted at PF, given that John has no Case assigner in syntax.

(ii) I tried [ John to leave].

characterized as [+a,+p]. In fact, PRO possesses an anaphoric property since it may require a controller in order to have specific reference and therefore may fail to be [-a,-p] (variable) or [+p,-a] (pro); PRO is also pronominal (and therefore not [+a,-p]) since it can have a 'remote' controller (cf. Chomsky (1981)).

The lack of overt [+a,+p] elements and the occurrence of phonetically null [+a,+p] elements (the theorem that PRO is ungoverned; also cf. 29) is obtained by default, if only governed elements satisfy binding principles. Binding properties are reformulated as licensing conditions on a governed element *a* in the expression *E* with indexing *I*, as below (cf. Chomsky (1986a;171-2)).

(34) The licensing conditions on governed elements:<sup>34</sup>

For some *b* such that (i) or (ii), *I* is BT-compatible with (*a*,*b*):

- (i) *a* is an r-expression and
  - (a) *b* is the domain of the operator if *a* is a variable or
  - (b) *b* = *E* otherwise
- (ii) *a* is an anaphor or pronominal and *b* is the least CFC containing *x* for which there is an indexing *J* BT-compatible with (*a*,*b*).<sup>35</sup>

def. = *I* is BT-compatible with (*a*,*b*) if:

- (a) *a* is an anaphoric and is bound in *b* under *I*
- (b) *a* is a pronominal and is free in *b* under *I*
- (c) *a* is an r-expression and is free in *b* under *I*.

Some empirical predictions of (34), where a local domain is defined in terms of the notion of BT-compatible CFC, differ from those of (29) in at

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<sup>34</sup> For the previous formulation of a local domain (called governing category), see Chomsky (1981). We will not discuss some conceptual and empirical problems raised by the notion of SUBJECT in terms of the i-within-i condition and the auxiliary hypothesis which play roles in defining governing category (cf. Yang (1983); Huang (1983)); we simply acknowledge that there are some issues raised by the current formulation, such as the relation between the ECP and LF-movement of anaphors (cf. 35).

<sup>35</sup> CFC (complete functional complex) is a category in which "all grammatical functions compatible with its head are realized in it - the complements necessarily, by the projection principle, and the subject, which is optional unless required to license a predicate, by definition." (Chomsky (1986a;169)) The local domain for an anaphor or pronominal *a* is the least CFC (NP or IP) containing a lexical governor of *a*.

least two respects: First, the conditions (34) allow anaphors in subject positions while the conditions (29) do not; in (35a), each other is licensed by having a BT-compatible CFC (IP); the anaphor each other is bound in IP.

- (35) a. \*<sub>[IP They<sub>i</sub> think each other<sub>i</sub> won]</sub>  
 b. \*<sub>[IP They<sub>i</sub> INFL-each other<sub>i</sub> [<sub>VP</sub> think [<sub>CP</sub> [<sub>IP</sub> t<sub>i</sub> won]]]</sub>

The ungrammaticality of (35a) is then accounted for by the ECP, under the assumption that anaphors moves to INFL in LF in order to be governed by their antecedents (subjects), as in (35b):<sup>36</sup> The t<sub>i</sub> in (35b) is neither theta-governed nor antecedent-governed (movement crosses three barriers, VP, CP and IP). Second, the notion of BT-compatibility explains an overlapping distribution of pronominals and anaphors:

- (36) a. [<sub>IP</sub> the children<sub>i</sub> like [<sub>NP</sub> {each other's<sub>i</sub>/their<sub>i</sub>} friends]]. (cf. (229) in Chomsky (1986a;170))

The minimal BT-compatible CFC for each other is IP and each other is licensed by having a BT-compatible CPC (IP); the minimal BT-compatible CFC for their is NP and their is licensed by having a BT-compatible CFC (NP). The interpretation of ungoverned PRO, which is not licensed by (34), is obtained by control theory. In fact, control properties differ from binding properties so that grammar needs a theory of control independent of a theory of binding (cf. Chomsky (1981;1986a) and references cited therein).

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<sup>36</sup> LF-movement of anaphors and the conditions (34) predict that if languages show no Subject-object asymmetry with respect to the ECP, then anaphors may appear in subject positions; this prediction is borne out in languages such as Chinese, Japanese, and Korean. In languages such as Italian, as in English, subject-object asymmetry is observed (cf. Rizzi (1982; ch. 4)) and anaphors in the subject position are not allowed but that-trace effects do not show up, as they do in English. See Rizzi (1982; ch. 4) for an independent reason for the lack of that-trace effects in Italian.

### 1.1.6. Principles of Licensing and Full Interpretation

In the previous subsections, we have discussed each module of grammar, which includes appropriate universal principles/conditions. The principles and conditions we have discussed are taken as licensing conditions on elements at each level of representation. Licensed elements are linked with the LF level of representation through the projection principle and through the conditions on abstract representation of arguments (maximal A-chains); D- and S-structure, and LF are linked through move-alpha. On the other hand, under the projection principle, elements of S-structure are linked with the PF level of representation through morphology and phonology (cf. fn. 4).

In addition, as a property of natural languages, UG includes a principle of full interpretation (FI) at the levels of interpretation (LF and PF), which constitute the interface of syntax with systems of language use: Each element represented at the levels of interpretation (PF and LF) should receive an appropriate interpretation. Licensing principles and FI say that elements are represented at a certain level of representation if they are licensed in an appropriate way; once they are licensed, they must receive an interpretation. FI also says that unlicensed elements must not receive interpretation. Thus FI is bidirectional; elements are licensed in syntax iff they receive appropriate interpretations at LF/PF.

At LF (linked to a cognitive level) and at PF (linked to a production and perceptual level), properly-licensed elements receive (grammar-)'external' interpretation in a sense since the levels of LF and PF constitute the interface of the language faculty with other cognitive systems; each element receives semantic and phonetic interpretation by some invariant principles by virtue of being licensed in an appropriate fashion. For

example (cf. Chomsky (1986a;98), at PF, book cannot be represented as [fburk]; [f] and [r] do not receive phonetic interpretation since they are not licensed by morphology or phonology in appropriate ways. Thus they are not proper representations of P and therefore having a representation [fburk] violates a principle of FI. Likewise, the sentence who John saw Bill does not receive a semantic interpretation at LF since who is not licensed; an operator should strongly bind a variable (nonvacuous quantification; the Bijection Principle (Koopman and Sportiche (1982))). On the other hand, the sentence John saw Bill must receive a semantic interpretation; a principle of FI says that it must not be the case that John or saw Bill is licensed by its licensing conditions but does not receive a semantic interpretation.

The projection principle and the chain conditions are cross-level constraints that link levels of representation so that a restriction on one element of a certain level may carry over into another level of representation. A principle of FI is meaningful only under the theory assuming the structure  $Z = (D, S, L, P)$  with the projection principle and move-alpha with Recoverability of Deletion; elements cannot be deleted if they are not recoverable (cf. Chomsky (1964;71); Chomsky (1981)).

## 1.2. Outlook

Thus far we have discussed the theoretical framework we will adapt here. The theory sketched above mostly concerns maximal elements providing licensing conditions of maximal elements and conditions or principles of the distribution of maximal elements at each level of representation. In the following Chapters, we discuss some linguistic phenomena ('complex predicates') related to the behavior of minimal elements in each level of

representation under the framework of UG discussed above and under a certain assumption on tree structure. Based on our discussions of those linguistic phenomena, without changing the core aspect of UG, we will extend the theory to include principles or conditions of minimal elements or those on the distribution of minimal elements having a number of theoretically and empirically plausible consequences. Some of the core proposals are listed below:

- (37) a. reinterpretation of head-movement (Chapter 2)
- b. introducing minimal category-to-minimal category transformations (affect/move-category) under a theory of transformation called the licensing theory of transformation (Chapters 2 and 3)
- c. the wide interpretation of the projection principle with the extension of the projection principle to a sublevel of PF (Chapters 2 and 5)
- d. a certain syntactic approach to 'complex predicates' (Chapters 2 and 3)
- e. introducing morphological ambiguity derived from syntactic derivations (Chapter 3)

## CHAPTER 2: COMPLEX PREDICATES AND MOVEMENT

### 2.0. Introduction

In this Chapter, we briefly discuss some empirical and theoretical issues raised by the linguistic phenomena (the 'complex predicate' phenomena) that we will discuss in subsequent Chapters. We discuss certain empirical data and the notion of category, which leads to a transformational (movement) approach to the phenomena in terms of affect/move-category, which we call the Restructuring Rule (RR). This Chapter also discusses some theoretical issues related to the notion of movement (adjunction and substitution) under the restricted theory sketched in Chapter 1. Our discussion of movement will lead to a proper understanding of the two different types of 'complex predicate/word'; i.e., morphologically-complex predicates/words and of complex predicates composed of morphologically-independent predicates/words. We also discuss another aspect of the transformational connection between the levels of representation and consider some well-motivated and restricted transformational approaches to 'complex predicates,' resulting in a very restricted theory of UG consistent with the ideas of the projection principle and FI.

### 2.1. Transformation and the principles of UG

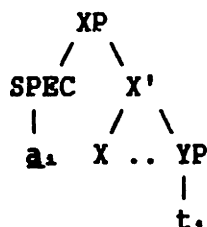
#### 2.1.1. The licensing theory of transformation and the status of category projection

In a recent framework (cf. Chomsky (1986b)), move-alpha is either

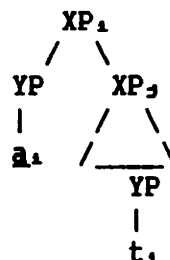
substitution or adjunction.<sup>1</sup> It is assumed to affect either maximal projections or heads. Consider the following schema for movement of maximal projections:

(1) Movement of maximal projections

a. substitution

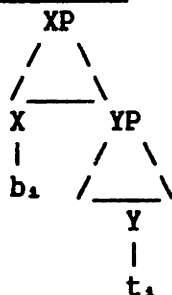


b. adjunction

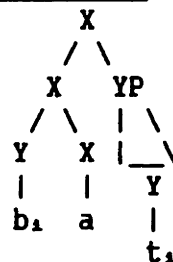


Movement of minimal projections

c. substitution



d. adjunction



a<sub>1</sub> (terminal strings) move to (empty) base-generated positions (1a/c) or adjoin to categories (1b/d). The movement processes in (1) are assumed to be ruled out by independently-motivated principles of UG: For example, because of the projection principle, the positions (syntactic categories) do not move in the case of adjunction as shown in (2a) (cf. (5) in Chapter 1); arguments cannot simply attach to a node, as shown in (2b), because of the Structure-Preserving Hypothesis and perhaps because of X-bar theory.

<sup>1</sup> It is assumed that deletion or insertion, which used to be a transformation, may not apply unless an inserted or deleted element is a dummy (semantically null) or minor element such as *of* as a dummy Case marker and *that* complementizer. Note that expletives such as *there* are not inserted in the present framework, but are generated at D-structure. While deletion is constrained by Recoverability of Deletion, whose interpretation is theory-internal, insertion of minor categories may best be understood as realization of features under certain conditions. See Chomsky (1986a) in which *of*-insertion is discussed as a realization of GEN (also cf. Stowell (1981) for the rule of *of*-insertion).





The processes in (1b, c and d) are, however, not fully understood in the literature and one can ask what the proper nature of movement in (1) is. To answer this, we suggest the notion of movement that motivates the above two processes under a certain assumption on Xo-categories and terminal strings (and on tree structure).

For reasons which will be clear in subsequent Chapters, let us suggest that in the following structure, Xo and a are in the domination relation (along the lines of Higginbotham (1985a)) and that they are independent entities governed by different processes and principles.



a represents bundles of phonological, morphological, syntactic, semantic features and other lexical information such as selectional properties.<sup>2</sup> Xo represents categories with categorial features [aN,bV] (obtained in the Lexicon, which are percolated from a and which are projected through X-bar schema (cf. Chomsky (1970))) and with some grammatical features such as [+/-transitivity, +/-ergativity], as we will discuss in Chapter 3. Categories are also understood as syntactic positions dominating terminal

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<sup>2</sup> Given the structure (3) in terms of the domination relation and feature bundles, we assume the following about a: The semantic and syntactic features of a are categorially represented in syntax in terms of categorial projection; certain morphological features are referred to in syntax to trigger syntactic head-movement (as we will argue; cf. Chapter 3); and morphological and phonological features are referred to at the level of PF representation. On the other hand, both a and Xo-categories as independent entities (as feature bundles) are, as we will suggest, referred to by transformations.

In assuming that the structure in (3) represents the domination relation, we diverge from the current concept of tree structure (cf. Chomsky (1955/1975a); Lasnik and Kupin (1977)).



Suppose further that configurational features  $[+x]$  and  $[+y]$  of the category  $X^i$  are restricted to the same bar-level of categories as  $X^i$ . For concreteness, imagine that the feature  $[+x]$  and  $[+y]$  can be assigned only to maximal categories/positions.  $X^i$  positions may fail to be assigned  $[+x]$  or  $[+y]$  if  $i$  is nonmaximal, and therefore they are not likely to be landing sites of maximal elements that move to seek their missing licensing factors/features. The Structure-Preserving Hypothesis<sup>2</sup> follows because terminal strings of maximal categories would move only to maximal categories to seek their missing licensing factors, since only the same bar-level of positions would provide missing licensing factor(s).<sup>4</sup> Let us call this idea the 'licensing' theory of transformation (a refined and generalized version of the last resort theory of move-alpha (see Chomsky (1981; 293); Chomsky (1986a; 137 & 201))). Under this concept of movement, A-movement and A-bar movement are understood in the following ways: A-positions (but not A-bar positions) do not usually provide scope features. Thus, wh-elements, which must be assigned scope, should move to A-bar positions either in syntax or in LF. Since only SPEC positions provide scope features, quantificational elements move only to A-bar SPEC positions. On the other hand, arguments require Case because of the Visibility Principle to be properly interpreted at LF. When they are base-generated

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<sup>2</sup> We tentatively assume the following version of Emonds's Structure-preserving hypothesis (cf. Emonds (1976)):

(1) move-alpha is 'structure-preserving.' (def. = move-alpha is structure-preserving if and only if an  $X^i$  element moves to an  $Y^i$  position or category (where  $i$  indicates a bar-level)).

<sup>4</sup> As for the intermediate landing sites of move-alpha, we suggest that there is a condition on chains that avoids heterogeneous elements within chains obtained by movement. The intermediate elements should be nondistinct from the head and the tail of a chain in their bar-level and perhaps in their categorial features. This condition, however, may fail to apply to other chains that are not derived by movement, such as 'extended (A-)chains' in Chomsky (1986b).

in non-Case positions, they should move to Case positions, obeying the constraints or principles of UG. The landing sites of A-movement are not non-A- or nonmaximal positions since A-movement is motivated by the lack of Case and Case is not assigned to non-A- or nonmaximal positions.

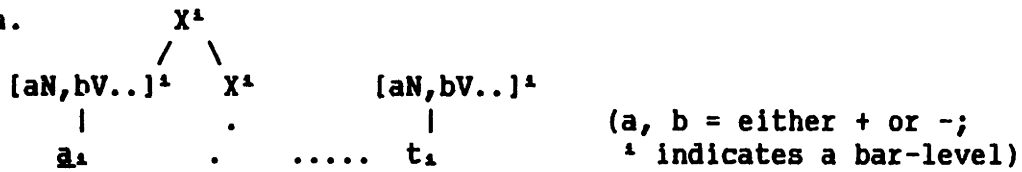
The licensing theory of transformation implies that move-alpha does not take place without causes and that move-alpha is not maximally free, unlike the currently assumed proposition on move-alpha -- move anything anywhere. Move-alpha takes place only when alpha is not appropriately licensed to be interpreted at a certain relevant level of interpretation. Since the lack of a licensing factor of an element in the position that dominates it triggers move-alpha, movement is understood as trigger-oriented. When an element is base-generated in a position that lacks a licensing factor for that element and there is no position available for the element to move, the representation would not be interpreted at a level of interpretation (either at LF or at PF).

#### 2.1.2. The adjunction function $\chi$ and the wide interpretation of the projection principle

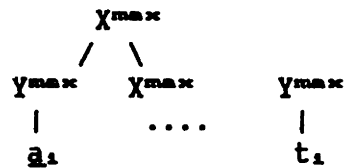
Adjunction shown in (1b and d) (cf. May (1977;1985) and Chomsky (1986b)) is also movement of terminal strings but creates the same type and the same bar-level of nodes as those which dominate those terminal strings at D-structure, creating positions. Let us suggest the adjunction function  $\chi$ , which creates both positions and nodes in the following way: The bar-level of created positions is determined by the bar-level of adjoined nodes (1) and the categorial status of created positions is determined by that of

moved terminal strings.<sup>5</sup> Adjunction is discussed to apply both to maximal elements (e.g., arguments; cf. 5b) and to minimal elements (heads; cf. 5c).

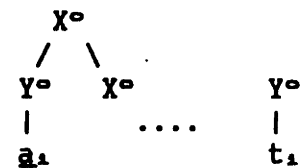
(5) a.



**b.**



C.



It follows from the licensing theory of transformation that maximal and minimal projections adjoin only to maximal and minimal positions, respectively:  $X_{max}/X$  elements (arguments/heads) adjoin to  $Y_{max}/Y$  nodes, creating  $X_{max}/X$  positions to receive some missing licensing factor(s) for  $X_{max}/X$  elements. According to the licensing theory of transformation, in order for  $X'$  elements to move,  $X'$  elements should be base-generated in  $X'$  positions that lack some licensing factors for  $X'$  elements. The licensing theory of transformation then explains why there is no  $X'$  adjunction if  $X'$  is licensed only through X-bar theory.<sup>6</sup> In fact, no other principles of grammar constrain the distribution of  $X'$ . Thus, there is simply no

<sup>8</sup> We assume that when a nonterminal NP string (John's mother for example) moves, all the structure below NP moves to another base-generated or created position.

(1)                 {SPEC/NP}<sub>i</sub>          ..... NP<sub>i</sub>  
                    /    \                   |  
                  NP   N'                  t<sub>i</sub>  
                  |    |  
                John's   N  
                     |  
                   mother

\* The wide interpretation of the projection principle, which will be discussed shortly, will also correctly eliminate the possibility of movement of X' elements.

motivation for adjunction of X'elements under the licensing theory of transformation.

As for the created nodes and the created positions, the current theory suggests that  $XP_1$  and  $XP_2$  in (1b) are 'segments' (cf. May (1985); Chomsky (1986b))<sup>7</sup> that form a category and that the positions derived by adjunction are A-bar positions (cf. May (1977;1985); Baltin (1982); Chomsky (1986b); Lasnik and Saito (to appear)). May's analysis of Quantifier Raising (QR) suggests that quantifiers adjoin to IP or VP to have scope, creating A-bar positions at LF (cf. May (1977;1985)). In Chomsky (1986b), (wh-)operators are also assumed to undergo adjunction to VP before they move to the SPEC of CP to void VP/IP barrierhood (cf. the Subjacency Condition; Chomsky (1986b;30); fn. 27 in Chapter 1), just as quantifiers undergo adjunction to VP to have scope at LF. Thus positions created by adjunction are equivalent to escape-hatches of operators, like the SPEC of CP, at S-structure; and traces left by adjunction are variables at LF. Adjunction that creates A-bar positions is not incompatible with the licensing theory of transformation if quantifiers or operators have the feature [+q] and adjunction of quantifiers creates A-bar positions (scope positions) because of that feature.

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<sup>7</sup> The notion of segment corresponds to the notion of occurrence in May (1985). May (1985;56) suggests that '[adjoined] nodes do not constitute distinct categorial projections, .. understanding the occurrence of a projection (at a given bar level) to be made up of a set of occurrences of nodes that are featurally nondistinct (that is, identical with respect to syntactic features, bar level, index, etc.). It is these nodes, taken collectively, that constitute the membership of a projection. In fact, this characterization claims that the structural effect of (Chomsky-) adjunction is to create multimembered projections. .... On this interpretation of the relation between nodes and projections, derivations will be inherently 'structure-preserving,' in the sense that the categorial structure imposed by X-bar theory on D-structure representations will remain unchanged in the course of derivation via 'Move-alpha,' to be onto S-structure or LF, although the hierarchical and/or linear arrangement of constituents may be altered.'

At this point, the question arises: Can adjunction create A-positions as well as A-bar positions? Given the adjunction function  $\chi$ , it is logical that adjunction creates A-positions when non-operators undergo adjunction. Then an obvious question one can raise is whether adjunction as a process creating A-positions is empirically realized. In fact, some instantiations of adjunction, such as rightward movement in Romance languages, may create A-positions (see Kayne and Pollock (1978) and Kayne (1979)) for Romance languages; and Choe (1987a) for Korean).<sup>9</sup>

If adjunction creates certain positions, as we suggest, adjunction raises a question about the projection principle, which is repeated below.

(6) a. The Projection Principle:

Representations at each syntactic level (i.e., LF and D- and S-structure) are projected from the Lexicon (through CSR(C)), in that they observe the s-selection properties of lexical items.

There are two interpretations of the projection principle. We can interpret the projection principle in (6) as an across-the-board condition on theta-positions (ordinary narrow interpretation; cf. the strong version of the projection principle in (5) in Chapter 1). On the other hand, we may also have a wide interpretation: Every position (even non-theta positions)

\* If adjunction creates A or A-bar positions, as we suggest, then we need to extend the notions of A-bar and A-positions to include the following definition:

(i) if  $\bar{B}$  is a position derived by adjunction,  $\bar{B}$  is an A/A-bar position iff it dominates a member of A/A-bar chain.

Thus, when adjunction creates A-positions, adjoining elements can move to other A-positions; when adjunction creates A-bar positions, adjoining elements cannot move to other A-positions.

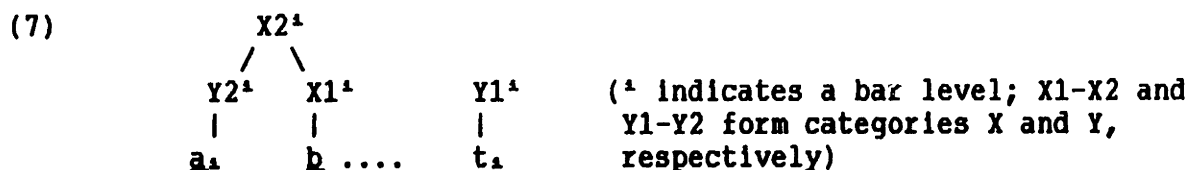
\* In Choe (in progress), we argue that adjunction instantiates A-movement in syntax while adjunction instantiates A-bar movement (QR) in LF. As for some differences between A- and A-bar adjunctions that result in different interpretations of created segments and positions, see Choe (in progress). In there, we drop the assumption that operators-adjunction can create A-bar positions at S-structure because of the feature [+q], arguing that there is an empirical and theoretical necessity to suggest that syntactic adjunction is a process creating A-positions while LF-adjunction is a process creating A-bar position.

licensed by X-bar theory is obtained by the selectional properties of heads and is observed at every level of representation. This interpretation assumes that the selectional properties of all heads in the sense of X-bar theory (X-heads hereafter) are specified in the Lexicon. The selectional properties of nonlexical items (I and C) thus come under the scope of the projection principle; the selection of A and A-bar SPEC is part of the selectional properties of X-heads. For example, I selects A-SPEC (A-position) while C selects A-bar-SPEC (A-bar position). This wide interpretation of the projection principle leads to us to reformulate the projection principle in (6a) as in (6b):

(6) b. The Projection Principle:

Representations at each syntactic level (i.e., LF and D- and S-structure) are projected from the Lexicon (through CSR(C)), in that they observe the s-selection properties of Lexical items (C, I, [+/-N, +/-V], ...); all maximal categories (A/A-bar SPECS and complements of X-heads) are selected through the s-selectional properties of X-heads.

Even though the idea of the principle of FI favors the wide interpretation of the projection principle,<sup>10</sup> this wide interpretation of the projection principle may fail to allow for the creation of either A or A-bar positions: Created positions are not selected by Lexical properties of X-heads. Let us thus revise the adjunction function  $\bar{X}$  so that just as segments (of adjoined nodes) created by adjunction form a category, so also positions created by adjunction (Y2) are segments and form a category with base-generated positions (Y1) from which elements move (cf. 5).



<sup>10</sup> Later, our wide interpretation of the projection principle will incorporate the ideas that the projection principle holds at (a sublevel of) PF (cf. Chapters 3 and 5) and that UG also includes the projection principle on X-heads (cf. this Chapter).

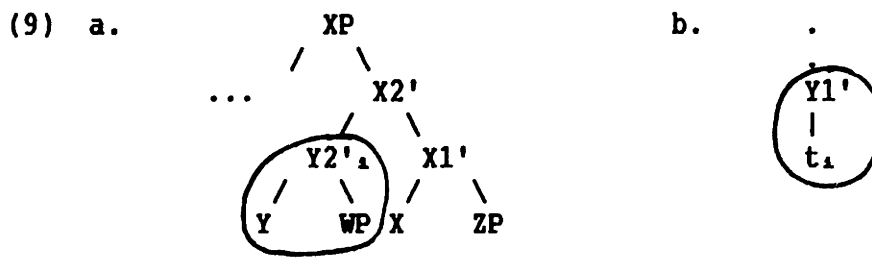


This amounts to saying that discontinuous representations of categories (linked through adjunction) form certain types of chains.

Given this adjunction function  $\chi$  and the selectional properties of X-heads, we maintain the wide interpretation of the projection principle which operates on categories but not segments. If only categories but not segments are visible with respect to X-bar theory or if X-bar constraints operate on categories but not on segments (as May (1985) implies; cf. fn. 7), it is possible to reconsider the following current standard assumption (7a), having the assumption in (7b) instead.<sup>11</sup>

- (8) a. The X-bar constraints are satisfied at D-structure but not at other levels of representation. (cf. Chomsky (1986a;100 and 161); Chomsky (1986b;3))  
 b. The X-bar constraints are satisfied at every syntactic level of representation.

If (8b) is in fact right, given the wide interpretation of the projection principle and the licensing theory of transformation, it follows that there is no transformation that affects nonmaximal and nonminimal X' elements (or nodes). First, X' positions are not open for substitution since X-bar theory does not allow null X' positions. Second, adjunction of X' elements always violates (8b). Consider the following structure obtained by adjunction of an X' element.



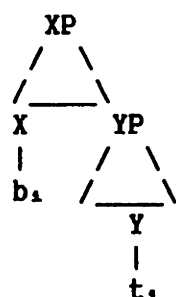
<sup>11</sup> Theoretically speaking, (8b) assumes (8a) regardless of some constructions that question the validity of assumption (8a), such as relative clauses and small clause constructions (cf. Chomsky (1981;1986b); Stowell (1981); see also Chomsky (1986b; class lectures) for a discussion that small clauses contain base-generated segments). (8b) also assumes no syntactic operations other than adjunction that change syntactic structure. In short, (8b) is theory-internal.

In the structure (9a), the projection of the X-head Y (circled) lacks the SPEC position and in the structure of (9b), there is no X-head, given that t is not the trace of a head. Thus, adjunction of X' elements would always violate X-bar constraints, given the assumption in (8b).

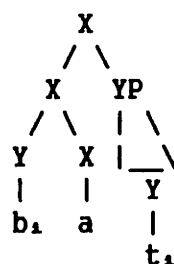
### 2.1.3. The theta-criterion and the projection principle on X-heads

As for head-movement, the current theory assumes that head-movement<sup>12</sup> is also either substitution<sup>13</sup> or adjunction (cf. Baker (1985/to appear); Chomsky (1986b)).<sup>14</sup>

#### (10) a. substitution



#### b. adjunction



Some well-known instantiations of head-movement are I-to-C movement and V-to-I head-movement. In addition, Baker (1985/to appear) proposes X-to-V

<sup>12</sup> Like move-np/wh (A/A-bar movement), head-movement is assumed to be subject to the formulation of the ECP (called the Head Movement Constraint), which implies that head-movement is an instantiation of move-alpha that leaves traces (cf. Travis (1984); Chomsky (1986b;71)).

<sup>13</sup> The following implicitly admit that head-movement is substitution in that a head moves to another head position when the latter does not contain an overt element: Rizzi (1982); Koopman (1984); Sproat (1985a); Haider and Prinzhorn (1986;eds.); Holmberg (1986); Raposo (1987); Larson (1987) (cf. Koster (1975); den Besten (1977/1983); Emonds (1980)).

<sup>14</sup> Chomsky (1986b) assumes that adjunction may be substitution or adjunction that triggers categorial or morphological amalgamation ( $V_i$  is formed after V-to-I movement applies in Chomsky (1986b;sec.11); also cf. Travis (1984)). Baker (1985/to appear) explicitly suggests that head-movement is either substitution (when landing sites are null) or adjunction.

movement as an instantiation of head-movement for various linguistic phenomena such as noun-incorporation in polysynthetic languages.

The head-movement discussed in Baker (1985/to appear) is basically head-adjunction. Examples (N-to-V (11) and V-to-V (12) movement) are illustrated below:<sup>15</sup>

- (11) a. Yao-wir-a?a ye-nuhwe?-s ne ka-nuhs-a?  
pre-baby-suf 3fs/3n-like-asp the pre-house-suf  
"The baby likes the house."



- b. Yao-wir-a?a ye-nuhs-nuhwe?-s  
pre-baby-sur 3fs/3n-house-like-asp  
"The baby house-likes." (cf. (14a and b) in Baker (to appear; Chapter 3); Mohawk data from Postal (1962))

- (12) abusa a-na-dy-ets-a mbuzi udzu  
goatherds SP-past-eat-caus-asp goats grass  
"The goatherds made [the goats eat the grass]."



(Chichewa data from Baker (1985/to appear))

In (11 and 12), the final landing sites are not morphologically null, and head-movement in (11 and 12) is suggested to be adjunction (cf. Baker (1985;to appear)). Under the licensing theory of transformation, let us suggest that if heads (N or V heads) are morphologically dependent, they move to other heads to be morphologically licensed or closed; heads may fail to move to non-head positions if non-head cannot properly license morphological dependency of that heads. The morphological motivation of

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<sup>15</sup> One more possible instantiation of head-movement is P-to-V head-movement in so-called applicative construction (cf. Baker (1985/to appear)):

- (i) a. Fisi a-na-dul-a chingwe ndi mpeni  
hyena SP-past-cut-asp rope with knife  
"The hyena cut the rope with a knife."  
b. Fisi a-na-dul-ir-a mpeni chingwe  
hyena SP-past-cut-with-asp knife rope (Chichewa data from Baker (1985/to appear; Ch 5; (22)))

Here, we will not consider data related to P-to-V head-movement in detail when we discuss the notion of head-movement and the Restructuring Rule we will propose in the following Chapters; we will leave the data related to P-to-V head-movement open under our proposal for further research.

head-movement is plausible: In fact, the element in the landing site of head-movement is read as an affix of a morphologically-complex word (derived by head-movement), which plays the role of the 'head of a word' (cf. Williams (1981a); cf. Chapter 3). The morphologically-dependent element is read as a stem, which plays the role of a non-head of a word.

In the literature, I-to-C head-movement is discussed as an instantiation of 'head-substitution'; I-to-C head-movement is proposed mostly for V-second order in Germanic languages (cf. den Besten (1977/1983); Haider and Prinzhorn (1986;eds.); Holmberg (1986)) and is also proposed in terms of the Aux-to-COMP rule to explain Case-marking from C in Italian (Rizzi (1982; ch. 3); see also Raposo (1987) for Portuguese I-to-C head-movement).<sup>16</sup> One well-known property of I-to-C head-movement is that movement is blocked if C contains a morphologically-overt element. For example, Rizzi (1982) shows that in Italian, I assigns Case in C position through the Aux-to-COMP (= I-to-C) rule, which is instantiated in (13a). The rule is, however, blocked when C contains an overt element (di = complementizer), as in (13b).

- (13) a. Questa commissione ritiene [ aver loro sempre ottemperato agli obblighi previsti dalla legge]  
 "This commission believes [ to-have they/them always fulfilled the legal duties."  
 b. \*Cerco [S' [COMP di esser][lui simpatico con tutti]]  
 "I try 'of to-be he/him nice with everybody."  
 (cf. (6c) and (55/56) in Rizzi (1982;Chapter 3))

In the Swedish V-second order in finite clauses described by Platzack (1986b), only when C is not filled by an overt element is V-second order obtained by I-to-C head-movement (accompanied by I/V amalgamation; cf. Platzack (1986a)), as shown in (14a). When COMP is filled with om (if), V-

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<sup>16</sup> I-to-C head-movement is also proposed to give some configurational analyses of VSO languages (cf. Emonds (1980); Sproat (1985a)). However, see chapter 5.

second order is not obtained (I-to-C movement is blocked), as shown in (14b).<sup>17</sup>

- (14) a. Köper du den boken, så blir han glad.  
           buy you that book then gets he glad  
           "If you buy that book, he will be glad."  
       b. \*Jag undrar om kommer han inte snart.  
           "I wonder if comes he not soon." (cf. 5 and 28a in Platzack (1986b))

This property of I-to-C movement is usually attributed to the Doubly Filled COMP filter (cf. Chomsky and Lasnik (1977)). However, the current framework, which allows head-adjunction, does not rule out doubly filled COMPs since I-to-C movement could be an instantiation of adjunction to di (complementizer) or om (if), as in (11-12) (X-to-V head-adjunction).

There is one process that behaves in a similar way to I-to-C head-movement, i.e., V-to-I head-movement. V-to-I head-movement is generally assumed to be motivated by morphological reasons: I is morphologically-supported by V when do-insertion does not apply (cf. Sproat (1985a) for example). Nevertheless, like I-to-C movement but unlike X-to-V movement in (11-12), V-to-I movement is also assumed to be blocked when I contains modals or auxiliaries verbs such as have and be of have...-en and be...-ing in English when the auxiliary do is not inserted (in short, when I contains an overt element):

- (15) \*John smile-will. (cf. John will smile.)

The ungrammaticality of (15) can be ruled out if a modal in nature cannot be an affix.

A crucial question one can raise here is why functional heads such as C or I overt elements cannot be affixes<sup>18</sup> or why functional X-heads are not

<sup>17</sup> Rizzi (1982; 84) also reports that if (se in Italian) also blocks the Aux-to-COMP rule in Italian.

<sup>18</sup> While it seems true that overt functional X-heads are not landing sites

landing sites of head-movement, while lexical heads such as V overt elements can be affixes. We feel that there must be a deeper reason why this is so; also if we are right in assuming that head-movement is triggered by certain morphological dependency of heads (under a trigger-based theory of transformation, i.e., the licensing theory of transformation), then any X-heads can serve as landing sites of head-movement as long as they contain phonetically overt heads.

In fact, the concept of tree structure we are adopting and the wide interpretation of the projection principle imply that there must be no head-substitution. X-head elements including C and I heads are represented as a bundle of phonetic, morphological, syntactic, and semantic features obtained in the Lexicon. If the basic functions of heads are selectional properties (or their semantics), then the Lexicon contains heads which lack phonetic features but not ones that lack basic syntactic and semantic features. If that is so, whether it is phonetically null or not, the tree structure of a head is (16) in which categorial or grammatical features are percolated to form an X<sub>0</sub>-category projection subject to X-bar conventions:

- (16)           X  
              |  
          [ $aS_1, \dots bS_n, -/+P, \dots a \dots$ ]  
              where P indicates a bundle of phonetic features;  $S_i$  ( $0 < i < n+1$ )  
              morphological, syntactic, and semantic features; and  $a$  other  
              lexical idiosyncracies; and where X represents a bundle of  
              categorial features (cf. fn. 2).

Given the assumption in (16), X-head positions may fail to be open for substitution, whether it is phonetically-realized or not, since substitu-

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of head-movement, they are rather popular hosts of clitics in languages such as Hebrew and Berber. As most studies assume (cf. Baker (1985a); Anderson (1982), etc.), we assume that complex words formed with clitics should be understood on some different grounds.

tion would violate the wide interpretation of the projection principle or (a strong version of) Recoverability of Deletion.

We suggest that X-heads that dominate phonetically null heads are not landing sites of substitution for the same reason that XP's that dominate PRO or pro are not landing sites of A-movement (A-movement to PRO or pro positions would trigger A-chains with two theta-positions). Suppose that heads are linked with their own theta-assigning properties that are obtained on the basis of their selectional properties (semantics) and of their positional status within syntactic structure (derived by the X-bar schema/conventions). Then, we expect that those theta-assigning properties based on the selectional properties and on the X-bar schema/conventions would not change during syntactic derivations. Thus, we suggest the projection principle on X-heads in (17), in addition to (6b); we suggest that the wide interpretation of the projection principle include both (6b) and (17):<sup>19</sup>

- (17) The projection principle on X-heads: X-heads (i.e., [+N,+V], I, C, .. and F) 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.

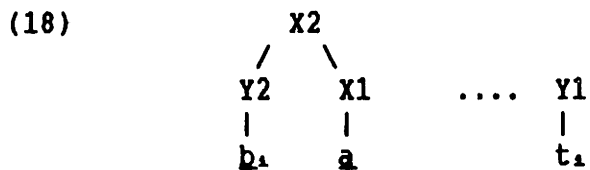
The projection principle on X-heads in (17) implies the constant aspect of selectional properties of heads in every syntactic level of representation. (17) suggests that heads and therefore X-heads are not deleted (no tree pruning) since deletion of nodes would result in change in theta-assigning properties of heads that immediately c-command deleted nodes. (17) also suggests that X-heads are not landing sites of movement if the X-bar

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<sup>19</sup> A selectional property of an X-head may or may not be disjunctive. For instance, after may select either NP (forming PP) or IP (forming CP). When a lexical item has a disjunctive selectional property, -XP or -YP, either XP or YP (but not both) is selected in syntax. Once one selectional property is chosen in syntax, that selectional property should be preserved in syntax because of (17).

conventions with feature percolation conventions holds of the relation between X-heads and heads that move to those X-heads. If categories or heads are visible to the X-bar constraints and to the projection principle, we expect head-substitution to violate the projection principle on X-heads.

Given (17), we can ask how (17) works with respect to head-adjunction. We suggested that head-movement creates the segments of both categories X and Y shown in (18) (cf. the adjunction function  $\chi$ ) and that a segment of a category is invisible with respect to the projection principle and to X-bar constraints while a category is not.



The selectional property of an X category instantiated as X1 and X2 segments is visible in the X<sub>0</sub>-structure but that of a Y category (Y1 and Y2) is not visible in the X<sub>0</sub>-structure in (18b) since only a segment of a Y category is present. Then the question is which instantiation of the segments of the category Y is visible with respect to the projection principles and to the X-bar constraints. To answer this, we introduce the notion of chain obtained by head-movement that we call H-chain (thanks to Noam Chomsky (p.c.) for the terminology). From our point of view, H-chains can be called abstract representations of X-heads. We suggest, by analogy with A-chains, that the tail of an H-chain ( $b_1, t_1$ ) is the position where we read the theta-assigning property of an Y category. In other words, adjoining guest heads are not visible with respect to the projection principle on X-heads (the selectional properties of guest heads not only are invisible but also do not affect or are not added to those of host



heads) although they are visible with respect to a level of interpretation (i.e., PF).

Because of the Lexical Integrity Hypothesis (cf. Lapointe (1981); Selkirk (1982)), head-movement is assumed to be a one-step operation. Thus, we may have the following H-chains formed by adjunction (which always has two members) including a trivial H-chain that contains one member (cf. 19a):

- (19) a. ( $\{a\}_1$ )  
       b. ( $\{a\}_1, t_1$ )  
       c. ( $\{\{a\}_1-b\}_2, t_2$ )  
       d. ( $\{\{\{a\}_1-b\}_2-c\}_k, t_k$ ) ....

In (19), each tail is a theta-assigning position. Given the notion of H-head, we suggest that in order to license its theta-assigning property, a head should lie in a certain position within an H-chain at S-structure (cf. fn. 20 below). To incorporate these ideas, we suggest the following definition.<sup>20</sup>

- (20) An H-chain is visible for theta-assigning iff the morphological requirement of an H-chain is satisfied; the morphological requirement of an H-chain is satisfied if a head is in the position of the head of an H-chain

By analogy with the theta-criterion at LF in terms of A-chains, the theta-criterion on X-heads at LF -- a one-to-one relation between theta-assigning properties and X-heads -- can be stated as follows:

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<sup>20</sup> Note that we are assuming that the H-chain is motivated by a morphological factor; the head of H-chain (b) is morphologically-dependent and it moves in order to be morphologically licensed since it should be interpreted at a level of interpretation, i.e., PF (cf. the licensing theory of transformation). Later, we will suggest that head-movement applies in the PF component but that it applies only with RR, and therefore H-chains are not obtained at PF. Thus, at S-structure, we expect morphologically-dependent elements to lie under X<sub>0</sub>-categories without being satisfied by their morphological requirements. Because heads may undergo head-movement in the PF component and because theta-assigning properties are visible in LF, we do not suggest the following: If the morphological requirement of an H-chain is satisfied, a head is in the position of the head of an H-chain.

(21) The theta-criterion on X-heads: An H-chain has one and only one visible theta-assigning position.

It seems that not every head possesses its selectional properties (semantics). The heads of maximal projections without theta-roles would not have semantics (no selectional properties) and therefore such projections may only be selected as the SPECS of XPs, whose existence is licensed through X-bar theory. Since their projections would have no semantic contents, by definition of D-structure, projections of such X-heads cannot appear as complements of X-heads, although they can be selected as SPECS of XPs. Since the heads of SPECS have no selectional properties (no semantic contents), given the notions of A- and A-bar-Chains, those categories/positions can be landing sites of A or A-bar movement of maximal elements without violating the projection principle in (6b and 17). Head-substitution to SPEC positions would, however, create the selectional/theta-assigning properties of the heads of those projections, given the X-bar conventions with feature percolation conventions; heads cannot change selectional properties because of the projection principle on X-heads and theta-criterion on X-heads. Thus SPEC positions are not landing sites of heads. On the other hand, every X-head that licenses a complement possesses selectional properties and therefore X-heads are not open as landing sites of movement. If X-heads have no theta-assigning properties, they would not have their own complements. To conclude, only SPECS can be open as landing sites of movement of maximal elements, while X-heads and complement positions are not open as landing sites of substitution.

Let us now return our concern to the status of I-to-C and V-to-I head-movement. Suppose, for the sake of argument, that head-movement may be substitution or adjunction. Then we could say that either substitution or adjunction offer ways to license heads morphologically, assuming that

morphological licensing may be obtained either by moving heads to other head positions or by adjoining heads to other head positions. Remember, however, that I-to-C (or V-to-I) movement is blocked when C (or I) is filled by a complementizer (or by a modal), while other instantiations of head-movement, such as X-to-V movement, are not blocked even if V is lexically filled (cf. 11-12). Although this difference is largely ignored, a generalization seems to be that head-adjunction is in general blocked when a possible landing site is nonlexical (in Chomsky's (1981) sense) and head-adjunction is not blocked when a landing site is lexical. Even if we put aside various issues related to I-to-C or V-to-I head-movement, a question arises: If head-movement may be either adjunction or substitution, why should I-to-C (or V-to-I) be substitution; if head-movement is always adjunction, why is I-to-C (or V-to-I) head-adjunction blocked when C or I is overtly realized or filled by an overt element? Both questions might be answered in terms of the Doubly Filled COMP/INFL filter that C/I cannot contain two heads or by assuming that C or I elements (heads) are not affixes, whether or not we allow head-substitution.

Instead of motivating the filter or instead of simply assuming that C or I heads are not affixes, we may suggest that V-second order, Italian Aux-to-COMP phenomenon, or V-to-I head-movement is actually derived by a transformation which differs from head-movement and which may be blocked when heads are phonetically realized. Under the framework that does not allow head-substitution and that allows a type of head-to-head transformation (other than head-adjunction), the lack of head-adjunction to a non-lexical item could be attributed to a condition on head-adjunction that prevents heads from adjoining nonlexical heads.<sup>21</sup> In the next Section, we

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<sup>21</sup> In fact, we will suggest a constraint on head-adjunction that head-

show that there are indeed more empirical reasons to motivate head-to-head transformations which differ from head-adjunction and which turn out to be X-head-to-X-head transformations in terms of affect/move-category (cf. Chapter 3). (We have seen that there are some theoretical reasons to eliminate head-substitution; from now on, we call head-adjunction head-movement.)

## 2.2. The two types of 'complex predicate'

The first empirical data we consider in connection with our discussions on head-movement are those related to 'complex predicate' constructions. There are apparently two types of 'complex predicate' discussed in the literature.<sup>22</sup> The first type of 'complex predicate,' composed of stem and affixal predicates, syntactically behaves as if it projects multiclauses in syntax; this type is mostly instantiated or can be easily seen in languages such as agglutinative languages<sup>23</sup> or polysynthetic languages.<sup>24</sup> The second type of 'complex predicate,' composed of morphologically-independent predicates, syntactically behaves as if it projects a monoclausal structure in syntax. This type is mostly discussed in connection with the so-called 'restructuring' construction in some Romance languages.<sup>25</sup> These two types of complex predicate are schematically instantia-

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adjunction moves only to lexical heads (cf. Chapters 3 and 5).

<sup>22</sup> We use the terminology 'predicate' ambiguously: predicate or verb.

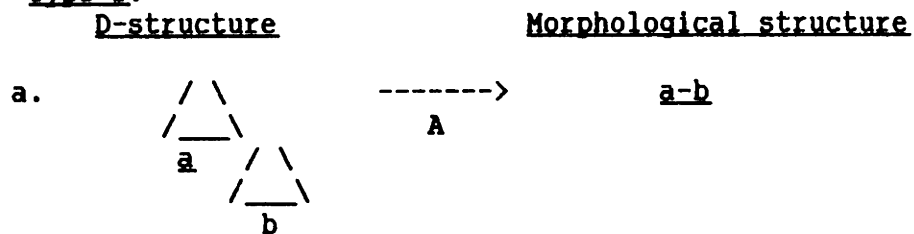
<sup>23</sup> Turkish, Hungarian, Korean, Kinyawanda, Berber, and Japanese.

<sup>24</sup> Eskimo languages (Inuit (Labrador-Inuttut; Greenlandic); Yupik), Bantu languages (Chechewa), Polynesian languages (Niuean; Pnapean), Iroquoian languages (Mohawk), Southern Tiwa, etc.

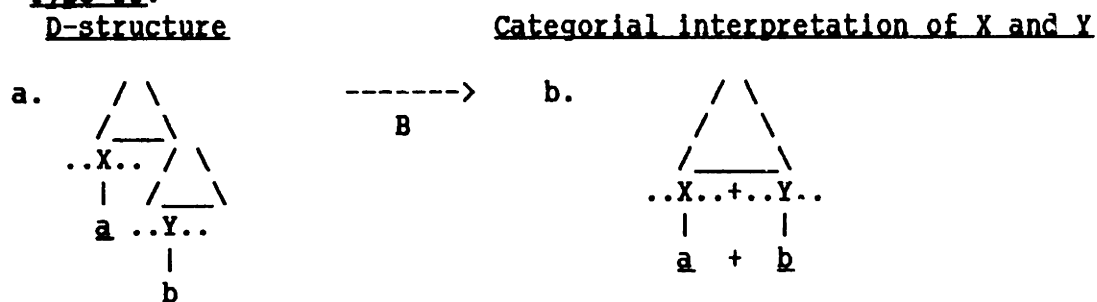
<sup>25</sup> See Rizzi (1978/1982) for Italian; Kayne (1980;1987) for Old French; Picallo (1985) for Catalan; Aissen and Perlmutter (1983) for Spanish. See also Evers (1975) for German.

ted in (22) in which type II is based on Rizzi's (1982) discussion of the 'restructuring' construction in Italian:

(22) Type I:



(23) Type II:



('+' indicates string adjacency with no other intervening X-heads and '-' morphological adjacency<sup>26</sup>; X and Y are categories (X-heads); a and b are morphemes (or complex morphemes) dominated by X-heads; the direction of head-projection and the morpheme order are irrelevant)

The two phenomena are theoretically interesting under the framework with the wide interpretation of the projection principle. The Type I 'complex predicate' shows some mismatch between syntactic and morphological aspects of X-heads, raising a question on the status of morphology and syntax. The Type II 'complex predicate' also shows some mismatch between configurational and categorial aspects of X-heads, raising a question about the categorial status of X-heads in configurational syntactic structure.

### 2.2.1. Type I 'complex predicates'

First, consider Type I 'complex predicates,' which raises some theoretical issues with respect to morphology and syntax in grammar. The following data in Eskimo (a polysynthetic language) instantiate the cases

<sup>26</sup> From now on, we will use the notations '+' and '-' with these interpretations here. Also, we will sometimes use ab instead of a-b.

in which predicates are morphologically complex; a matrix and an embedded predicates are morphologically amalgamated.

- (24) a. anguti-up annak taku-ja-nga (LI-Eskimo)<sup>27</sup>  
man-erg woman-abs see-ind-3s/3s  
 "The man sees the woman."  
 b. anguti-up annak taku-guma-va-a  
man-erg woman-abs see-want-ind-3s/3s  
 "The man wants to see the woman."  
 (cf. (1b & 9b) in Woodbury and Sadock (1986); also (1a & 14b) in Grimshaw and Mester (1985))

- (25) a. nutara-up arnaq ani-ti-taa (I-Eskimo)  
child-erg woman-abs go out-make-3s/3s  
 "The child made the woman go out."  
 b. nutara-up arna-mut angut aktug-ti-taa  
child-erg woman-all man-abs touch-make-3s/3s  
 "The child made a woman touch the man." (cf. (4) in Jensen and Johns (in press))

In (24b), when a transitive verb forms a complex verb with a matrix verb, its argument structure is preserved as if a complex verb were not morphologically complex (cf. 24a): The number of overt arguments in (24b) is the same as those in the English counterpart (control construction) even though two predicates (see and want) are morphologically amalgamated. One of the two arguments takes NOM ((erg)ative) and the other ACC ((abs)olutive), as in the English counterpart. On the other hand, when an embedded logical subject theta-role is realized (cf. 25), unlike English, the embedded subject is suppressed as taking Obl Case ((all)ative), if an embedded verb is intransitive, but the embedded subject takes ACC ((abs)) if an embedded verb is intransitive.

Different theoretical positions show different claims about the syntax of morphologically-complex predicates. In the literature, mostly based on data drawn from polysynthetic languages, there have been two major posi-

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<sup>27</sup> The data in (24) are examples of Labrador Inuttut dialect of Inuit (LI-Eskimo) (cf. Grimshaw and Mester (1985)). The data in (25) are from Inuktitut dialect (I-Eskimo) (cf. Jensen and Johns (in press)).

tions: One is the strong lexicalist position and the other is the syntactic position.

The syntactic position<sup>28</sup> advocates a view that clauses with morphologically-complex predicates form multi-clausal structure and not monoclausal structure in syntax. Thus morphological aspects can be explained independently under the syntactic position. The strong lexicalist position<sup>29</sup> maintains that syntax does not provide the inputs of word formation processes (cf. the lexicalist hypothesis (Chomsky (1970) and the strong lexicalist hypothesis (cf. Jackendoff (1975))). Thus, the syntax of complex predicates/words is exclusively under the domain of the Lexicon (or lexical rules), which is not connected to syntax. The strong lexicalist position predicts that the arguments of predicates, morphologically complex or not, are selected in the Lexicon<sup>30</sup> and that complex predicates behave like simplex predicates.<sup>31</sup> The strong lexicalist position is mostly motivated by the facts given in (25): embedded subjects take either OBL or ACC, depending on the transitivity of an embedded verb, which apparently confirms the idea that clauses can take one NOM and one ACC whether verbals are complex or simplex (also cf. 24).

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<sup>28</sup> Smith (1982); Sadock (1980;1986); Sadock (1986); Woodbury (1985); Woodbury and Sadock (1986); Baker (1985/to appear); Anderson (1982); etc...

<sup>29</sup> This position is taken by Mithun (1984;1986); Grimshaw and Mester (1985); Di Sciullo and Williams (1987); and Jensen and Johns (in press) under various theoretical frameworks. The strong lexicalist position maintains that the internal structure of words is not accessible to syntactic principles.

<sup>30</sup> The morphological structure of a complex predicate is, thus, assumed to be subject to the same morphology as that of a simplex predicate.

<sup>31</sup> Grimshaw and Mester (1985;11), for example, claim that complex verbs have the same syntax as other verbs of the language, triggering the same case-marking effects as any simplex verbs.

This strong lexicalist position, which incorporates syntactic aspects of complex predicates to the Lexicon, cannot capture all the redundancy between syntax with morphologically-complex predicates and syntax without them, as shown in (24). In addition, the aspect given in (25) is also found in some instantiations of French (and Italian) causative constructions, in which an embedded logical subject takes OBL when an embedded verb is transitive and ACC when an embedded verb is intransitive, as shown in (26 and 27) below.

- (26) a. Pierre fera nettoyer la chambre à Marie.  
 Pierre will-make clean the room to Marie  
 "Pierre will make Marie clean the room."  
 b. Pierre lui fera nettoyer la chambre
- (27) a. Pierre fera travailler Marie  
 Pierre will-make work Marie  
 "Pierre will make Marie work."  
 b. Pierre la fera travailler. (cf. (61a and 62a) in Zubizarreta (1985))

The Case of each embedded logical subject is overtly realized when the logical subject is cliticized: lui in (26b) is an OBL dative clitic and la in (27b) is an ACC clitic. Thus, it seems that the French causative construction also shows the same argument structure as its Eskimo counterparts do (cf. 25) although the predicates are not morphologically complex. Under the strong lexicalist position, the argument structure in French causativization cannot be explained in the same way as that in Eskimo data (25) since neither fera nettoyer nor fera travailler in (26-27) is a word.

In addition, there are many arguments in the literature against the strong lexicalist position, which are mostly based on empirical facts incompatible with the strong lexicalist position. First, Baker (1985a), who attributes the observation to Marantz (1984), illustrates data that are against the strong lexicalist position.



- (28) a. Mi m-phik-ish-iz-e ru:hu-y-a cha:kuja  
 I IsS-cook-caus-asp myself food  
 "I made myself cook food."  
 b. Mi mi-m-big-ish-iz-e mwa:na ru:hu-y-e  
 I IsS-3s0-hit-caus-asp child himself  
 "I made the child hit himself."  
 c. \*Mi ni-m-big-ish-iz-e Ali ru:hu-y-a  
 I IsS-3s0-hit-caus-asp Ali myself  
 "I made Ali hit myself." (cf. (67) in Baker (1985a;410))

In (28), we see that the behavior of reflexives is the same whether predicates are morphologically amalgamated or not as we compare Eskimo data with their English translations. The strong lexicalist position accounts for the interpretation of reflexives in (28a and b) as long as reflexives in this language are not subject-oriented. However, the strong lexicalist position would not explain why (28c) is blocked even if myself and I are in the same clause and I is in the subject position. In the syntactic position, both in (28a) and (28b), reflexives are bound by subjects (cf. English translations) and in (28c), a reflexive is bound by a matrix subject rather than by an embedded subject, violating the condition A of binding.

Similar data are provided by Woodbury and Sadock (1986) (WS hereafter): In West Greenlandic Eskimo,<sup>32</sup> the reflexive third person is bound by the surface subject, as shown in (29a).

- (29) a. Isuma-mi-nik oqalug-poq  
 mind-3refl-inst/s speak-ind-3s0  
 "He<sub>i</sub> speaks his<sub>i</sub> own mind/thoughts."  
 b. pro<sub>i</sub> pro<sub>i</sub> isuma-mi-nik oqalo-rqu-va-a  
 mind-3refl-inst/s speak-order-ind-3sS/3s0  
 "He<sub>i</sub> orders him<sub>j</sub> to speak his<sub>j</sub>/\*<sub>i</sub> own mind/thoughts."  
 (cf. WS (p.237-8)) (pro's and underlining are added to WS's (20).)

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<sup>32</sup> Woodbury and Sadock (1986) use data by Kleinschmidt (1851; 162-3).



between verbal stems and affixes in morphologically-complex predicates (cf. (26b) and (22) in WS (pp. 235 and 239)).<sup>36</sup>

- (30) a. Liissaq-u-na                      tai-gu-ur-tug<sup>37</sup>  
          Lisa-abs/s this one-abs/s come-ind/3sS-utter-ind/3sS  
          "Lisa uttered 'this one is coming'."  
       b. Cug-nun                      atange-ci-q-ni-llru-a-ten  
          person-DAT/p wait-fut-say-past-ind/3s-2s  
          "He said that the people will wait for you."

It is widely assumed that 'inflectional' morphology is not restricted to the syntax of words and therefore may not be derived lexically (cf. Allen (1978); Anderson (1982)). The complex verbals which contain these inflectional and postinflectional elements then may fail to be obtained in the Lexicon. On the other hand, the syntactic position implies that so-called 'inflectional' and some (but not all) 'derivational' affixation may both be syntactically derived. Thus the morphologically-complex predicates in (30) do not raise a problem.

Third, WS note that in complex predicates in Eskimo languages, double datives are possible, which are not options for simplex predicates (perhaps universally).<sup>38</sup>

- (31) [Uu-m      pi-llru-a-nga,]      Jim'a-mun   tan'gurrar-nun  
          this-erg do-past-ind/3sS-1sO   Jim-dat/s   boy-dat/pl  
          tegu-vkar-ni-lu-ku              qalqapa-ka  
          take-let-say-appos-3sO   axe-abs/s-1s/gen  
          "[This (person) (spoke) to me and] said Jim let the boys take my  
          axe." (CAY-Eskimo (15) in WS)

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<sup>36</sup> (30a) is from West Greenlandic Eskimo and (30b) from Central Alaskan Yupik (CAY-Eskimo).

<sup>37</sup> WS (p.235) notes that no simplex predicates take two absolutive arguments in the language.

<sup>38</sup> This argument can be attributed to Aissen (1974b), who notes that in Turkish, complex predicates may take double datives that are not options for simplex predicates and suggests complex predicates are syntactically derived.

The final argument in favor of the syntactic position is that complex verbals in Eskimo languages are productive and their semantics are almost completely predictable, as Woodbury (1985) and WS note.<sup>39</sup> The productivity and the predictability of semantics are not characteristic of the Lexicon but of syntax (cf. Chomsky (1970)). To conclude, it seems that the strong lexicalist position is undesirable in various ways.<sup>40</sup>

As for the syntactic position on morphologically-complex predicates, there are three different approaches to how morphology and syntax interact within the syntactic position: The first two approaches suggest that there are both syntactic and morphological aspects in complex predicates but that syntactic aspects cannot be incorporated into morphology and vice versa. Thus, either (A) morphological aspects of morphologically-complex predicates are derived by syntactic rules which cause morphological amalgamation (especially, Smith (1982); Woodbury (1985); WS),<sup>41</sup> or (B) a certain level of morphological structure links to syntactic structure (forming double

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<sup>39</sup> WS (fn. 9) notes that while most complex predicates show 'complete distributional and semantic productivity,' there are a few exceptions: for example, the causative transitivity marker te- is less-than-productive. These exceptions, however, do not undermine the syntactic position on morphologically-complex predicates since the position does not necessarily claim that all morphologically-complex words should be syntactically-derived.

<sup>40</sup> Studies on complex verbs in agglutinative languages mostly support the syntactic position, with some exceptions. Aissen's (1974a/b) work on causative construction in Turkish is a good example. She argues that in Turkish although causees are syntactically inert (with respect to reflexive binding), complex causative predicates are derived by verb raising, which roughly corresponds to head-movement in the current framework. As for the Korean morphologically-complex causativization, many Korean linguists uphold the syntactic position, assuming certain versions of verb raising or of McCawley (1968) type '(semantic) predicate raising' in various frameworks (cf. H.-B. Lee (1970); I.-S. Yang (1972); C.-M. Lee (1973)). Also see a certain syntactic position in K. Park (1986) in Marantz's (1984) framework.

<sup>41</sup> such as verb raising, incorporation, or 'clause union,' which is powerful and productive enough to be syntactic (cf. Woodbury (1985)).

structure), which would explain both the morphological/lexical and syntactic nature of morphologically-complex predicates (cf. Sadock (1985); double structure approach). (C) The third approach, suggested by Baker (1985a), offers a syntactic counterpart of the strong lexicalist position: Morphologically-complex predicates are formed by a syntactic rule and their morphological amalgamation is a side effect of a syntactic rule.<sup>42</sup> The two approaches A and C take different views on the status of the morphology of complex words, although they assume some syntactic rule that triggers morphologically-complex verbs. The first two approaches (A and B) advocate syntax and morphology as two independent components, while the third approach C combines syntax and morphology. The strong third approach challenges some conventional views on morphology and syntax (cf. Chomsky (1970); Halle (1973); etc.). Thus, we discuss the third approach first and argue that it is untenable.

The third approach C is motivated by a certain generalization between morphological and syntactic derivations called the mirror principle (the MP), as explicitly and strongly formulated in Baker (1985a;375):

(32) The mirror principle:

Morphological derivations must directly reflect syntactic derivations (and vice versa).

Baker interprets the MP, assuming the following ordered cyclic nature of morphology (cf. Williams's (1981a;248) Righthand Head Rule): When affixes are all on the right side of a stem, leftmost affix A forms an innermost

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<sup>42</sup> While the strong lexicalist position incorporates the syntax of morphologically-complex verbs into the Lexicon, Baker's syntactic position combines the morphology of morphologically-complex verbs with syntax. Baker (1985/to appear) suggests it is a syntactic head-movement (especially V-to-V or N-to-V adjunction) that triggers the syntactic and morphological aspects of morphologically-complex predicates.

cycle with the stem; affix B forms the next cycle combining with the first cycle.

- (33) a. ...stem-affix A-affix B ...  
 b. ...[[...[[stem] affix A] affix B] ...

Given the ordered cyclic nature of morphology (33),<sup>43</sup> the content of the MP is that the outputs of the syntactic processes associated with affix A must be the inputs of the syntactic processes associated with affix B but not vice versa.<sup>44</sup>

Consider the following two examples which come under the scope of the MP:

- (34) a. Naa-mon-an-ya Mwape na Mutumba  
 1sS-past-see-recip-caus and  
 "I made Mwape and Mutumba see each other."  
 b. Mwape na Chilufya baa-mon-eshy-ana Mutumba  
 and 3pS-see-caus-recip  
 "Mwape and Chilufya made each other see Mutumba."

- (35) a. ?Naa-mon-eshya Mwape Mutumba  
 1sS-see-caus  
 "I made Mwape see Mutumba."  
 b. Mwape aa-mon-eshy-wa Mutumba na ine  
 3sS-see-caus-pass by me  
 "Mwape was made to see Mutumba by me."  
 (cf. (49) and (51) in Baker (1985a;395); data from Bemba, a Bantu language from Givón (1976))

The syntax (34) (the interpretation of reciprocals) exactly corresponds to that of their English counterparts except that the predicates are morphologically complex. The MP says that in (34a) with the morphological

<sup>43</sup> In fact, Baker (1985a; fn.18) notes that it is the cyclic structure of complex words that determines the order of syntactic processes. In the structure below,

(1) ... [[affix B [ stem ]] affix A]...  
 the syntactic phenomenon associated with affix B should occur before one associated with affix A does, given the MP. Affix order itself does not always predict the order of syntactic derivations. Thus Baker assumes that syntactic derivations are reflected in morphological cycle structure.

<sup>44</sup> Baker (1985a;378) states that the syntactic process associated with affix A must occur before the syntactic process associated with affix B (cf. fn. 6 in Baker (1985a)).

structure [[[see]-recip]-caus], reciprocal interpretation should apply first before a causative complex predicate is formed and that in (34b), after a causative complex predicate is formed, reciprocal interpretation applies. The interpretation of the reflexive is obtained accordingly, as we see in the English translations. In (35b) with the morphological structure [[[see]-caus]-pass], first, causativization and then passivization applies since the passive morpheme is affixed to a morphological structure that contains a causative affix and the stem. In (35b), the syntactic/Case structure of theta-structure, which we call an argument structure, is obtained, as predicted by the morphological cycle structure.

To explain the generalization called the MP, Baker (1985a) suggests the simple hypothesis that a single morphological and syntactic process takes place in a certain component of the grammar (i.e., a syntactic component). As a result, syntactic and morphological derivations occur at the same time. This hypothesis thus suggests that the MP is a derivative theorem, (which follows from the structure of the grammar, which allows a process which has both syntactic and morphological aspects) and that the MP is not therefore a basic principle of UG. Let us call this hypothesis the mirror image hypothesis (the MIH).

Even if the MIH derives the MP and therefore might lead to a simple grammar, as Baker claims, the virtue of the MIH is only apparent. While it might lead to a simple grammar, it raises some serious theoretical problems with respect to its implications within grammar. First, the MIH proposes that there are universally two different instantiations of the same syntactic rule, one accompanied by affixation and one accompanied by no affixation. For example, reflexivization is understood either as an instantiation of a binding phenomenon accompanied by head-movement (say,

refl-movement) or as a binding phenomenon (as in English, for example). This amounts to saying that there is no general rule of head-movement but that head-movement is associated with a certain specific syntactic phenomenon or with a side effect of a syntactic rule. The MIH is clearly not a desirable hypothesis from a theoretical point of view. It would be better to claim that head-movement and reflexivization are separate phenomena, governed by separate principles of grammar.

However, for the sake of argument, consider the MIH as it is. The hypothesis also suggests that there may be two different morphological principles -- morphology associated with syntactically-derived words (i.e., morphology as side effects of syntactic rules) independently of morphology(-proper) associated with lexically-derived words. If morphology and syntax form a component within grammar, and if morphology is also independently motivated to explain the morphological aspects of lexically-derived words, then the MIH allows some redundancy between the two components -- morphology/syntax and morphology -- since both lexically- and syntactically-derived words are subject to morphological principles, forming morphological cycles, or are subject to the RHR. For example, morphology but not syntax-proper determines left or rightward affixation of both types of complex words (as we will show; cf. Williams (1981a)); the cyclic nature of morphology, which is clearly not phonology, also applies to both syntactically- and lexically-derived words: [[[see]-caus]-pass] in (35) and [[construct]-ion].<sup>45,46</sup> In fact, the MIH is not only theoretic-

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<sup>45</sup> Smith (1982) and Sadock (1980) also note that morphologically-complex predicates, which are not lexically derived, are morphologically words; they imply that syntactically-derived words are subject to morphological principles.

<sup>46</sup> It has also been discussed that the rules of blocking which constrain lexically-derived words (cf. Aronoff (1976)) hold also in syntax; Miyagawa



cally undesirable but also dispensed with. In Chapter 5, we will show, under the present notion of head-movement, that the generalization stated as the MP is a consequence of a certain version of the HMC and of Strict Cyclicity, both of which are independently motivated and that the MIH has no explanatory power.

As long as a syntactic rule (head-movement) plausibly derives morphologically-complex predicates, as we will show in the following Chapters (also, cf. Baker (1985/to appear)), we do not need to motivate dual structure, as in Sadock (1985) (the position B discussed above). Thus, we adapt the approach A by suggesting that syntactic rules such as head-movement are responsible for the Type I 'complex predicate' but that morphology and syntax are independent of each other (no MIH): Given head-movement that provides inputs to morphology, we suggest that morphology applies to the outputs of syntax, claiming that morphology and syntax form separate components, as Chomsky (1970) and Halle (1973) originally suggested. Syntax applies whether there is morphological amalgamation or not and morphology applies whether words are derived syntactically or lexically. Note that without the MIH, head-movement becomes a very general syntactic rule devoid of any morphological aspects.

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(1984) shows that in Japanese, causative affixation is subject to the same rules of blocking as in lexically-derived words; if Japanese causativization is syntactic after all (cf. Kuno (1973); Shibatani (1972); also cf. Miyagawa (1984) who shows that Japanese causative affixation also has syntactic aspects), we would rather assume, in accordance with the null hypothesis, that there is one component of morphology which governs all morphologically-complex words, whether it is syntactically or lexically derived.

### 2.2.2. The type II 'complex predicate' and morphologically-complex predicates

The Type II 'complex predicate' shows aspects opposite to the Type I 'complex predicate,' which raises a problem about the status of syntactic structure in syntax. An instantiation of the Type II 'complex predicate' comes from Romance languages (such as Italian, Spanish, Catalan): In Italian, cliticization is strictly clause-bounded, as shown in (36).<sup>47</sup> But when a matrix verb belongs to a certain class of verbs (Vx; verrà (= will come) in (37)), a clitic (ti in (37)) may appear across an embedded clause as if there were no embedded clause.

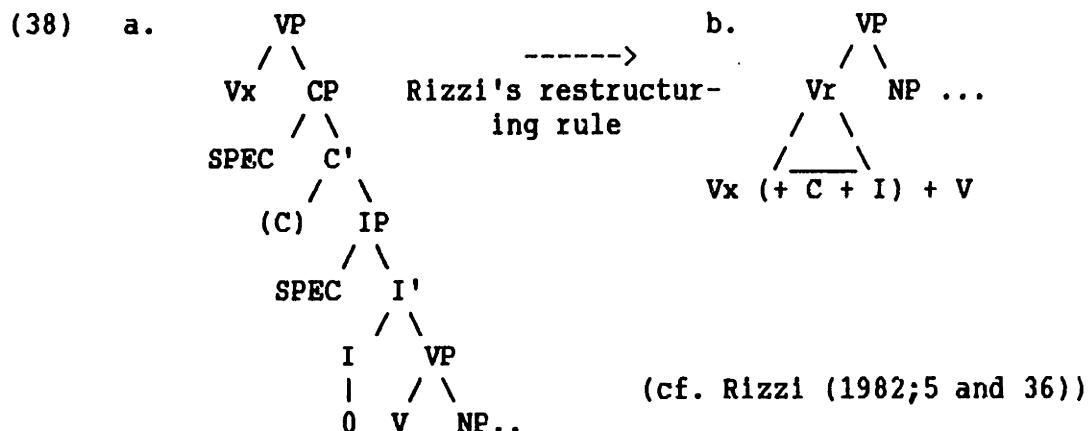
- (36) a. Piero deciderà di parlarti di parapsicologia.  
       "Piero will decide to speak to you about parapsychology."  
       b. \*Piero ti deciderà di parlare di parapsicologia.
- (37) a. Piero verrà a parlarti di parapsicologia.  
       "Piero will come to speak to you about parapsychology."  
       b. Piero ti verrà a parlare di parapsicologia. (cf. (1) in Rizzi (1982;1))

To account for the long-distance movement of cliticization in (37) (and for other aspects of sentences such as (37b); cf. Chapter 3), Rizzi (1978/1982) proposes the following hypothesis: A restructuring rule (governed by modals, aspectuals, and motion verbs (= Vx)) optionally reanalyzes a terminal substring  $V_x (C) V$  as a single verbal complex ( $Vr$ ) composed of morphologically-independent words, hence automatically transforming the underlying bisentential structure into a simple sentence, as

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<sup>47</sup> In the literature, the clause-bounded nature of the relation between a clitic and the position with which it is associated is described as subject to the Specified Subject Condition (cf. Chomsky (1973)) and therefore to binding (cf. Kayne (1975;1980)). The evidence comes from Romance causative constructions, under various analyses of 'complex predicates.'

shown in (38).<sup>48, 49</sup> (See Chapter 3 for more detailed discussion on the rule)



The first obvious objection to the restructuring rule is that it is not compatible with the projection principle (as many have already pointed out

<sup>48</sup> (38) represents our interpretation of Rizzi's restructuring rule in the present framework; it does not affect the conceptual core of Rizzi's rule.

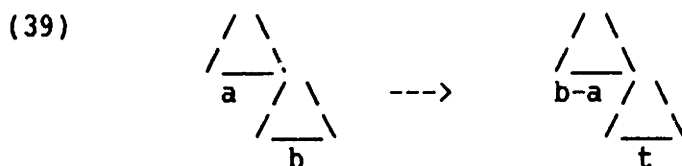
<sup>49</sup> There are other approaches to the phenomenon involved in the process in (38): They all agree that there is no rule which derives the 'restructuring' phenomenon but have various analyses of the 'restructuring' phenomenon: (I) syntactic structure exhibits double or parallel structure (cf. Zubizarreta (1982); Manzini (1983b); Goodall (1985); Haegeman and Riemsdijk (1986); and Di Sciullo and Williams (1987)) or (II) complex predicates are base-generated (Strozer (1981); Picallo (1985)) or (III) they are derived from bisentential clauses by a movement rule of V-projections (see Burzio (1986); also see Kayne (1975); Rouveret and Vergnaud (1980); Aissen (1974b)).

Alternative approaches, however, seem to have few explanatory aspects, as we will discuss in Chapter 3. Note also that there is a problem when we address proposals for the Type II 'complex predicate': Each proposal intends to cover different ranges of empirical data, including Romance causative construction or Rizzi's core 'restructuring' case or both, even including the Type I 'complex predicate.' In most cases, especially in dual/parallel structure approaches or in movement approaches, proposals for causative construction may also extend to explaining 'restructuring' construction. For this reason, both 'restructuring' constructions in Italian and Spanish and causative constructions in Romance languages are much discussed in connection with the notions of 'restructuring' and reanalysis. We, however, maintain that the 'restructuring' phenomenon is restricted to the phenomenon which Rizzi (1982) describes. According to Rizzi, the 'restructuring' construction in Italian exhibits at least auxiliary change and clitic climbing.

(Strozer (1981); Zubizarreta (1982); Picallo (1985)) since it deletes categories (tree pruning (cf. Ross (1967)) and changes structures.

If Rizzi's restructuring rule is syntactic after all, as Rizzi suggests, we can eventually question what rules create such effects, how we treat tree structure syntactically, and how we treat this 'reanalysis' in a theoretically well-motivated way. Suppose that the output of Rizzi's restructuring rule, apparently complicated or even random, actually results from a systematic output of a transformation. Then movement theory would have to allow another function, say  $\mathbf{Y}$ , of a transformation, which differs from the adjunction function  $\mathbf{X}$  and which must be compatible with the projection principle. Let us call a transformation with such a function the Restructuring Rule or RR for short. In acknowledging below that RR may also be accompanied by head-movement, giving rise to the morphologically-complex Type II 'complex predicate,' we suggest that RR may also be head-to-head transformation.

Let us now return to the notion of head-movement. Baker (1985/to appear) assumes without argument that the embedded head  $\underline{b}$  moves to the left side of the matrix head  $\underline{a}$ , forming  $\underline{b-a}$ . Thus it seems that head-movement is in general leftward.



If head-movement is adjunction and is motivated for morphological reasons, as we have suggested, leftward adjunction would explain the morpheme order in (39): The reason why head-movement is leftward can now be attributed to the Righthand Head Rule shown in (40) (the RHR; Williams (1981a;248))<sup>50</sup> and

<sup>50</sup> Both lexically-derived words (cf. Lieber (1981)) and syntactically-

to one of Marantz's versions of Lieber's feature percolation conventions given in (41) if the heads of complex words determine the categorial status of complex words, as commonly assumed:

- (40) RHR: In morphology, the morphological head<sup>51</sup> of a morphologically complex word is the righthand member of that word.  
 (41) Feature Percolation Convention (convention I):  
 the features of affixes (morphological heads) take precedence over the features of nonheads in percolation. (cf. Lieber (1981;49-50); Marantz (1984;122))

One good example of the categorial determination of the complex word in terms of the RHR comes from the data derived by noun-incorporation, which Baker (1985/to appear) argues is derived by N-to-V movement (adjunction).

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derived words show some exceptions to the RHR. As for some exceptions of syntactically-derived words, the causative construction in Chamorro provides a good example (Ken Hale (p.c.)):

- (i) Ha#na-taitai ham i ma'estru ni esti na lebblu  
 3sS-caus-read lper-obj teacher obl this book  
 "The teacher made/let/had us read this book." (cf. Chamorro data; (20) in Baker (1985a))

In (i), the causative morpheme is not on the right side of a stem. (As far as we know, in VSO languages, passive and causative morphemes are always on the left side of verbal stems.) If morphological heads determine the categorial status of complex words, then (i) may fail to raise a serious problem with respect to the RHR since both the causative morpheme and a stem are [+V, -N] (but cf. Williams (1981b); Di Sciullo and Williams (1987)). Some serious counterexamples of the RHR, however, come from noun incorporation data in Ponapean (cited by Rosen (1987); data from Rehg (1981;209-210)):

- (ii) I pahn khkos-likou (cf. (3c) in Rosen)  
 I will pleat-dress "I will dress-pleat."

Although N is in the position of a morphological head, the complex word V-N in (ii) is verbal. If the RHR should hold of incorporation in Ponapean, the complex word V-N would be nominal since N is the head. As we will argue, (i) and (ii) are not derived by head-movement but by the Restructuring Rule, which we will propose in Chapter 3; they do not obey the RHR for reasons that we will discuss. We will suggest in Chapter 3 that certain words syntactically-derived by head-movement are subject to the RHR.

<sup>51</sup> Williams (1981a) uses the terminology 'head of a word.' For reasons which will be clear later (especially in Chapter 3), we use the terminology 'morphological head,' which is a terminological variant at this point.

- (42) a. Yao-wir-a?a ye-nuhwe?-s ne ka-nuhs-a?  
 pre-baby-suf 3fs/3n-like-asp the pre-house-suf (V ...N)  
 "The baby likes the house."  
 b. Yao-wir-a?a ye-huhs-nuhwe?-s  
 pre-baby-sur 3fs/3n-house-like-asp (N-V)  
 "The baby house-likes." ((14a and b) in Baker (to appear;  
 ch.3); Mohawk data from Postal (1962))

Notice that N in fact moves to the left side of V so that V is a morphological head and that the categorial status of N+V is [+V,-N]; like V, N+V takes agreement and aspectual markers. Thus, we suggest that the target of head-movement becomes a morphological head and that head-movement is motivated for morphological reasons and is leftward adjunction to satisfy the RHR. In short, the change of the string order between V and N before and after the application of head-movement must derive from a property of head-movement: head-movement is motivated by morphological reasons (due to morphological dependency of heads) and the target is located rightward in morpheme order/structure to become a morphological head of complex words. Notice that even when the target and the trigger have the same categorial status (Vs), the order between the causative morpheme and V are reversed when they are morphologically amalgamated, as we see in the Chichewa causative construction below.

- (43) abusa a-na-dy-ets-a mbuzi udzu  
 goatherds 3P-past-eat-caus-asp goats grass  
 "The goatherds made the goats eat the grass."  
 ^ |  
 | \_\_\_\_\_ | (cf. (19) in Baker (1985/to  
 appear; ch. 4))

Interestingly, however, there are some specific classes of verbs that preserve the relative string order with respect to embedded verbs when they are morphologically amalgamated, unlike the causative construction in (43). Consider these Chichewa examples:

- (44) a. Ndi-ka-pemp-a pamanga  
 1sSP-go-beg-asp maize  
 "I am going [to beg maize]."

b. Kati madzi banu dza-man-e-ni ine  
 If water your come-refuse-asp-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 (1985/to appear;ch. 4))

Both (43) and (44) illustrate morphologically-complex predicates but those morphologically-complex predicates show different morpheme orders: In (43), the embedded predicate comes first, while in (44), the matrix predicate comes first. This seemingly trivial fact becomes interesting when we notice that the matrix predicates in (44) fall under the class of 'restructuring' verbs in Italian:<sup>52</sup> The complex words in (44) that show different morpheme order from usual head-movement data (cf. 43) raise two important theoretical and empirical issues. One is (A) whether these morphologically complex words in (44) are derived by a different type of head-movement; the other is (B) whether 'restructuring' effects are also obtained when predicates are morphologically amalgamated. The answer to the first question is linked to a question on the status of I-to-C or V-to-I head-movement discussed in Section 2.1.. (Remember that we speculated in Section 2.1. that C/I and I/V amalgamation may be obtained by a head-to-head transformation other than head-movement.) If the answer to the second question is affirmative, then we suspect that the rule governing 'restructuring' may be a type of head-to-head transformation (as we see in the

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<sup>52</sup> According to Watkins (1937:92-104), these matrix verbs are called auxiliary verbs, which are always prefixed with respect to main verbs; on the other hand, causative (passive; applicative) affixes are always suffixes. Watkins (1937:98) notes: -ka- (go) in (44a) indicates movement to some place for the purpose of performing the action expressed in the stem and may be interpreted as 'go in order to.' Like an auxiliary, it can be inflected, not being restricted to any particular tense. -dza- (come in order to) in (44b) is obviously derived from the verb ku.dza (to come). We will discuss the auxiliary nature of 'restructuring' verbs in Italian (cf. Napoli (1981)) and in Korean in Chapter 3.

morphologically-complex verbs in (44)). In fact, in consistence with the syntactic position of Type I 'complex predicates,' we will suggest that the 'restructuring' phenomenon can appear whether or not predicates are morphologically complex (cf. Chapters 3 and 4). Given that syntax and morphology are independent, this suggestion is not unpalatable.

In fact, the first goal of this thesis is to show that 'restructuring' derives from an X-head-to-X-head transformation (called RR), which causes overt or covert categorial amalgamation. We not only suggest that the 'restructuring' phenomenon in Romance languages is derived by a transformation called RR, but also claim that the phenomenon is universal. In fact, we will show that the 'restructuring' phenomenon is not the only one derived by RR and that RR is responsible for a number of other linguistic phenomena including ones that used to be described in terms of I-to-C and V-to-I head-movement. We also show that RR leads to a number of theoretically desirable consequences.

The second goal is to show that categorial amalgamation derived by RR may be accompanied by head-movement, giving rise to a different morphological structure from one derived only by head-movement. We will show that morphologically-complex words (Type I 'complex predicates') are ambiguous depending on their syntactic derivations -- complex words derived by head-movement (move-head) and complex words derived by RR accompanied by head-movement (move-category). We also show that the morphology, syntax, and semantics of morphologically-complex words derived by RR differ from those of morphologically-complex words derived by head-movement, as predicted.

The third goal is to show that the two Types of 'complex predicate' are not restricted to (some) Romance languages or to polysynthetic or agglutinative languages but also occur in English type languages as pretty



general phenomena (especially see Chapter 4). On the other hand, we will show that different parameterization of the levels of rule application plays a nontrivial role in triggering the different syntax of complex predicates; the properties of syntactically-derived complex predicates are determined not only depending on syntactic derivations (RR or head-movement) but also depending on the parameterization of the levels of rule application.

## CHAPTER 3: THE RESTRUCTURING RULE -- AFFECT/MOVE-CATEGORY

### 3.0. Introduction

In this Chapter, we introduce and develop a transformational rule we call the Restructuring Rule (RR), which may or may not be accompanied by the morphological amalgamation which we assume is obtained by head-movement (cf. Baker (1985/to appear)). We suggest that RR, which is motivated to explain the 'restructuring' phenomenon in the literature, is a type of transformational rule, which differs from the usual transformation called move-alpha: RR -- an X-head-to-X-head covert transformation -- is triggered by a certain categorial defectiveness/dependency of an X-head and affects minimal categories (X-heads) changing the interpretation of categories with respect to the notion of government but leaving configurational structure intact. We will call this covert operation affect-category.

By explaining the 'restructuring' phenomenon in terms of a transformational rule (RR), we will suggest that the phenomenon is universal, unlike Rizzi (1982), who suggests that it is language-specific; we will, in fact, show that Korean also exhibits the 'restructuring' phenomenon (cf. Chapter 5). The 'restructuring' phenomenon discussed by Rizzi (1982) will therefore be understood as some specific instantiations of general RR effects, i.e., the Italian 'restructuring' phenomenon as a language-specific instantiation of V-to-V RR. Thus we will see that V-to-V RR effects in other languages are differently instantiated from Italian. On the other hand, we also show that RR is responsible for a number of other seemingly-unrelated linguistic phenomena and claim that the 'restructuring' effects,

which will be understood in terms of deeper RR effects, are larger than previously assumed in the literature. In other words, different instantiations of RR will explain various different constructions such as (causative) small clauses or certain instantiations of noun-incorporations (see Chapter 4 for more instantiations).<sup>1</sup>

We show, by examining 'restructuring' cross-linguistically, that complex predicates/words derived by RR (which we will call R-complex predicates/words)<sup>2</sup> may also be morphologically complex. RR may be accompanied by head-movement; RR accompanied by head-movement (overt RR) derives complex X-heads that dominate morphologically-complex terminal strings, giving rise to a one-story complex X-head projection from multi-story simplex X-head projections. We will thus call overt RR accompanied by head-movement move-category; overt RR affects both configurational structure and categorial dependency.

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<sup>1</sup> As we will show, RR is not only responsible for 'reanalysis' phenomena including the 'restructuring' phenomenon, but also for other phenomena related to categorial deletion. For example, RR will lead us to understand S-bar deletion or IP selection in the ECM construction in a different way (cf. Section 4.1.): C-to-I RR triggers an ECM environment without deleting CP nodes or without motivating IP selection; C-to-I RR makes CP and IP projections combine into a projection of C+I, maintaining the independence of each projection with respect to the wide interpretation of the projection principle.

<sup>2</sup> The notion of complex word is purely terminological; Type II complex words ('restructuring' predicates) are not words as morphological entities. We use the terminology 'R-complex word' for words abstractly-linked through RR. The notion of R-complex word is apparently conceptually similar to the notion of morphosyntactic complex word in Zubizarreta's (1985) sense. The two notions, however, differ and exhibit two different explanatory domains. Zubizarreta's notion intends to explain the Romance causative construction; the French/Italian faire/fare + V sequence is considered as a 'complex verbal unit' (also cf. Rouveret and Vergnaud (1980)). On the other hand, as we will show later, the notion of R-complex words does not consider the Italian fare + V sequence as a unit, while it does consider the French faire + V sequence as a unit (cf. Section 4.2.).

Consequently, syntactically-derived morphologically-complex words are ambiguous: They are derived either by overt RR (RR accompanied by head-movement) or by head-movement. (We will call morphologically-complex words derived by head-movement M-complex words and those derived by overt RR M/R-complex words.) UG thus contains at least the following three different 'complex-words':

- (1) a. M-complex words      -- head-movement  
       b. M/R-complex words    -- RR and head-movement (= overt RR)  
       c. R-complex words      -- RR

These three different 'complex words' are divided up in the following fashion (for Type I and Type II division, see Chapter 2).<sup>3</sup>

(2)	RR	head-movement	
Type Ia		M-complex words	(move-alpha)
Type Ib	M/R-complex words	M/R-complex word	(move-category)
Type II	R-complex words		(affect-category)

Some typical examples of each Type are illustrated in (3): (3a), (3b) and (3c), representing instantiations of Type Ia, Ib, and II complex predicates, respectively.

(3) Chichewa causative construction:

- a. Buluzi a-na-sek-ets-a      ana  
    lizard SP-past-laugh-caus-aspt children  
    "The lizard made the children laugh." (Chichewa data; (42b) in Baker (1985/to appear; ch. 4))

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<sup>3</sup> One might suggest that just as R-complex words have overt counterparts, so M-complex words may also have covert counterparts. Baker (1985/to appear), in fact, proposes LF-head-movement by analogy with LF-wh-movement (cf. Huang (1982)) to account for some linguistic phenomena, including the 'restructuring' phenomenon in Italian. Later, we will interpret the output of head-movement in a more restricted and systematic way than Baker (1985/to appear) does, so that any version of LF-head-movement cannot be extended to have 'restructuring' effects. Under our interpretation of head-movement, we will leave open a possibility of having LF-head-movement (cf. fn. 46 in Section 3.3.).

Chichewa complex predicate construction with an auxiliary type of verb:

b. Ndi-ka-pemp-a pamanga

IsSP-go-beg-asp maize

"I am going to beg maize." (Chichewa data from Wilkins (1937;98))

Italian 'restructuring' construction:

c. Piero ti verrà a parlare di parapsicologia.

"Piero to you will come to speak about parapsychology." (Italian data; (1) in Rizzi (1982;1))

As we will show, the different morpheme order,<sup>4</sup> as shown in (3a and b), will signify whether a complex predicate instantiates Type Ia or Type Ib. (3c) illustrates a typical 'restructuring' construction with clitic climbing; we will suggest that V-to-V RR applies to (3c), forming a V+V R-complex word.

While affect-category (RR) applies in syntax (probably at D-structure) and move-alpha (head-movement) in syntax, move-category (the combination of RR and head-movement) applies in various ways, depending on the levels of rule application; head-movement may apply in the PF component only when it is accompanied by RR. We will have the following combinations of levels of rule application.<sup>5,6</sup>

(4)	head-movement	RR	configurational structure
a. covert RR	----	D-structure	syntax/LF
b. deep-overt RR	syntax	D-structure	----
c. surface-overt RR	PF component	D-structure	syntax/LF
d. head-movement	syntax	----	syntax/LF

<sup>4</sup> In (3a), the matrix predicate follows the embedded predicate; in (3b), the matrix predicate precedes the embedded predicate.

<sup>5</sup> The level of the application of head-movement (syntax or PF) plays some syntactically-significant role in the case of M/R-complex words (cf. also Chapter 4).

<sup>6</sup> In Section 4.4., we add one more instantiation of RR -- surface RR --, in which overt RR applies in the PF component.

RR and head-movement are motivated for different reasons under the licensing theory of transformation; RR is motivated by a certain categorial dependency while head-movement by a certain morphological dependency. Note that the notions of head-movement and RR that derive various types of complex predicate implies that the X-head components of complex predicates are independently projected at D-structure. Both RR and head-movement are (X-)head-to-(X-)head transformations; RR affects X-heads whereas head-movement affects heads. Therefore the effects of those two processes are expected to differ; RR effects and head-movement effects will be delimited in an empirically and theoretically significant way. We will discuss how these three complex words differ in their morphological, syntactic, and semantic internal structures by proposing the notions of s-head and m-head that are linked to the notions of RR and head-movement. One trend in the literature on 'complex predicates/words' is that all syntactically-derived morphologically-complex words are derived by the same mechanism and that therefore their morphology, syntax, and semantics are explained under the same principle and have no systematically predicated ambiguity. Only parameterization on the level of rule application plays a significant role with respect to the syntax of clauses containing complex predicates (cf. Aissen (1974); Marantz (1984)). Such a trend is explicitly articulated in Baker (1985/to appear), who argues that (transformationally-derived) complex predicates are derived by (LF or syntactic) head-movement.<sup>7</sup> However, we will characterize two types of morphologically-complex words,

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<sup>7</sup> Likewise, 'verb/semantic predicate-raising' in the generative semantics tradition (cf. McCawley (1968)) and clause-union in the relational grammar tradition (Perlmutter (1983;ed.)) are also assumed to produce complex predicates which morphologically, syntactically, and semantically have the same shape (also see Marantz's notion of merger).

which differ in their morphology, syntax, and semantics, according to their syntactic derivations.\*

In the Section immediately following, to motivate a certain version of the syntactic position, we discuss V-INFL-C amalgamation in Korean. Korean data are significant from our point of view, since Korean exhibits rich morphological realizations of C and I while C and I heads are all morphologically amalgamated on verbal morphology. We will argue that Korean morphologically-complex verbals are also syntactically derived; certain '(post)inflectional' amalgamation in Korean lie within the syntactic domain (cf. Allen (1978); Anderson (1982)).\*

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\* Here, we will not discuss lexically-derived words in any detail. Our concern will be restricted to syntactically-derived (morphologically-) complex words.

\* See Lieber (1981) and Kiparsky (1982) for another view that 'inflectional' morphology comes under the domain of the Lexicon.

### 3.1. Korean verbal morphology and the syntactic position

#### 3.1.1. Functional categories in Korean

In this Section, we discuss Korean<sup>1</sup> verbal morphology to suggest the following: (A) 'inflectional' amalgamation in an agglutinative language is syntactically derived through a certain type of morphological combination of V and INFL(AGR) (and C) (cf. Section 4.1.), and (B) a clause is a projection of C; V is minimally projected up to CP. We show that Korean employs an INFL node although tense elements are in most cases amalgamated with V and although overtly realized agreement is apparently not rich. We will confirm that like any X-heads, INFL and C categories (projected from functional Lexical items) dominate phonetic, syntactic, or semantic features whose nature or realization is language-specific, subject to the projection principle on X-heads.

- (1)           X<sub>o</sub>  
              |  
          [aS<sub>1</sub>, ..., aS<sub>n</sub>, aP, .. a ..]

In (1), S<sub>1</sub>...S<sub>n</sub> are syntactic or semantic features and P is a bundle of morphological and phonetic features; a represents lexical properties such as selectional properties; and X represents a bundle of categorial (and grammatical) features (cf. Chapter 2).

##### 3.1.1.1. The head of S

There have been proposals that in some languages, S is a projection of V but not of INFL.<sup>2</sup> For example, Whitman (1984) explicitly suggests for

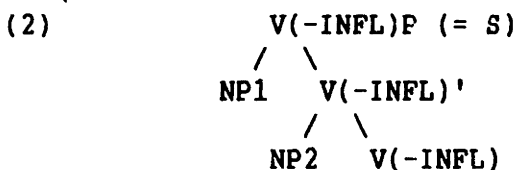
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<sup>1</sup> Korean, a typical head-final language, is a free word order language with morphologically-complex verbals and an overt case marking system, which is characteristic of agglutinative languages.

<sup>2</sup> The issue of what the head of S may be is also raised in connection with



Japanese that Japanese S is a projection of V (more precisely V-INFL) as given below, which still explains the subject-object asymmetry<sup>3</sup> attested to in Japanese: The subject (NP1) is hierarchically higher than the object (NP2).

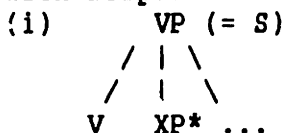


Whitman (1985;26) claims: "Selection of INFL as the head of S in Japanese requires a great deal of empirically unmotivated abstraction from superficial structure: tense and modal elements normally associated with INFL appear as suffixes on the verb; they do not agree in any visible sense with the subject and thus cannot plausibly be argued to contain AGR; ..."<sup>4</sup> Whitman's position implicitly advocates a version of the strong lexicalist position: Morphologically-complex verbs with INFL (tense or modal) elements (V-INFL) are derived in the Lexicon and their internal structures are opaque to syntax.

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the V-second order in Germanic languages (cf. Taraldsen (1984) for the 'Head of S' parameter; Emonds (1986); Haider and Prinzhorn (1986;eds); Haegeman (1986)).

<sup>3</sup> According to Kiss (1985), in languages such as Hungarian, S is a flat projection of V, forming a so-called nonconfigurational structure (cf. Hale (1982;1983)), since Hungarian shows no syntactic subject-object asymmetry with respect to binding condition C and the ECP.



We will show in Chapter 4 that Hungarian flat structure is derived by the overt RR that applies in syntax, advocating the syntactic position that will be proposed in this Section.

<sup>4</sup> We do not discuss his evidence that Japanese has no VP node. See Choe (1985b) for arguments against his evidence. Below, we discuss positive evidence that Korean employs the VP node.

Consider the following Korean data first:<sup>5</sup>

- (3) a. Chelswu-ka nywuyok-ey ka-ss-ta  
           -sub New York-to go-past-em "Chelswu went to New York."  
       b. Chelswu-ka nywuyok-ey ka-ss-ess-ta  
           -sub New York-to go-past-past-em  
           "Chelswu had gone to New York."  
       c. Chelswu-ka nywuyok-ey ka-lke-ta  
           -sub New York-to go-will-em  
           "Chelswu will go to New York."

The INFL elements in Korean are mostly amalgamated on the verbal morphology, as shown above. The past tense marker (-{0/e/a}ss-) (3a), the past perfect marker in (3b),<sup>6</sup> and the future tense marker in (3c) are all

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<sup>5</sup> In Korean glosses, we follow the Yale Romanization system, which is a direct Romanization from the Korean spelling system to the English alphabet system; the Yale system does not reflect pronunciation.

As for vowels, one-one relations between letters and their pronunciation hold, while for consonants, the pronunciation is sometimes affected by minor or peculiar phonological rules, with some exceptions. Some regular rules are: (i) obstruents and affricates become voiced between vowels or after [m,n,ng,l/r]. (ii) {0/e/a}ss (past tense marker) is pronounced as [{0/e/a}t].

The verbal morphology of Korean has the following order (morphemes are separated by -): stem - (agreement) - (tense) - sentence ending marker (- complementizer). When necessary, the following abbreviations are used: TOP - topic marker; CON - contrastive focus marker; comp - complementizer; em - (sentence) ending marker; Q - question marker; pres - present tense marker; past - past tense marker; fut - future tense marker; H - honorific marker; xH - honorific suppletive of x; ben - benefactive marker; pass - passive marker; Inf - infinitive or [-Tense] marker; gen - genitive case marker; sub - subjective case marker; and obj - objective case marker.

As for the glosses of case-markers, we use the terminology 'subjective' or 'objective' corresponding to the notion of NOM or ACC. Topic, subjective, and objective markers have morphological variants according to their phonetic environments: nun/un, ka/i and lul/ul. In glosses, we ignore these variants, using nun, ka and lul only.

As for the glosses of other languages, we follow the glosses used in the sources (with some modifications when necessary).

<sup>6</sup> Perfect tense is represented by reduplication of the past tense marker -{0/a/e}ss-.

morphologically affixed to V. In addition, C (-ta-ko)<sup>7</sup> is also amalgamated to V-I, as shown below.\*

- (4) na-nun Chelswu-ka hakkyo-ey ka-ss-ta-ko sayngkakha-n-ta  
 I-TOP -sub school-to go-past-em-comp think-pres-em  
 "I think Chelswu went to school."

Under the strong lexicalist position, the word ka-ss-ta(-ko) (= go-past-em(-comp)) in (3a) and (4) would project an X-head in syntax, forming a one-story syntactic projection (at D-structure); none of the morphemes has syntactic projection and therefore a possible clausal projection would be:

- (5)
- ```

      VICmax
     /    \
    /      \
  NP1      VIC'
         /   \
        /     \
      NP2      VIC
         |
      ka-ss-ta-ko  where VIC represents an Xo
  
```

The structure (5) in which the subject (NP1) is hierarchically higher than the object (NP2) is compatible with binding facts in Korean. In fact, Korean shows a subject-object asymmetry with respect to binding condition C, as shown in the contrast between (6a) and (6b).

- (6) a. Chelswu<sub>i</sub>-uy emeni-ka ku<sub>i</sub>-lul salangha-n-ta  
           -gen mother-sub he-obj love-pres-em  
       "Chelswu<sub>i</sub>'s mother loves him<sub>i</sub>."

<sup>7</sup> We tentatively assume that the complex morpheme -ta(-ko) (-em-comp) lies under the C category. It is, however, possible that -ta- and -ko are dominated by two independent functional categories one of which is C and that they are amalgamated into -ta-ko by a certain process (i.e., overt RR, as we will see in Section 4.4.).

\* We assume, as M.-Y. Kang (p.c.) also notices, that sentence ending markers are realizations of C, which means that sentence ending markers represent the existence of CP in root clauses in Korean. When an embedded clause is interrogative, an interrogative marker (Q) that roughly corresponds to English whether appears with the complementizer -ko or -nun-, as shown in (i) (also cf. fn. 7).

- (i) emeni-kkeyse Chelswu-ka hakkyo-ey ka-ss-{nunya-ko/nun-ci} mwul-ess-ta  
       mother-subH -sub school-to go-past-{Q-comp/comp-Q} ask-past-em  
       "Mother asked whether Chelswu went to school."

- b. \*ku<sub>1</sub>-ka Chelswu<sub>1</sub>-uy emeni-lul salangha-n-ta  
 he-sub -gen mother-obj love-pres-em  
 "He<sub>1</sub> loves Chelswu<sub>1</sub>'s mother."

Also, Korean shows Weak Cross-Over effects (cf. 7b).<sup>9</sup>

- (7) a. nwukwu<sub>1</sub>-ka {[0]<sub>1</sub>/caki<sub>1</sub>/ku<sub>1</sub>} emeni-lul salangha-0-pnikka  
 who-sub self/he mother-obj love-pres-Q  
 "Who<sub>1</sub> loves his<sub>1</sub> mother?"  
 b. \*{[0]<sub>1</sub>/caki<sub>1</sub>/ku<sub>1</sub>} emeni-ka nwukwu<sub>1</sub>-lul salangha-0-pnikka  
 self/he mother-sub who-obj love-pres-Q  
 "Who<sub>1</sub> does his<sub>1</sub> mother love?"

Although the binding facts in Korean are not incompatible with the structure given in (5), there is a theoretical reason to refuse the structure (5) (the strong lexicalist position). V-INFL amalgamation is highly productive and the V-INFL combination shows no semantic idiosyncrasy -- a clear reason to suspect that the V-INFL amalgamation occurs in syntax (cf. Chomsky (1970)). There are some empirical reasons, also. First, INFL elements can be morphologically separated from V. When V is negated or followed by a particle such as -man (= only/just) or -nun (the contrastive marker), a main verb appears in its tense-neutral form (V-ci/ki),<sup>10</sup> without

<sup>9</sup> Korean employs the null argument represented as [0] in (7), like Chinese or Japanese (see Huang (1984) for an analysis of null arguments in Chinese); whether it is pro or a variable left by a null Topic marker is not our immediate concern here.

<sup>10</sup> While the morpheme -ki in Korean is also used as a nominalizer, -ki in (8) is an allomorph of -ci, which is used to indicate the tense-neutral form of V, like to in to V of English. One might suggest, based on (i-ii), that unlike English to V, V-ki is not agreement-neutral:

- (i) ka-si-(?ess-)ki-nun ha-si-ess-ta  
 go-H-(past-)to-CON do-H-past-em "[0] did go (but...)."
   
(ii) ka-si-(?ess-)ki-man ha-si-ess-ta  
 go-H-(past-)to-only do-H-past-em "[0] only went."

In (i-ii), the honorific marker appears both with V-ki and with the auxiliary verb ha-. We, however, assume that -si- can be duplicated unless V-ki is either topicalized or clefted (cf. (9) and (12)), given the ubiquitous realization of AGR in Korean, which will be discussed below (cf. (33) and fn. 11). In short, we assume that V-{ki/ci} is tense/agreement-neutral.

being morphologically amalgamated with tense elements. Tense elements are affixed to the auxiliary verb ha- (do):

- (8) a. Chelswu-ka nywuyok-ey ka-ki-nun ha-ess-ta  
           -sub New York-to go-to-CON do-past-em  
           "Chelswu did go to New York (but ...)."  
   b. Chelswu-ka nywuyok-ey ka-ki-man ha-ess-ess-ta  
           -sub New York-to go-to-only do-past-past-em  
           "Chelswu had just gone to New York."  
   c. Chelswu-ka nywuyok-ey ka-ci mos-ha-ess-ta  
           -sub New York-to go-to not-do-past-em  
           "Chelswu did not go to New York."

The examples in (8) show that V and INFL elements are morphologically independent and that certain morphemes may block the surface morphological amalgamation of V and INFL elements.

Second, there is evidence that Korean employs the VP node, as we argue in Choe (1985b). A piece of evidence among others we discuss in Choe (1985b) is that Korean employs transformations referring to the VP node. First, Korean employs VP-topicalization (9a) and base-generated VP-topicalization (9b).

- (9) a. [ton-lul pel-ki-nun] apaci-kkyese ha-si-0-ko (from Choe (1985))  
           money-obj make-to-TOP father-subH do-H-pres-and  
           [ton-lul ssu-ki-nun] emeni-kkeyse ha-si-n-ta  
           money-obj spend-to-TOP mother-subH do-H-pres-em  
           "As for making money, father does, and as for spending money, mother does."  
   b. [sal-ki-nun] kebwugi-ka kacang olay sa-/\*ha-n-ta  
           live-to-TOP turtle-sub most long live-/do-pres-em  
           "As for living, turtles live longest."

In (9a), the object and the agreement/tense-neutral form of V are preposed<sup>11</sup> and the auxiliary ha- (do) with agreement/tense elements (ha-si-0-

<sup>11</sup> The V-ki in VP-topicalized sentences is tense- and agreement-neutral. If agreement appears in a VP-nun phrase, the sentence has the contrastive meaning. (As in Japanese (cf. Kuno (1973)), the Korean topic marker -nun is also used as the contrastive marker.)

(i) ton-lul pe-si-ki-nun apaci-kkeyse ha-si-n-ta  
       money-obj make-H-to-CON father-subH do-H-pres-em  
       =/"As for making money, father does."  
       "Father does make money (but....)."

If V has a honorific suppletive, then V-ki should appear as VH-ki (ii):

(= do-H-pres)) is left behind. If the object is not preposed, the sentence is not acceptable:

- (10) \*[pel-ki-nun] apeci-ka ton-lul ha-si-0-ko  
make-to-TOP father-sub money-obj do-H-pres-and  
 [ssu-ki-nun] emeni-ka ton-lul ha-si-n-ta  
spend-to-TOP mother-sub money-obj do-H-pres-em (cf. 9a)

Thus (9a) instantiates a clear case of VP-topicalization. The example (9b), in which V is accompanied by a verbal modifier, illustrates an instantiation of base-generated VP-topicalization. In (9b), the verb sal- (live) appears both in a topicalized phrase and in a main verbal phrase; the auxiliary verb ha- in the verbal phrase is not allowed. The topicalized VP sal-ki (= live-to) and the phrase olay sal- (= live long) exhibit the typical general-specific relation between base-generated NP topics and the subjects in the base-generated NP topic sentences shown below (also cf. Li and Thompson (1976)).

- (11) kkot-nun cangmi-ka choiko-i-0-ta  
flower-TOP rose-sub best-be-pres-em  
 "As for flowers, roses are best."

In addition, Korean also employs VP-clefting, as shown below.<sup>12</sup>

- (12) Chelswu-ka mayil ha-nun il-i-0-la-n [mek-ko ca-ki] i-0-ta  
 -sub everyday do-comp thing-be-pres-em-comp eat-and sleep-to be-pres-em  
 "It is eating and sleeping that Chelswu does everyday."

In (12), the V-ki form is agreement/tense-neutral and VP is rightward-clefted. INFL elements are left behind with the auxiliary verb ha- (do), as in VP-topicalization (cf. 9a).

- 
- (ii) cinci-lul {tusi/\*mek}-ki-nun apeci-kkeyse ha-si-ess-ta  
 mealH-obj {eatH/eat}-to-CON father-subH do-H-past-em  
 "Father did have meals (but...)."

In (ii), the contrastive meaning is stronger than the topic meaning.

<sup>12</sup> Korean does not employ the it..that clefting construction but the pseudo-clefting construction. The Korean clefting construction allows VP-clefting, as in (12), unlike the it..that clefting construction in which VP is not clefted (cf. Rochemont (1986)).



- b. wh-phrases/quantificational phrases can be linked with the anaphor caki (or the null pronominal [0]), but not with the pronoun ku.<sup>15</sup>

-yo, any answer in (i) with -pnita is not appropriate; when an answer ends with the formal ending marker -pnita, a full verbal should be repeated. This fact is unclear in (i) probably because of the length of a repeated NP phrase in (ic), but becomes clear when we examine the answer patterns of simple question sentences. In (ii), the answer is not appropriate unless a full verbal is repeated.

(ii) Q: ne-nun nwukwu-lul Seoul-yek-eyse manna-ss-upnikka?

you-TOP who-obj -station-at meet-past-QH

"Who did you meet at Seoul station?"

A: a. ??tongchangsayng-i-0-pnita

former classmate-be-pres-emH "It's (my) former classmate."

b. tongchangsayng-lul manna-ss-upnita

former classmate-obj meet-past-emH

"(I) met (my) former classmate."

In addition, if Subjacency matters, when an answer ends with -pnita, (ib) would be better than (ia). The grammaticality of the two answers is, however, opposite, as shown in (ia) and (ib), if we consider the degree of ungrammaticality.

Apart from Subjacency problems, the question-answer pattern, indeed, seems to indicate whether the pied-piping convention is used in LF. Consider the following data drawn from E.-J. Lee (1987):

(iii) Q: [NP [PP etisel] sa-0-n sikyeyl-ka kasang ssa-0-upnikka?

where buy-past-comp watch-sub most inexpensive-pres-QH

\*"Watches that (you) bought where are most inexpensive."

A: a. [PP Lotte paykhwacem-(eyse)]-yo

"It's Lotte department store."

b. [NP Lotte paykhwacem-eyse sa-0-n sikyeyl]-0-0-yo

"It's a watch that (I) bought at Lotte department store."

(iv) Q: [NP [PP ettehkey] pe-0-n tonl-ka kasang kwicwungha-0-upnikka?

how earn-past-comp money-sub most valuable-pres-QH

\*"money that (you) earned how is most valuable."

A: a. \*[PP pam-nac-uro yelsimhi ilha-e-sel]-0-0-yo

"It's by working hard day and night."

b. [NP pam-nac-uro yelsimhi ilha-e-se pe-0-n tonl]-i-0-yo

"It's money that (I) earned by working hard day and night."

The contrast between (iiia) and (via) is clear even with the ending marker -yo; the contrast reminds us of an ECP effect (CED effects; Huang (1982)). (Note that any answer with -yo is appropriate in (i); in Korean, extraction out of the subject position does not trigger ECP effects.) Even if the question-answer pattern indicates whether the pied-piping convention has applied, Subjacency effects are not observed, as we see in (i-ii) and (iiia). Thus we maintain the usual assumption that Subjacency does not apply in LF.

<sup>15</sup> In fact, a variable left by a quantificational phrase does not bind the pronoun ku in Korean. Hong (1985) independently observes this fact. For a discussion of the properties of binding of pronouns in Korean, see Hong (1985). Also see Saito and Hoji (1983) for pronominal binding in Japanese.





"Which painter<sub>i</sub> do you remember {\*the/??a} fact that (he<sub>i</sub>) loves his<sub>i</sub> work very much."

- b. ??ne-nun Chelswu-ka todaychey mwuet-lul ha-ess-ta-nun  
 you-TOP -sub the hell what-obj do-past-em-comp  
 (\*ku) somwun-lul tul-ess-ni?  
 the rumor-obj hear-past-Q

"What<sub>i</sub> the hell did you hear {\*the/??a} rumor that Chelswu did (it<sub>i</sub>)."

- c. ne-nun Chelswu-ka mwuet-lul ha-ess-ta-nun  
 you-TOP -sub what-obj do-past-em-comp  
 (\*ku) somwun-lul tul-ess-ni?  
 the rumor-obj hear-past-Q

"What<sub>i</sub> did you hear (a/\*the) rumor that Chelswu did (it<sub>i</sub>)."

In (15), -hi (Q) or -ipnikka (HQ) is served as the scope marker of a wh-phrase; in LF, a wh-element moves to a position in the clause that contains a scope marker, which is probably a realization of C. The usual wh-in-situ phrases do not show any Subjacency effects, as shown in (15c). On the other hand, the marginality (??) of the CNPC sentences in (15a and b) indicates that the sentences instantiate Subjacency effects, illustrating weak grammaticality.

The ungrammaticality of (15a) cannot be attributed to the fact that wh-elements are linked to the pronoun ku (cf. 14b) since which-phrases and what-the-hell phrases can be linked with the pronoun ku. These two wh-phrases may bind the pronoun ku as well as the anaphor caki, as shown in (16a and b) (cf. fn. 19).<sup>20</sup> On the other hand, ku is not bound by a usual wh-in-situ phrase, whose ungrammaticality with ku is severe, as shown in (16c).

- (16) a. enu-hwaka<sub>i</sub>-ka {ku<sub>i</sub>/caki<sub>i</sub>}-uy cakphwum-lul salangha-0-pnikka?  
 which-painter-sub he<sub>i</sub>/self<sub>i</sub>-gen work-obj love-pres-QH  
 "Which painter<sub>i</sub> loves his<sub>i</sub> work?"  
 b. todaychey nwugwu<sub>i</sub>-ka {ku<sub>i</sub>/caki<sub>i</sub>}-ka khu-0-ta-ko sayngkakha-0-pnikka?  
 the hell who-sub he/self-sub tall-pres-em-comp think-pres-QH  
 "Who<sub>i</sub> the hell thinks that he<sub>i</sub> is tall."

<sup>20</sup> In Japanese, a which-phrase can also bind the pronoun kare. Pesetsky (1984) attributes the observation on Japanese to H. Hoji.

- c. nwugwu<sub>1</sub>-ka {caki<sub>1</sub>/\*ku<sub>1</sub>}-ka khu-0-ta-ko sayngkakha-0-pnikka?  
 who-sub self/he-sub tall-pres-em-comp think-pres-QH  
 "Who<sub>1</sub> thinks that he<sub>1</sub> is tall."

The Subjacency effects in (15a and b) suggest that operator-movement is involved in (15a and b). The Weak Cross-Over effects in Korean observed in (17) below further confirm the notion that a sort of operator-movement must be involved in (16a and b):<sup>21</sup>

- (17) a. \*ku<sub>1</sub>-uy emeni-ka totaychey nwukwu<sub>1</sub>-lul salangha-0-pnikka?  
 he-gen mother-sub the hell who-obj love-pres-QH  
 \*"Who<sub>1</sub> the hell does his<sub>1</sub> mother love?"  
 b. \*ku<sub>1</sub>-uy emeni-ka anu atul<sub>1</sub>-lul salangha-0-pnikka?  
 he-gen mother-sub which son-obj love-pres-QH  
 \*"Which son<sub>1</sub> does his<sub>1</sub> mother love?"

Given that these are wh-in-situ, we may suggest, assuming (14a), that the which-phrase and the what-the-hell phrase are actually linked to null operators and that null operators syntactically move successive-cyclically.

Another syntactic operator-movement in Korean that obeys Subjacency is rightward inversion (see Appendix II in this Chapter for the details):<sup>22</sup> Long-distance rightward inversion is possible, as shown in (18a) and Subjacency is observed, as shown in (18b) (cf. (9 and 15a) in Appendix II).

- (18) a. na-nun [Chelswu-ka t<sub>1</sub> ilk-ess-ta-ko] sayngkakha-n-ta, ku chayk<sub>1</sub>-lul  
 I-TOP -sub read-past-em-comp think-pres-em the book-obj  
 "I think that Chelswu read the book."  
 b.?? Chelswu-ka [NP t<sub>1</sub> maul-ey nathana-ass-ta-nun (\*ku) somwun]-lul  
 -sub village-at appear-past-em-comp the rumor-obj  
 tul-ess-ta, holangi<sub>1</sub>-ka  
 hear-past-em tiger-sub  
 "Chelswu heard {??a/\*the} rumor that a tiger appeared in the village."

<sup>21</sup> With caki or [0], (17) are also ungrammatical; the following case of Weak Cross-Over is also ungrammatical (cf. Higginbotham (1983)):

- (i)\*{ku<sub>1</sub>/caki<sub>1</sub>/[0]<sub>1</sub>}-uy emeni-ka totaychey nwukwu<sub>1</sub>-lul salangha-0-pnikka?  
 he/self -gen mother-sub the hell who-obj love-pres-Q  
 "Who<sub>1</sub> the hell does his<sub>1</sub> mother love?"  
 (ii)\*{ku<sub>1</sub>/caki<sub>1</sub>/[0]<sub>1</sub>}-uy emeni-ka enu atul<sub>1</sub>-lul salangha-0-pnikka?  
 he/self -gen mother-sub which son-obj love-pres-Q  
 "Which son<sub>1</sub> does his<sub>1</sub> mother love?"

<sup>22</sup> We argue in Appendix II that an inverted phrase is base-generated and a null inversion-operator moves, as in relative clauses.

The data (18) suggest that inversion is derived by successive-cyclic syntactic operator movement (A-bar movement) in syntax, obeying Subjacency.

If the rightward inversion and sentences with which- or what-the-hell phrases involve (null operator) A-bar movement in syntax, we might as well assume the existence of CP, whose SPEC is an A-bar position and therefore plays the role of an escape hatch for operator-movement in the cases of long-distance A-bar movement, which is typical of A-bar movement, as shown in (18a). In the following long-distance which sentence shown in (15d) below, in which the SPEC of CP can serve as an escape hatch (also cf. long-distance movement in (18a) and (i) in fn. 16), Subjacency effects are not observed, in contrast to (18b) and (15a and b) in which no escape hatch of A-bar movement is available between operator positions and their scope markers.

(15d) ne-nun Chelswu-ka anu chayk-lul ilk-ess-ta-ko sayngkakha-0-pnikka?  
       you-TOP           -sub which book-obj read-past-em-comp think-pres-QH  
       "Which book do you think Chelswu read?"

To conclude, it seems fair to say that the Subjacency effects of syntactic A-bar movement show that in this language, C projects to form a CP which contains the SPEC of C.

### 3.1.2. The structure of INFL

#### 3.1.2.1. [+/-Tense] and [+/-Agr]

Let us now discuss another functional category, INFL, whose widely-assumed structure is given below.

(19) INFL ---> [ [+/-Tense], (AGR) ] (cf. Chomsky (1981))

In (19), the meaning of [+/-Tense] is just as controversial cross-linguistically (cf. Stowell (1981;1982); Haegeman (1986)) as the empirical and theoretical meaning of AGR (cf. Taraldsen (1978/80); Chomsky (1981;82);

Reuland (1983); Huang (1984); Rizzi (1986a); Borer (1986a and b)). As for the status of [+Tense], Stowell (1981; 1982) for example suggests that English infinitival clauses lack the morphological feature [+/-Past] but must be [+Tense], having an abstract tense operator (cf. Stowell (1981; 41)):

(20) Jenny remembered [PRO to lock the car].

According to Stowell, the tense of the embedded INFL in (20) is specified as being unrealized with respect to the tense of the matrix INFL.

Stowell's suggestion claims that INFL contains tense features whether INFL is finite or not. Let us thus suggest, by analogy with the notion of tense binding in De Mey (1982), that the feature [+/-Tense] indicates the semantic dependency of tense elements and that verbal morphology (infinitival or finite form of V) also indicates [+/-Tense] distinction in a language-specific way: The values of the tense features in INFL[+Tense], which also determine the phonetic realization of INFL, are specific and determined independently by their own semantics while those of the tense features in INFL[-Tense] are realized as generic/nonspecific or deemed (partially or entirely) dependent upon a (hierarchically higher) INFL [+Tense]. The dichotomy of INFL[-Tense] and INFL[+Tense] in this sense, in fact, plays a role in syntax. For example, in English in which [-Tense] is realized as the infinitival form of V (to V), INFL[+Tense] is a Case-assigner and INFL[-Tense] is not. If, as in English, both phonetic realization of tense elements and tense dependency indicates the values of tense features, then it can be assumed that the feature [+/-Tense] represents a bundle of (sub-)tense features, some of which may play an independent role in syntax in certain languages.<sup>23</sup>

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<sup>23</sup> Chung (1983), for example, argues that in Chamorro, features like [+/-

As for the status of AGR, rich or weak overt realization of AGR and types of agreement features (person, number,..) are suggested to play a role in syntax.<sup>24</sup> In general, AGR results in overt realization of agreement on verbs. In other words, the form of subject-verb agreement on a verbal indicates the existence of AGR, as in (21a). It seems, however, that there is another type of agreement, as we see in (21b).

- (21) a. They are born linguists.  
 b. John believes them to be born linguists.

In (21b), even though overt agreement does not link a subject and a verb, there is some form of agreement -- agreement dependency between subjects and predicate NPs (subject-predicate agreement), which is probably overtly realized in very restricted environments. Given that some notion of agreement applies both to (21a) and to (21b) sentences, let us suggest that the subject-predicate agreement in (21b) is a realization of [-Agr]<sup>25</sup> and that the subject-verb/predicate agreement in (21a) is a realization of [+Agr].<sup>26</sup> In other words, INFL also contains a bundle of agreement

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Mood] play a role in syntax.

<sup>24</sup> For example, richness of overt agreement markers may determine pro-drop parameters (cf. Taraldsen (1978/80); Chomsky (1981; 1982); Rizzi (1986a)). For partial appearance of pro according to the choice of person and number features, see Borer (1986a) for Hebrew and Hale and McCloskey (1984) for Irish. Kornfilt (1984) also shows that Turkish has two kinds of AGR: One that licenses pro and one that does not.

<sup>25</sup> The idea that [-Agr] in INFL[-Tense] represents a type of agreement is confirmed in (i). PRO in English has a default value [+singular] (one) and subject-predicate agreement appears.

(i) It is difficult to criticize {oneself/\*oneselves}.  
 In different languages, PRO takes different default values of number agreement (cf. Rizzi (1986a)). Whether the value [+singular] for subject-predicate agreement in a specific language is obtained through INFL or through the default value of pro which binds PRO (cf. Epstein (1984); Rizzi (1986a); also cf. Borer (1986b)) is a different issue.

<sup>26</sup> Note that the notion of [+Agr] is virtually identical to that of AGR in a usual sense in that both of them are realized as subject-verb agreement. Given the rich functions of AGR discussed in the literature, we assume that

features, which is divided into at least two groups according to the type of agreement. If that is so, INFL contains at least two different kinds of bundles of features:

(22) INFL ---> [ [+/-Tense], [+/-Agr],... ]

By suggesting (22), we take agreement features as basic contents like tense features in clauses since we do not consider [-Agr] as the lack of agreement but rather as the lack of subject-verb agreement. We thus predict at least four variants of INFL.<sup>27</sup>

(23) a. INFL[+Tense,+Agr]                      b. INFL[+Tense,-Agr]  
       c. INFL[-Tense,+Agr]                     d. INFL[-Tense,-Agr]

The verb form in (21a) above illustrates the case of (23a) and that in (21b) the case of (23d). (21a) shows morphologically-overt and semantically-independent tense on verbs ([+Tense]) and both subject-verb and subject-predicate agreements ([+Agr]), but (21b) shows no morphologically-overt and semantically-independent tense on verbs ([-Tense]) and no subject-verb agreement ([-Agr]).

It has been assumed that clauses are [+Tense] if they have overt agreement on verbs, but that they are [-Tense], if they do not (no AGR). Nevertheless, there have also been some discussions that show that this may not be the case. For example, Portuguese employs inflected infinitives (INFL([-Tense,+Agr]))<sup>28</sup> in some restricted environments (cf. Raposo (1987))

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[+Agr] (but not [-Agr]) is part of AGR; if INFL contains [+Agr], it contains AGR, but not necessarily vice versa.

<sup>27</sup> Similar views with notational and empirical variations can be found in Reuland (1983), Haegeman (1986), and Raposo (1987).

<sup>28</sup> Reuland (1983) also argues that the -ing in NP-ing construction in English is a realization of INFL[-Tense,AGR], which is interpreted as INFL[-Tense,-Agr] here. In Reuland, the existence of AGR in the -ing construction is, however, based on other theory-internal facts (under the assumption that AGR is [+N] (cf. Chomsky (1981))), and not on overt agreement realization.

and that those infinitives which occur with overt agreement may assign NOM to the subject (see Section 4.1. for details):

- (24) a. [<sub>IP</sub> Eles aprovar<sub>em</sub> a proposta] será difícil.  
 "They to-approve-AGR the proposal will be difficult."  
 b. Será difícil [<sub>IP</sub> eles aprovar<sub>em</sub> a proposta].  
 "It will be difficult they to-approve-AGR the proposal."  
 (cf. (27) in Raposo (1987))

The second example of an INFL[-Tense,+Agr] instantiation comes from Berber. In Berber, the tense-neutral form of a verb (the (Aor)ist tense form) appears in coordination and ad constructions. In the second conjunct of coordination construction (cf. 25a) and in a certain construction in which an embedded V takes the future marker ad (cf. 25b), a verb in a second conjunct (25a) and one in an embedded verb (25b) appear in the form of Aorist tense:

- (25) a. Y-ttcu Mohand aysum t-ettc Tifa aghrum  
 3ms-ate meat 3fs-eat(Aor) bread  
 "Mohand ate meat and Tifa ate bread."  
 b. Y-bgha Mohand ad y - ghers Yidir i tixsi  
 3ms-want Fut 3ms-cut throat(Aor) to sheep  
 "Mohand wants Idir to kill the sheep."  
 (from Choe (1987a;125); also cf. Guerssel (1985))

The verbal form with the Aorist tense is tense-neutral and its tense depends entirely on the tense in the first conjunct of coordination construction or on that in the matrix tense. Thus according to our criterion, the Aorist tense is [-Tense]. Nevertheless, the Aorist tense takes agreement elements, and assigns Case to subjects; overtly realized subjects appear in the second conjunct and in the embedded clause in (25).

These cross-linguistic data suggest that INFL[-Tense,+Agr] may be one of the INFL variants and behave differently from INFL[-Tense,-Agr] and from INFL[+Tense,+Agr]: Because it is [-Tense], its tense is dependent, unlike INFL[+Tense,+Agr]; because it is [+Agr], unlike INFL[-Tense,-Agr], it may



assign Case excluding PRO, allowing pro in the subject position (see Section 4.1. for Portuguese data). The data also suggest that [+Agr] (= AGR) makes INFL a (potential) Case-assigner, regardless of the value of the tense features.

As for the fourth type of INFL -- INFL[+Tense,-Agr], there is one instantiation discussed in the literature to our knowledge. Haegeman (1986) claims that Flemish infinitive clauses headed by certain prepositions such as mee (with) contain INFL[+Tense,-Agr]:

- (26) a. Mee ik da te zeggen hee-se dat hus gekocht  
           with I that to say has-she that house bought  
           "Because of my saying that she has bought that house"  
       b. Mee PRO da te zeggen hee-se dat hus gekocht  
           with that to say has-she that house bought  
       c. Mee dan-kik) da gezeid heen, hee-se dat hus gekocht  
           with that-I(I) that said have, has-she that house bought (cf. (1) and (3) in Haegeman (1986))

With mee, the subject may be either an overt NP (26a) or PRO (26b) or the mee phrase can allow a finite verb (26c). Even though verbs appear in the noninflected infinitival form both in (26a) and in (26b), Haegeman argues that they differ: An infinitive clause with an overt NP subject (26a) is much closer to a finite clause (26c) than to a nonfinite clause with PRO (26b). The tense of infinitive in (26b) is controlled by that of the matrix clause. On the other hand, the infinitive form of a verb in (26a) allows a time-adverbial; there is a time-location independent of that of the main clause, like finite clauses, as shown in (27b and c).

- (27) a. K-heen vee geld verdiend mee PRO (\*gisteren) gazetten te verkopen  
           "I have much money earned with PRO (yesterday) newspapers to sell."  
       b. Mee ik da gisteren te zeggen hee-se dat hus gekocht (PAST)  
           With I that yesterday to say has-she that house bought  
       c. Mee ik da gisteren te zeggen goa-se dat hus kopen (FUT)  
           With I that yesterday to say goes-she that house buy ((11a and b) and (12) from Haegeman (1986))

In (27a) with PRO, temporal adverbials are not allowed, while in (27b and c) with overt subjects, temporal adverbials may be used independent of the

tense of the matrix clauses. Based on this piece of evidence, Haegeman suggests that Flemish may employ INFL[+Tense,-Agr], which may assign NOM to the subject. If she is right, we have all the instantiations of INFL in (23).<sup>20</sup>

However, under our assumption of the features [-Tense] and [-Agr], INFL in (26a and b) and (27) is [-Tense,-Agr] but not [+Tense,-Agr],<sup>20</sup> since a verb is realized as the infinitival form. One may suggest that Haegeman's data show that there are two types of INFL[-Tense,-Agr]. In fact, there seem to be a small number of different instantiations of INFL [-Tense,-Agr] cross-linguistically: In English, in addition to the infinitival form in (21b) which instantiates INFL[-Tense,-Agr], there is one more instantiation of INFL[-Tense,-Agr] in small clauses whose INFL is not phonetically realized.<sup>21</sup>

(28) I consider them born {linguists/\*a born linguist}.

Whether INFL is phonetically realized or not, subject-predicate agreement is observed, as shown in (28). This suggests that INFL in small clauses is [-Agr], like INFL in (21b).

<sup>20</sup> One example of INFL[+Tense,-Agr] may come from imperative clauses:

(1) (Boys!) Be ambitious!

Since we define INFL[-Tense] as dependent upon INFL[+Tense], we suggest that imperative clauses contain INFL[+Tense,-Agr], since the dependency of tense is not found in (1). However, INFL[+Tense,-Agr] need not assign NOM to the subject; it may be that it assigns Vocative Case to the subject since the subject can overtly be realized.

<sup>20</sup> Haegeman (1986) also notes that the infinitives in (27b and c) always carry a factive implication. Another piece of evidence she provides to show that INFL in (26a) is [+Tense,-Agr] is that infinitives with PRO may not have the focus marker *te*, but those with overt subjects do, as in finite clauses. These properties, however, may not necessarily be associated with the feature [+Tense].

<sup>21</sup> See Lasnik and Saito (to appear) for a theory-internal argument for the existence of INFL in small clauses. See also Kitagawa (1985) for arguments that small clauses are in fact CP's.

It seems that INFL in small clauses and INFL in infinitival clauses differ in some respects in English. First, sentential adverbials are not possible in (29a) while they are possible in (29b).

- (29) a. I consider him (very) happy {\*at this moment/\*at home/\*for this reason}.  
 b. I consider him to be (very) happy {at this moment/at home/ for this reason}.

In small clauses, nonsentential adverbials like very are allowed, but not sentential (temporal/locative/causal) adverbials.<sup>22</sup> In addition, the partial independence of temporal elements, as we see in Flemish data, is observed only in clauses with overtly-realized INFL[-Tense] (also cf. Stowell (1982; 563)).

- (30) a. I remembered this morning to lock the car today. (future)  
 b. I remembered this morning locking the car yesterday. (past)  
 c. \*This morning, I considered him happy today.  
 d. \*This morning, I considered him happy yesterday.

Suppose that there are two kinds of INFL([-Tense, -Agr]): One contains enough syntactic features to be an X-head in syntax, but lacks some features (say, [+A]),<sup>23</sup> which licenses sentential adverbials including temporal ones, while the other ([-Tense, -Agr] with the feature [+A]) has those characteristics which license sentential adverbials.<sup>24</sup> In addition,

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<sup>22</sup> Ken Hale (p.c.) has pointed out to us that when adverbials have some contrastive meanings, as in (i), they appear under the scope of small clauses.

(i) a. I consider him happy at home and sad at the office.  
 b. I found him energetic in the morning and sad in the afternoon.  
 c. Today, I considered him happy in the morning and sad in the afternoon.

We have no explanation of the contrast between (29) and (i) (also cf. (30)); we only speculate that predicates with adverbials such as happy at home may form idiomatic VP expressions in certain focus environments such as (i).

<sup>23</sup> One may suggest that the existence of the feature [+A] also triggers certain different semantics between the clause in (29b) and that in (29a): the event reading versus the property reading of a clause.

<sup>24</sup> When (29) is passivized, to be appears and adverbials are also possible

small clauses in English also show different degrees in allowing be (cf. fn. 61 in Section 3.3.).

- (31) a. I consider him (\*be) happy.  
 b. I ~~make~~ him (??be) happy.  
 c. I let him (be) happy (due to Richard Kayne (p.c.)).

Interestingly, these small clauses in (31) show different degree of grammaticality when adverbs are in the scope of small clauses: cf. I make him run early in the morning and I let him sleep all day (cf. (30b and c) and also cf. (29b)).<sup>22</sup> The facts in (31) also suggest that there are at least two types of INFL[-Tense,-Agr] in small clauses: INFL with and without [+A].

The properties of these two clauses containing INFL[-Tense,-Agr] (infinitival clauses and be small clauses versus small clauses) in English parallel those of Flemish data. By analogy with the English facts discussed above, we suggest that in Flemish, the infinitival form of V instantiates two types of INFL[-Tense,-Agr], one with, one without the feature [+A]. Then, the following cases of INFL[-Tense,-Agr] represent universally significant types of INFL in addition to (23) and we leave the question of

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under the scope of the embedded clause; the scope of the adverbials in (1a) is ambiguous.

- (1) a. John was considered to be happy {at this moment/yesterday/for this reason}.  
 b. \*John was considered happy {at this moment/yesterday/for this reason}.

The contrast between (1a) and (1b) confirms the assumption that phonetic realization indicates the contents of tense elements in INFL, as we suggest; when to be appears, INFL[-Tense] licenses (sentential) adverbs containing the feature [+A]; when no overt realization of INFL appears, INFL[-Tense] does not license adverbs containing no [+A] feature.

<sup>22</sup> Note also (31a) but not (31b and c) does not allow a verb in the small clause:

- (1) \*I consider him sleep all day.

It may be that some weak INFL does not tend to afford main [+V,-N] elements.

empirical instantiations of INFL[+Tense,-Agr] open for further research (but cf. fn. 29).

- (32) a. INFL[-Tense,-Agr,+A]  
b. INFL[-Tense,-Agr,-A]

### 3.1.2.2. [+Agr] in Korean

The existence of AGR in Oriental languages has been dismissed in the literature (Huang (1984) for Chinese, D.-W. Yang (1985) for Korean, and Saito (1985) for Japanese)) for some obvious reasons; these languages lack overt English type agreement morphology (especially in person and in gender). It seems, however, that Korean exhibits some realization of agreement, which plays a role in Korean syntax in the same way as in other languages in certain specific constructions:

AGR in Korean appears to differ from that in English in its realization in that it may fail to occur on the verbal morphology. Although the (p)erson and (g)ender of AGR never show up in Korean (Note that (g)ender never shows up in English, either), (n)umber of AGR optionally shows up as -tul but not on the verbal morphology, as shown in (33).<sup>30</sup>

- (33) a. nehi-tul-ka cal(-tul) ha-ess-ta  
you-pl-sub well-pl do-past-em "You(pl) did well."  
b. ikes-tul-ka kkaykkus(-tul) ha-0-ta  
these-sub clean-pl do-pres-em "These are clean."  
c. kutul-ka caymi(-tul) po-le(-tul) naka-ss-ta  
they-sub fun-pl have-to-pl go out-past-em  
"They went out to have fun."  
d. (i) kutul-nun o-ki-tul-nun ha-ess-ta  
they-TOP come-to-pl-COM do-past-em  
"They did come (but...)"  
(ii) Chelswu-wa Yenghi-ka acik ttena-ci(-tul) an-ass-ta  
-and -sub yet leave-to-pl not-past-em  
"Chelswu and Yenghi did not leave yet."

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<sup>30</sup> Song (1975) also notices the ubiquitous appearance of the plural maker -tul in Korean. As shown in (33c), -tul can be duplicated.

- e. kutul-nun [cakitul-ka ttokttokha-0-ta-k)]-tul sayngkakha-n-ta  
 They-TOP themselves-sub intelligent-pres-em-comp-pl think-pres-em  
 "They think that they are intelligent."  
 f. nehi-tul, chengso(-tul) ha-ela  
 You-pl cleaning(N)-pl do-imp "You(pl), clean up (your places)!"

When the subject is plural, the plural marker -tul is optionally affixed to an adverb (33a), an adjective (33b), a noun or the tense neutral form of V (V-ci/ki) (33c and di-ii), a complementizer (33e), or an N of denominal verbals (N-do) (33f). Even though the realization of number agreement is apparently ubiquitous, the domain of its realization is clause-bounded. The plural marker -tul may fail to occur across a clause, as shown in (34).

- (34) \*Chelswu-ka [kutul-ka ttena-ss-ta-ko] sayngkak-tul ha-n-ta  
 -sub they-sub leave-past-em-comp think-pl do-pres-em  
 "Chelswu thinks that they left."

In Korean, there is also honorific agreement, which is obligatory in (moderately) formal speech. The honorific marker -si- is affixed on the verbal morphology.<sup>27</sup> The relevant examples are in (35).<sup>28</sup>

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<sup>27</sup> It is usually assumed not to be syntactic, but we suggest that it is syntactic and that its value is optionally chosen in the Lexicon and checked at PF by pragmatic factors, e.g., the position in a social hierarchy, family relation, or age with respect to the speaker.

<sup>28</sup> The case marker -kkeyssa is an honorific form of the subjective marker -ka. This honorific form of NOM may indicate that NOM implies agreement (cf. Jaenen, Mailing and Thrainsson (1985)). However, agreement may not imply NOM assignment (cf. Chomsky (1981), as we see in polite imperative sentences (i) and in sentences taking dative subjects ((ii), inversion sentences in relational grammarian terms).

(i) sensayng-nim-tul, tul-e-tul o-si-psiyo  
 teacher-H-pl enter-to-pl come-H-emH  
 "Teachers, please come in!"

(ii) a. koa-tul-eykey-nun ayceng-tul-ka philyoha-0-ta  
 orphan-pl-to-TOP affection-pl-sub need-pres-em  
 "Orphans need affection."

b. sensayngnim-kkey cip-ka philyona-si-0-ta  
 teacherH-toH house-ob need-H-pres-em  
 "(Our) teacher needs a house."

The dative marker -eykey also has an honorific form: -kkey; Korean does not have the honorific form of the objective marker -lul.

- (35) a. *apeci-kkeyse cip-ey o-si-ess-ta*  
 father-subH home-at come-H-past-em  
 "(My) father has come home."  
 b. *sensayng-nim-kkeyse tul-e o-si-ess-ta*  
 teacher-H-subH enter-to come-H-past-em  
 "(My) teacher came in."

Even though only *-si-* but not *-tul* appears on the verbal morphology, it is fair to assume that Korean has some system of agreement; INFL contains all the agreement features of [+Agr] but has a weak or defective agreement system with respect to its realization (which is also ubiquitous; cf. (33) and fn. 10). Although the realization of agreement is optional (and ubiquitous), agreement is obligatory; when the subject is singular and nonhonorific, neither *-tul* nor *-si-* is allowed, as shown in (36).

- (36) a. \**Chelswu-ka Mwuyok-ey-tul ka-ass-ta*  
 [-pl] -sub -to-pl go-past-em  
 "Chelswu went to New York."  
 b. \**Chelswu-ka Mwuyok-ey ka-si-ess-ta*  
 [-H] -sub -to go-H-past-em

Only *-si-* appears on the verbal morphology, but we consider the partially or fully ubiquitous realization of *-si-* or *-tul* as a combined realization of subject-verb agreement and subject-predicate agreement. In other words, we consider the plural marker *-tul* and the honorific marker *-si-* are realizations of [+Agr]. Below, we will show that [+Agr] in Korean in our sense makes INFL[-Tense] a Case-assigner and therefore a governor of the subject, as in Berber or Portuguese. Our discussion will therefore confirm that *-tul* and *-si-* are indeed realizations of [+Agr] and not of [-Agr].

### 3.1.2.3. Properties of INFL[-Tense, +Agr] in Korean

It seems that INFL[+Tense] is always [+Agr]. But INFL[-Tense] in Korean can also be [+Agr]. Korean has certain infinitival constructions in which an embedded V is the tense-neutral form of V (V-*ki/ci*), as shown in (37).

- (37) a. kulim-ey aitul-ka hungmi-lul kaci-ki-lan  
 painting-to children-sub interest-obj have-to-as for  
 tangyenhan il-i-0-ta  
 natural matter-be-pres-em  
 "As for children's taking an interest in painting, that is natural."  
 b. aitul-ka ilccikk ilena-ki-ka maywu elyep-0-ta  
children-sub early get up-to-sub very difficult-pres-em  
 "For children to get up early is very difficult."

If in Korean, the realization of [+Agr] is optional in the case of number agreement, as shown in (33), INFL[-Tense] is ambiguous with respect to the feature [+/-Agr] when no overt agreement appears. There is indeed evidence that INFL[-Tense] can be [+Agr]:

In (37), overt embedded subjects appear with subjective markers, and therefore [+Agr] (a bundle of certain agreement features) is present to assign Case to the subject, although [+Agr] is not overtly realized. We thus predict that overt agreement can appear in (37), and this prediction is borne out, as we see below:

- (38) a. kulim-ey ai-tul-ka hungmi-tul-lul kaci-ki-lan  
 painting-to child-pl-sub interest-pl-obj have-to-as for  
 tangyenhan il-i-0-ta  
 natural matter-be-pres-em  
 "As for children's taking an interest in painting, that is natural."  
 b. ai-tul-ka ilccikk-tul ilena-ki-ka maywu elyep-0-ta  
 child-pl-sub early-pl get up-to-sub very difficult-pres-em  
 "For children to get up early is very difficult."

When a subject is [+honorific], the honorific marker -si- also appears.

- (39) emeni-tul-kkeyse yoli-ey hungmi-tul-lul kaci-si-ki-lan  
 mother-pl-subH cooking-at interest-pl-obj have-H-to-as for  
 tangyenhan il-i-0-ta  
 natural matter-be-pres-em  
 "As for mothers's taking an interest in cooking, that is natural."

The overt realization of agreement shown in (38-9) suggests that the embedded INFL[-Tense] in (37) is [+Agr]; it also explains the appearance of overt subjects under the government domain of INFL[-Tense].

There are more constructions with INFL[-Tense, +Agr]. Consider the





- the student-obj right road-to guide-H-Inf-comp try-H-past-em  
 "The teacher tried to lead the student into the right path."  
 b. Chelswu-wa Yenghi({<sub>1</sub>/<sub>2</sub>}-ka {{{0}<sub>1</sub>/{kutul<sub>1</sub>/cakitul<sub>1</sub>-ka}}}  
       -and                              -sub                  they/selves-sub  
       pwumonim-lul mosi-lye-ko      nolyekha-ess-ta  
       parentsH-obj serve-Inf-comp try-past-em  
       "Chelswu and Yenghi tried to serve (their) parents."

One type of causative/small clause in Korean in which ECM takes place also contains INFL([-Tense]).<sup>41, 42</sup>

- (43) Chelswu-ka [aitul-lul tul-e o-0-key] ha-ess-ta  
       -sub children-obj enter-Inf come-Inf-comp do-past-em  
       "Chelswu caused children to come in."

In (43), the embedded V must be tense-neutral (V-{e/a/Q}), which is glossed as (Inf)initive. With past tense [+Tense], the sentence is not grammatical, as shown below:

- (44) \*Chelswu-ka Yenghi-lul ttena-ss-key ha-ess-ta  
       -sub              -obj leave-past-comp do-past-em  
       "Chelswu caused Yenghi to leave."

Although an embedded subject takes the objective Case marker, agreement can appear in the causative construction, as we see below.<sup>43</sup>

<sup>41</sup> The appearance of the complementizer (-key) in causative clauses suggests that although ECM takes place in causative clauses, causative verbs select CP (but not an IP or XP complement; cf. Stowell (1983); Chomsky (1986b)). In Section 4.1., we suggest that what causes ECM in causative clauses or in ECM environments in both English and Korean (in fact cross-linguistically) is C-to-V or C-to-I RR in syntax.

<sup>42</sup> For traditional Korean grammarians, -key is assumed to be an adverbial marker (cf. Choi (1935)), as shown in the examples below:

- (i) pankap-key phenci-lul pat-ass-upnida  
       happy-ly letter-obj receive-past-em  
       "(I) received (your) letter with pleasure."  
 (ii) Yachay-ka i kos-eyse singsingha-key sala-n-ta  
       vegetables-sub this place-at fresh-ly grow pres-em  
       "Vegetables grow fresh here."

However, when -key is used in the causative construction, it is also assumed to be a complementizer (cf. I.-S. Yang (1972) for example). We will assume without arguments that -key in (43) (and in (i-ii)) is a complementizer which heads a small clause (cf. Choe (in progress)).

<sup>43</sup> These examples suggest that agreement does not imply NOM assignment (cf. fn. 38).

- (45) a. Chelswu-ka ku halmeni-lul caki-cali-ey ancui-si-key  
           -sub the grandmother-obj self-seat-at sit-H-comp  
           ha-e-tuli-ess-ta  
           do-Inf-benH-past-em  
           "Chelswu caused the grandmother to sit in his seat."  
       b. Chelswu-ka ku aitul-lul tul-e-tul o-0-key ha-ess-ta  
           -sub the children-obj come-Inf-pl come-Inf-comp do-past-em  
           "Chelswu caused the children to come in."

Again, we predict that the embedded subject can have the subjective marker and this is the case, as shown below:

- (46)  
       a. Chelswu-ka ku halmeni-kkeyse caki-cali-ey ancui-si-key ha-e tuli-ess-ta  
           -sub the grandmother-subH self-seat-in sit-H-comp do-Inf benH-past-em  
           "Chelswu let the grandmother sit in his seat."  
       b. Chelswu-ka ku aitul-ka tul-e-tul o-0-key ha-ess-ta  
           -sub the child-pl-sub come-Inf-pl come-Inf-comp do-past-em  
           "Chelswu let the children come in."

These Korean small clause data confirm the idea that INFL[-Tense] in an embedded clause of causative construction with -key is [+Agr]. Thus causative construction does not contain arbitrary PRO for the embedded subject since an embedded subject position is governed either by a matrix verb through ECM (43 and 45) or by an embedded INFL[-Tense, +Agr] (46).<sup>44</sup>

There are, however, two theoretical problems raised by the Korean causative or ECM data. First, ECM is possible even when a complementizer (-key) is present in small clauses, as in (43); (43) suggests that small clauses are CP but allow ECM. Second, given the MC (cf. Chapter 1), the ACC assignment to the embedded subjects in (45) raises a theoretical problem: an embedded subject is (Case-)governed by a matrix verb, although an embedded INFL is [-Tense, +Agr], which also (Case-)governs the embedded subject. As for the first question, one might suggest that C in the small

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<sup>44</sup> It seems that INFL[+Agr] tends to be [+A], whether it is [-Tense] or [+Tense]. When INFL[-Tense] is [+Agr], it may license adverbials in Korean, as shown below.

(1) emeni-ka ai-tul-lul achim ilccik il-e-tul-na-0-key ha-ess-ta  
       mother-sub child-pl-obj morning early get up-inf-pl-comp do-past-em  
       "The mother caused her children to get up early in the morning."

clauses in Korean is transparent with respect to government. If this were true, one might also suggest, to solve the second problem, that INFL[-Tense,+Agr] is defective in two ways in that it is an optional governor and in that it does not induce the MC. When INFL[-Tense,+Agr] Case-governs it, a matrix verb does not need to Case-govern the subject; when INFL[-Tense,-+Agr] does not govern the subject, a matrix V Case-governs it, since INFL[-Tense,+Agr] does not block outside government. This might explain why ECM occurs in the causative construction that contains INFL[-Tense,+Agr], a potential governor. One problem with this explanation is that the solution is basically stipulative but not explanatory. In fact, instead of stipulating the defective properties of C and INFL[-Tense,+Agr] categories in Korean ECM and small clauses, we will argue in Section 4.1. that those defective properties follow independently from C-to-I/V RR (and syntactic adjunction), which are motivated in ECM and small clause constructions. The analysis to be given in Section 4.1. will confirm that every clause including a small clause and an ECM clause is a CP projection (cf. fn. 41).

Now, returning to the properties of INFL[-Tense] in Korean, INFL[-Tense] does not always allow [+Agr]. Consider the constructions shown in (47). When the subject is null, as in (47a and b) in which agreement is overtly realized, [0] has specific reference.

- (47) a. kulim-ey [0] hungmi-tul-lul kaci-ki-lan  
           painting-to interest-pl-obj have-to-as for  
           tumwun il-i-0-ta  
           rare matter-be-pres-em  
           "As for [0]'s taking an interest in painting, that is rare."  
       b. [0] ilccikk-tul ilena-ki-ka maywu elyep-0-ta  
           early-pl get up-to-sub very difficult-pres-em  
           "For [0] to get up early is very difficult."

In fact, Korean optionally allows null arguments (= [0]) with specific non-arbitrary reference, as shown in (48).

- (48) {ne-ka/{0}} {0}, {0}, cwu-ess-pnikka?  
           you-sub                                   give-past-QH  
           "Did (you) give (it,) (to him/her/them,)?"

The two {0}'s are governed by V and the null subject governed by INFL-([+Agr]), like *pro* in Italian and in Spanish (cf. Rizzi (1986a)). Thus {0}'s are not PRO (an ungoverned empty category) in (48). On the other hand, when no overt agreement appears in (47), as shown in (49), the interpretation of {0} is ambiguous; it has either specific (non-arbitrary) or arbitrary reference.

- (49) a. kulim-ey {0} hungmi-lul kaci-ki-lan  
           painting-to interest-obj have-to-as for  
           tumwun il-i-0-ta  
           rare matter-be-pres-em  
           "As for {0}'s taking an interest in painting, that is rare."  
       b. {0} ilccikk ilena-ki-ka maywu elyep-0-ta  
           early get up-to-sub very difficult-pres-em  
           "For {0} to get up early is very difficult."

We explain the ambiguity in (49) by suggesting that Korean INFL[-Tense] is either [+Agr] or [-Agr] in a certain infinitival construction (as in Portuguese (cf. Raposo (1987))) that is neither an ECM nor an obligatory control construction. Given optional realization of [+Agr], in (49) with no overt agreement, INFL can be interpreted either as [-Tense, -Agr] or as [-Tense, +Agr]. INFL[-Tense, -Agr] triggers only the arbitrary reading of {0} since it allows PRO in subject position; INFL[-Tense, +Agr] triggers the specific nonarbitrary reading of {0} since it (Case-)governs a subject position eliminating PRO in the subject position. We assume that the arbitrary reading of {0} in (49) derives from a universal quantificational reading of PRO.<sup>48</sup> This quantificational reading is, in fact, strengthened by the fact that the pronoun *ku* is not bound by {0} with the arbitrary reading, as in (50) while when {0} has an antecedent, as in (51), *ku* may be

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<sup>48</sup> Following Epstein's (1985) idea, one may assume that PRO is bound by a universal quantifier (*pro*) in the matrix clause.

bound by [0]. (Note that in Korean, a variable left by a quantificational element or wh-element does not bind the pronoun ku (cf. 14b; fn. 19).)<sup>46</sup>

- (50) [(0)<sub>i</sub> {caki<sub>i</sub>/\*ku<sub>i</sub>}-uy calmos-lul incengha-ki-nun] swiwun il-ka an-i-0-ta  
self/he-gen fault-obj accept-to-TOP easy thing-sub not-be-pres-em

"It is not easy [PRO to accept {his/self's} fault]." (Lit.)

- (51) Chelswu<sub>i</sub>-eykey-nun [(0)<sub>i</sub> {caki<sub>i</sub>/ku<sub>i</sub>}-uy calmos-lul incengha-ki-ka]  
self/he-gen fault-obj accept-to-TOP

swiwun il-ka an-i-ess-ta  
easy thing-sub not-be-pres-em

"It is not easy for Chelswu<sub>i</sub> [pro to accept {his/self's} fault]." (Lit.)

As we expect, when overt agreement appears, the pronoun ku may be bound by [0], as shown in (52); the binding fact in (52) suggests that when [0] is governed by INFL[-Tense, +Agr], it fails to be PRO<sub>REF</sub>.

- (52) [(0)<sub>i</sub> ku-tul<sub>i</sub>-uy calmos-lul inceng-tul ha-ki-nun  
he-pl-gen fault-obj accept-pl do-to-TOP  
i sangthay-eyse elyepwu-0-n il-0-ta  
this situation-in difficult-pres-comp matter-pres-em

"It is difficult for pro<sub>i</sub> to accept their<sub>i</sub> faults in this situation."

At this point, it should be noted that the arbitrary reading of [0] differs from the generic reading of [0]. Since some overt NP's (such as people, doctors etc.) have the generic meaning, when [0] has the generic reading, they can be considered as null variants of overt generic NP's, as shown below:

- (53) a. {uysa-ka [0] soki-0-nun kes}-nun nappu-0-pnita  
doctor-sub deceive-Inf-comp thing-TOP bad-pres-em  
"It is not good for doctors to deceive [0]."  
(cf. (28) in D.-W. Yang (1985))  
b. loma-eyse-nun [0] loma pep-lul ttal-a-ya ha-n-ta  
Rome-at-TOP Rome law-obj follow-Inf-comp(must) do-pres-em  
"[0] should follow the Roman law in Rome."

The generic reading also requires some generic environment; the subject should be singular<sup>47</sup> and tense is also generic.<sup>48</sup>

<sup>46</sup> This fact is independently observed by Hong (1985/86).

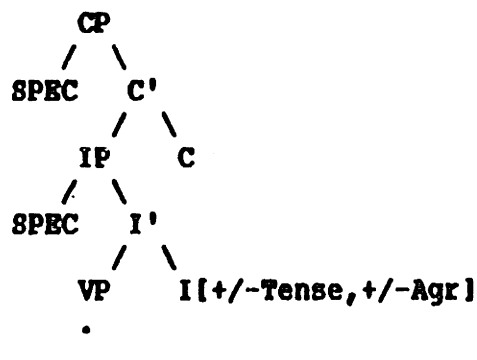
<sup>47</sup> In Korean, singular NP's (but not plural NP's) tend to have the generic reading, unlike English.

<sup>48</sup> The generic tense is usually present tense. Thus, when the embedded

So far, we have discussed nonlexical or functional Lexical categories (i.e., X-heads) such as INFL and C in Korean, and we have shown the syntactic reality of the INFL node in Korean. Although C is morphologically amalgamated on V-I, C is categorially independent in syntax. Korean also employs a variant of INFL, INFL[-Tense,+Agr], which can assign NOM, as Portuguese and Berber do. INFL[-Tense,+Agr], in Korean, triggers the nonarbitrary reading of null subjects, while INFL[-Tense,-Agr] triggers the arbitrary reading of null subjects.

Let us finish advocating the universal status of the VP node (cf. Williams (1984b); Rothstein (1983)) by asserting that INFL is an X-head and that tense and agreement elements ([+/-Tense] and [+/-Agr] features) are obligatory, regardless of their defects in morphological realization or semantic dependency. We suggest, given the X-bar schema in (55), that Korean employs the following D-structure even though V, I, and C are primarily morphologically amalgamated and even though I and C sometimes fail to be overtly realized at the surface:

(54)



- (55) a.  $\text{XP} \rightarrow \text{SPEC X}'$  (where X is [+/-N, +/-V], (C)omp, or (I)NFL)  
 b.  $\text{X}' \rightarrow (\text{comp})^* \text{X}$  (order is irrelevant)

---

verb is realized in the past tense, no generic reading of [0] is possible.

- (1) [[0] salam-lul soki-0-n kes-nun] nappu-0-ta  
 people-obj deceive-past-comp thing-CON/TOP bad-pres-em  
 "It is not good that [0] deceived people." (cf. D.-W. Yang (1985))

The SPEC of CP is a 'landing' site for an operator, being an A-bar position; the SPEC of IP is subject position. Heads (V, I and C) lie strictly on the right side, which means that Korean is a typical head-final language.

### 3.1.3. The universality of D-structure configurationality and the syntactic position

In previous subsections, we have shown that the strong lexicalist position that words are syntactically opaque is not tenable but rather that the syntactic position is empirically supported by the fact that inflectional elements are dominated by an X-head (INFL node) in syntax.<sup>49</sup> Based on our discussions in this subsection and in Chapter 2, we arrive at the following two working hypotheses of the syntactic position.

(56) The universality of D-structure configurationality:<sup>50</sup>

Every language fully adopts a certain version of the X-bar schema (55) with a certain (universal or language-specific) selectional function of X-heads; all clauses including ECM and small clauses contain (at least) I and C (cf. Chapter 4.).

(57) A convention of X-head projection:<sup>51</sup>

Every X-head (e.g. [+N, -V], I or C) has its own domain of projection at a certain level of representation (D-structure).

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<sup>49</sup> In fact, arguments against the strong lexicalist position are numerous in the literature. For arguments that 'inflectional' amalgamation shares some aspects of syntax, see Allen (1976), Anderson (1982); for arguments that 'derivational' amalgamation has some syntactic aspects, see Smith (1982); Sadock (1980;1986); Woodbury (1985); and Baker (1985/to appear). While the strong lexicalist position excludes any possibility of having syntactic explanations of morphologically-complex words, the syntactic position implicitly or explicitly assumes the lexicalist hypothesis (cf. Chomsky (1970)) in determining whether words are derived syntactically or lexically.

<sup>50</sup> In Chapter 4, we will show that all clauses including small and ECM clauses are CP projections and that the selection of certain functional X-heads is language-specific, while the selection of lexical X-heads may be universal.

<sup>51</sup> We assume that the direction of the head-parameter and the direction of Case and theta-role assignment adjust head-projections at D-structure, based on the restricted principles of UG (cf. Travis (1984); Koopman (1984)).



The first hypothesis says that there is a specific way in which every language is configurational;<sup>52</sup> the second one says that there is a specific level of representation (D-structure) at which every X-head is projected, subject to the X-bar schema in (55).

The syntactic position on certain morphologically-complex words under the two hypotheses given above may be formulated as in (58) in which the combination of 1 and 2 is bi-conditional:<sup>53, 54</sup>

(58) The syntactic position:

0. X-heads dominate phonetically null or overt morphemes at D-structure.
1. A complex word  $a_1 \dots a_i \dots a_n$  is derived transformationally if each  $a_i$  is dominated by an X-head in syntax and there is no intervening X-head between  $a_i$  and  $a_{i+1}$ .
2.  $a_i$  is dominated by an X-head in syntax and there is no intervening X-head between  $a_i$  and  $a_{i+1}$  if the complex word  $a_1 \dots a_i \dots a_n$  is derived transformationally.

(58:1) considers what the proper clausal structure is, given the universal principles on D-structure and the language-specific or universal selectional properties of X-heads. Thus the word destruction ([V-N]) is lexically-derived (not transformationally-derived) since V does not select an NP whose head N is not projected to form an argument (NP); the verb destroy s-selects a patient role which is c-selected as an NP and -ion does not represent a patient. In short, (58:1) says that complex words in a specific language are derived transformationally if the string order of the morphemes of the complex words reflects D-structure in that language.

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<sup>52</sup> Hale (1983) suggests that every language is configurational at the level of Lexical Structure in Hale's sense (also, cf. Hale and Keyser (1986)).

<sup>53</sup> Remember that we are assuming that X-heads and heads have the domination relation.

<sup>54</sup> By 'morpheme,' we mean morphological units which enter into the formulation of words.

Chomsky (1970) showed that 'derived' nominals such as destruction are not transformationally derived under the following assumptions: The productivity hypothesis -- the transformations apply freely -- and the idiosyncrasy-free hypothesis -- the relation between complex words and their formatives has no semantic idiosyncracies. In other words, the semantics of complex words, given the lexicalist hypothesis, are predicted from that of each morpheme of a complex word. Under the lexicalist hypothesis, (58:2) says that if complex words show these two properties then they are derived from X-heads in syntax. (58:1 and 2) together imply that transformations do not affect (simple) X-head-internal structures (a syntactic version of the strong lexicalist position; cf. Chapter 5).

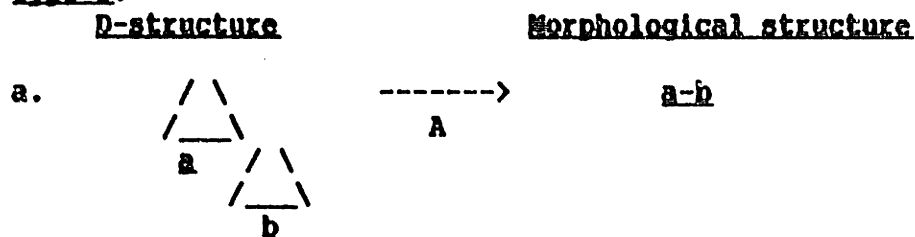
Given the syntactic position (58) with the two hypotheses in (56-57), we need a nonlexical or syntactic way to have amalgamation of syntactic units (heads dominated by X-heads; cf. I-V amalgamation) and we need a way to explain why some X-heads are invisible in syntax (e.g., the 'restructuring' construction). Certain morphological amalgamation and 'restructuring' (Type I and Type II of 'complex predicates') should be obtained as a result of syntax, more specifically, as a result of transformations. Thus immediate questions arise about what type of transformation causes surface morphologically-complex 'inflectional' words and what type of transformation makes C or I invisible (or inert) in certain clauses such as the Korean (ECH) small clauses. One candidate is head-movement. However, we have already seen in Chapter 2 that head-movement fails to apply when the target of head-movement is a functional/non-lexical category and that LF-head-movement is not a good candidate for the type II 'complex predicate.' In the next section, we propose and develop a head-to-head transformation other than head-movement (i.e., RR), which may or may not be accompanied by

morphological amalgamation. On the other hand, we will take up the issue concerning of the amalgamation of functional categories in Section 4.1. and suggest that overt RR accompanied by head-movement is responsible for them.

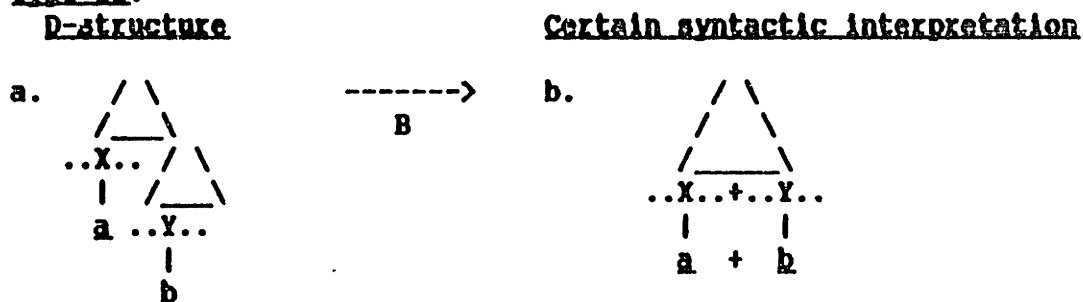
### 3.2. Type II 'complex predicates' and previous analyses

In this Section, assuming the syntactic position (58) with the two hypotheses (56-57) in Section 3.1., we discuss Type II 'complex predicates/words' (2) whose properties are also reflected in certain instantiations of Type I 'complex predicates/words' (1).

#### (1) Type I:



#### (2) Type II:



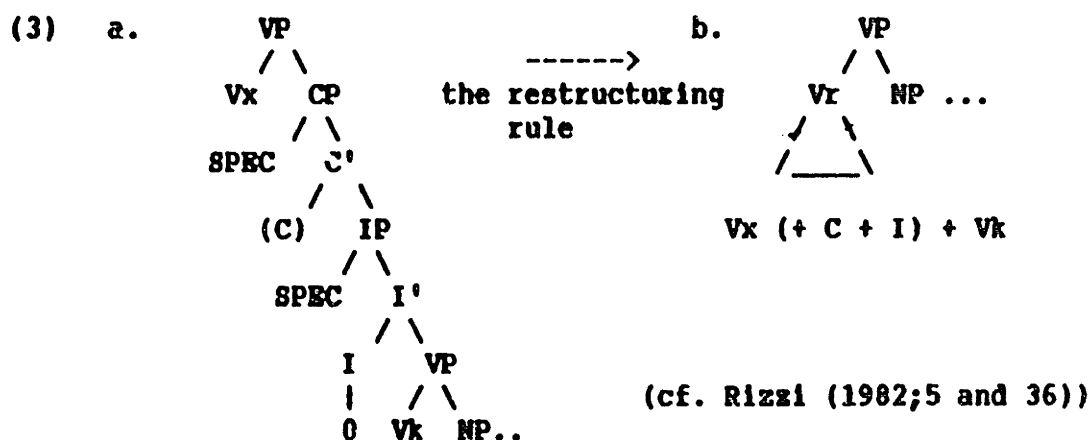
Unlike most studies of Type II 'complex predicates,' we will especially suggest that the structure of the Type II 'complex predicate/word' is (2a) in syntax and do not form the structure in (2b) unless the process A also applies to the Type II 'complex predicate/word,' or unless a and b are morphologically amalgamated by head-movement (cf. Section 3.3.).

#### 3.2.1. The Italian 'restructuring' phenomenon and Rizzi's (1982) analysis

An example of Type II 'complex predicates' comes from the Italian 'restructuring' phenomenon described by Rizzi (1982).<sup>1</sup> Rizzi (1982)

<sup>1</sup> As for other discussions under various assumptions, see Aissen and Perlmutter (1976/1983); Radford (1977); Luján (1976); Napoli (1981); Strozzer (1976/1981); Zubizarreta (1982); Piccolo (1985/1987); Burzio (1986); Di Sciullo and Williams (1987); and Kayne (1980/1987). Our

proposes the restructuring rule for Italian syntax with these properties: First, it is governed by a restrictive but significant class of main verbs (= Vx ('modals,' 'aspectuals,' and 'motion verbs')). Second, it optionally changes the structure of a phrase marker without affecting its terminal string and transforms an underlying multi-sentential structure into a simple sentence, creating a single verbal complex Vr (composed of morphologically-independent words) in the manner given in (3), which is repeated from Chapter 2.



There are three major arguments among those which Rizzi considers as supporting the rule. First, (as discussed in Chapter 2) the process shown in (3) is motivated by seemingly long-distance movement of cliticization in a certain construction: Cliticization is basically clause-bounded, as shown below.

- (4) a. Piero deciderà di parlarti di parapsicologia).  
 "Piero will decide to speak to you about parapsychology."  
 b. \*Piero ti deciderà di parlare di parapsicologia). (from (1) in Rizzi (1982;1))

The clitic la does not cross a clause. However, when a matrix clause

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discussions are based mostly on Rizzi (1982).

contains Vx, cliticization<sup>2</sup> may take place from an embedded clause to a matrix clause (clitic climbing), as shown in (5).

- (5) a. Piero verrà (a parlarti di parapsicologia).  
       "Piero will come to speak to you about parapsychology."  
       b. Piero ti verrà (a parlare di parapsicologia). (cf. (1) in Rizzi (1982;1))

The most interesting aspect of this phenomenon is that the embedded clauses of (4) and (5) are structurally identical: they are both [-Tense] and may take the complementizer a (5) or di (4). Thus Rizzi suggests that in (5b), the restructuring rule applies and that therefore cliticization applies without crossing a clause. The restructuring rule is productive in that the rule can apply whenever Vx appears. Vx's can be embedded by each other, as shown in (6), and a clitic (li in (6)) may cross as many clauses as the number of Vx's, which are underlined.

- (6) Maria li avrebbe potuti stare per andare a prendere lei stessa  
       "Maria them would have been able to be on the point of going to get t<sub>i</sub> herself. ((90a) in Rizzi (1982;22))

Rizzi (1982) further justifies the restructuring rule as given in (3) by arguing that the restructuring rule destroys subconstituency under the domain of Vx. One piece of the argument is that when the restructuring rule has applied, a substring of the domain of the restructuring rule, which forms a constituent before the rule applies, does not behave as a constituent with respect to rules referring to constituency. For example, in clefting sentences in which clitic climbing has applied (cf. 7b), which means that the restructuring rule has applied, a substring of a domain of the restructuring rule cannot be clefted; when no clitic climbing takes place, the substring can be clefted (cf. 7a).

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<sup>2</sup> Here we assume that clitics are derived by movement (cf. Kayne (1975); Rizzi (1982)).

- (7) a. E' proprio a riportargli i soldi che sto andando, stai tranquillo!  
 "It is just to bring him back his money that I am going, don't worry!"  
 b. <sup>1</sup>E' propri a riportare i soldi che gli sto andando, ...!  
 ((31a) and (32a) in Rizzi (1982:9))

In Italian (and cross-linguistically), the clefting sentence it is A that contains only a constituent in A position. Therefore, Rizzi attributes the ungrammaticality of (7b) to the restructuring rule; after the application of the rule, an embedded clause (Vk and its complements) does not form a constituent.

The third property, which provides indirect evidence for the necessity of the restructuring rule has to do with the auxiliary choice of a Vx. Rizzi suggests that an effect of the restructuring rule appears in the choice of the auxiliary of a Vx: The auxiliary of Vx is optionally determined by (the most embedded) Vk (but cf. fn. 18 in Section 3.3.):

- (8) a. Piero {ha/è} voluto venire con noi.  
 "Piero has/is wanted to come with us."  
 b. Piero {ha/\*è} sperato di venire con noi.  
 "Piero has/is hoped to come with us." (cf. (72 and 77) in Rizzi (1982))

In (8a), a Vx (voluto (= want)) requires avere (to have) as auxiliary. But when the embedded verb (venire (= come); Vk) requires essere (to be), the Vx may optionally take essere (cf. 8a); on the other hand, when a matrix verb is not Vx, such an alternation is not observed (cf. 8b). A Vx can be embedded by another Vx but the most embedded verb (Vk) determines the auxiliary of Vx, no matter which other Vx's (requiring avere or essere) are in the middle, as shown in (9).<sup>3</sup>

- (9) a. Maria li avrebbe potuti stare per andare a prendere lei stessa  
avere [+avere] [+essere] [+essere] [+avere]  
 "Maria them would have been able to be on the point of going to get t, herself."

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<sup>3</sup> As for the discussion of some exceptions to auxiliary change discussed by Burzio (1986), see Chapter 5 and Section 3.3..

b. Maria ci sarebbe dovuta cominciare ad andare.

essere [+avere] [+avere] [+essere]

"Maria there, would 'be' had to begin to go t<sub>1</sub>. (cf. (90) in Rizzi (1982;22-23))

Any auxiliary accompanied by Vx under the domain of 'restructuring' is changed to that of Vk.

(10) Maria ci potrebbe esser dovuta tornare.

essere [+avere] [+essere]

"Maria there might 'e' had to go back." ((91) in Rizzi (1982;23))

Thus Rizzi (1982;23) formulates the rule of Avere --> Essere as follows:<sup>4</sup>

(11) Avere ---> Essere in this context: [<sub>v</sub> vbl...vbl, V<sub>k</sub>], where V<sub>k</sub> is a verb basically requiring essere.

Rizzi further shows that this auxiliary alternation indicates whether the restructuring rule applies. The clitic climbing is possible if the auxiliary changes in a sentence with Vx, as shown in the contrast between (12b) and (12c).

(12) a. Maria ha dovuto venirci molte volte. ((84) in Rizzi (1982;21))

"Maria has had to come there many times."

b. Maria c'è dovuta venire molte volte.

c.\*?Maria ci ha dovuto venire molte volte.

In (12c), the restructuring rule has not applied, as in (12a), since the sentence takes the auxiliary essere required by Vx but not by Vk. Therefore no clitic climbing is allowed in (12c), unlike (12b) in which auxiliary change has taken place. The grammaticality of (12a), in which no auxiliary change and no clitic climbing appear, suggests that the rule is optional. To summarize, Rizzi suggests that the restructuring rule is optional and has at least the following effects:

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<sup>4</sup> Rizzi (1982;41,fn.28) speculates that auxiliary assignment would have to make use of the notion of 'head of the verbal complex' along the lines of Emonds (1976;1978):

(i) The lexical head of B<sup>max</sup> is that B such that there exist B = B<sub>1</sub>, B<sub>2</sub>, ..., B<sub>n</sub> = B<sup>max</sup> in which each B<sub>i</sub> is the head of B<sub>i+1</sub>. (Emonds (1978;159)) We will, in fact, introduce the notion of s-head to explain auxiliary change under our analysis of complex words.



- (13) a. clitic climbing  
 b. auxiliary change  
 c. constituency change

Even though the rule has nontrivial formal problems especially with respect to (13c), as Rizzi notes, Rizzi argues that grammar should have the rule instead of other possible alternatives. Rizzi argues against other possible approaches to the restructuring rule. First, Rizzi (1982;32) argues against a suggestion made by Quicoli (1976) that clitic climbing is derived by specified subject deletion (equi deletion): a null embedded subject (PRO) in (5) but not one in (4) is deleted. Quicoli's argument is based on the fact that *V<sub>x</sub>* does not take an overt embedded subject and an assumption that PRO is considered as a specified subject. However, Rizzi shows that clear cases of raising verbs may or may not trigger the restructuring rule, like control verbs shown in (5), for example.

- (14) *Mari e monti gli devono essere stati promessi invano, k a giudicare dal suo comportamento.*

"heaven and earth to him must have been promised in vain, if we consider his behavior."

- (15) *Mi potrebbe piovere sulla testa da un momento all' altro.*

"It to me<sub>i</sub> would be likely to rain on the head t<sub>i</sub> any minute."

- (16) a. *Mari e monti paiono essergli stati promessi invano.*

"Heaven and earth seem to have to him been promised in vain."

- b. \**Mari e monti gli paiono essere stati promessi invano.*

- (17) a. *Sembra piovergli sulla testa.*

"It seems to rain to him<sub>i</sub> on the head t<sub>i</sub>."

- b. \*?*Gli sembra piovere sulla testa. ((125-7) in Rizzi (1982;32))*

Both (14-15) and (16-17) contain raising verbs in matrix clauses, as we see a nonthematic subject in (14 and 16) or weather-*it* in (15 and 17). (14-15) allow clitic climbing while (16-17) do not. Rizzi notes that this *V<sub>x</sub>*-non*V<sub>x</sub>* dichotomy of raising verbs cannot properly be explained by Quicoli's proposal because specified subject deletion are not generally extended to cover the raising construction triggering A-movement that leaves a trace.<sup>2</sup>

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<sup>2</sup> Specified subject deletion also cannot extend to explain Korean 'restructuring' construction, which exhibits an overt embedded subject (cf. Section

Rizzi also rejects a base solution which allows double subcategorization: (A) as (control or subject-raising) main verb and (B) as an auxiliary element, inserted into the verbal complex. Rizzi (1982;33) notes "this would allow us to do away with many nontrivial formal problems created by the existence of a fully productive reanalysis rule." However, Rizzi points out that a Vx differs from an auxiliary verb. For example, the main verb avere as Vx and the auxiliary avere are semantically different: Vx differs from auxiliary verbs; the first is roughly synonymous with the root interpretation of dovere (must) while the second is simply a marker of perfect aspect. Second, the Vx-Vk sequences allow intervening elements: A complementizer may be selected by a Vx (also cf. (5 and 6)).

- (18) a. Gianni gli sta per raccontare stupide storie.  
 "Gianni him is going to tell stupid stories."  
 b. Piero li venne a chiamare alla stazione.  
 "Piero them came to call at the station." (cf. (14b and 15b) in Rizzi (1982; 4-5))

Many kinds of adverbs can also break into Vr (the Vx + Vk sequence), as shown in (19):

- (19) a. Lo verrò subito a scrivere  
 "I it will [vs come at once to write]."  
 b. Maria è dovuta immediatamente tornare a casa.  
 "Maria 'is' had immediately to come back home." (cf. (144a and c) in Rizzi (1982;38))

In addition, Vk can be passivized and take an auxiliary:<sup>a</sup>

- (20) Piero gli stava per essere presentato.  
 "Piero to him was going to be introduced." ((114) in Rizzi (1982;-28))

Third, although it is marginally accepted in the colloquial level, Vr may contain a wh-element:

### 3.4).

<sup>a</sup> Rizzi (1982;45) notes that the auxiliary essere in passive construction never triggers auxiliary change. Why this so will be discussed in Chapter 5.

- (21) a. Su questo punto, non ti saprei che dire.  
 "On this point, I you wouldn't [<sub>Vx</sub> know what to tell]."  
 b. ?Mario, non lo saprei a chi affidare, durante le vacanze.  
 "Mario, I him wouldn't [<sub>Vx</sub> know to whom to entrust], during my holidays." ((136a and b) in Rizzi (1982;36))

In (21), in which 'restructuring' has taken place as we see clitic climbing, wh-phrases can intervene between a V<sub>x</sub> and a V<sub>k</sub>. These facts lead Rizzi to reject a base-generation hypothesis.

### 3.2.2. Problems with Rizzi's restructuring rule

Rizzi's rule (originally proposed in the mid-seventies), however, has some theoretical and conceptual problems in the current framework: First, the rule does not explain why it applies in certain environments (given the idea of the licensing theory of transformation) and how it interacts with the principles of UG. The rule is rather radical since it allows node deletion; if the recoverability of deletion also applies to node deletion, the rule faces a problem. Nor can the rule avoid the problem caused by the projection principle (under either the narrow or the wide interpretation), because it deletes a subcategorized CP of V<sub>x</sub> or because it deletes the subject of an embedded clause. Second, Rizzi (1982;38) notes that a V<sub>r</sub> is a 'verbal complex,' not simply a V, since the 'verbal complex' allows many other intervening elements, as shown in (18-21). The postulation of 'verbal complexes' which contain maximal categories between V<sub>x</sub> and V<sub>k</sub> already makes Rizzi's restructuring rule in (3) mysterious. Third, the rule has nontrivial formal problems: it is neither explicit about its output structures nor about the mechanisms governing the output structures. In short, the rule is unclear in status; the restructuring rule, even though it originally intends to be language-specific, does not seem to be

governed by any explicit principles of UG, which clearly invokes a problem of learnability.

There is also some doubt about one effect of the rule, i.e., constituency change. Although the first two main 'restructuring' effects in (13) are not controversial in the literature (but cf. Burzio (1986)), the third effect of the restructuring rule (constituency change), which is crucial to the postulation of the restructuring rule, is questionable. There are, in fact, some arguments against this effect and therefore against the postulation of the restructuring rule itself. Strozer (1981), for example, notices<sup>7</sup> that constituency change may not be a 'restructuring' effect since the data which support the constituency argument can also be explained in terms of binding. For example, (7b) is also ruled out by binding or by chain conditions because the trace of a clitic fails to be bound by its antecedent, as we see in the S-structure of (7b) below.

(22) \*[E'propri [a riportare t<sub>i</sub> i soldi] [che gli<sub>i</sub> sto andando,...]]!

If 'Clitic Placement' (cf. Kayne (1975); Rizzi (1982;2-3)) is derived by a movement rule (or if traces left by clitics are constrained by binding A (cf. Kayne (1980;1984); Quicoli (1976))), then (22) violates binding because the clitic gli does not c-command its trace.<sup>8</sup>

Since binding also rules out the data for the constituency argument, it may in fact be that the 'restructuring' phenomenon does not involve change in constituency. If that is so, it would be better to understand auxiliary change and clitic climbing under a different analysis of 'restru-

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<sup>7</sup> Attributing the argument to Zubizarreta, Kayne (class lectures, 1987, Spring) also notices that binding explains the ungrammaticality of (7b), which means that we can dispense with Rizzi's constituency argument.

<sup>8</sup> Rizzi (1982) discusses more data with wh-movement, right node raising, and complex NP shift to strengthen the constituency argument. They are also explained in terms of binding in the same way as in (22) (see Strozer (1981)).

cturing' instead of motivating a rule that changes constituency. The rule that triggers constituency change has many nontrivial formal and theoretical problems as we discussed above. However, binding alone does not explain clitic climbing\* (and auxiliary change). Thus there must be a way to capture the other two 'restructuring' effects without postulating the rule in (3).

### 3.2.3. Other proposals

Three major approaches have attempted to explain the two 'restructuring' effects discussed (clitic climbing (and auxiliary change)), as shown below.<sup>10</sup>

- (23) a. base-generation approach (cf. Strozer (1976/1981); Picallo (1985))
- b. parallel structure approach (cf. Zubizarreta (1982); Di Sciullo and Williams (1987))
- c. movement approach: (cf. Burzio (1986))

The base-generation approach suggests a monosentential structure for the 'restructuring' construction. Thus it assumes that constituency change is not a 'restructuring' effect. One most recent proposal under the base-

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\* Kayne (1980) for example argues that the relation between clitics and the gaps linked with them is explained in terms of binding but assumes that the 'restructuring' phenomenon is responsible for clitic climbing.

<sup>10</sup> One more approach, which does not belong to any of the three approaches in (23), is found in Kayne (1987); we will discuss Kayne (1987) in Chapter 5. Approaches in other frameworks such as relational grammar are found in Aissen and Perlmutter (1976;1983) and in Radford (1977), which attempt to explain both 'restructuring' and causative constructions in Romance languages. The trend toward considering both 'restructuring' and causative constructions as a 'reanalysis' phenomenon is easily found in the literature. Except for the first approach (and Rizzi (1982)), the second and third approaches in (23b and c) aim at a unified account of the two constructions.

On the other hand, studies also show that the complex predicate of causative construction differs from that of 'restructuring' construction (cf. Rizzi (1982); Napoli (1981)). See also Picallo (1987) for some arguments that some unified account of causative and 'restructuring' constructions, such as Burzio's VP-movement and Baker's V-movement, would not explain some aspects of the 'restructuring' construction in Catalan.

generation approach can be found in Picallo (1985). Based on Catalan, Picallo first provides some arguments that Vx cannot be base-generated as a main verb and therefore no restructuring rule is necessary: First, Vx cannot be a control (nonergative) verb at D-structure since the restructuring rule, which may delete PRO, would violate the projection principle. Vx also cannot be a raising verb for these reasons: In Catalan, as in other Romance languages, cliticization of anaphoric/reflexive elements and A-movement cannot occur at the same time in the same domain of rule application if elements are coindexed:<sup>22</sup>

- (24) a. \*Els nostres amics<sub>i</sub> es<sub>i</sub> foren presentats t<sub>i</sub> t<sub>i</sub>  
           our friends to each other were introduced  
       b. \*Ell<sub>i</sub> es<sub>i</sub> sembla t<sub>i</sub> intel.ligent t<sub>i</sub>  
           he to himself seems intelligent. ((15) in Picallo (1987))

Passivization and cliticization have been applied in (24a); subject-to-subject raising and cliticization in (24b). The ungrammaticality in (24) suggests that if Vx is a raising verb, then a raising verb cannot cooccur with clitic climbing.

Picallo provides an argument that Vx's in Catalan are not raising verbs. Picallo first notes that most modal expressions in Catalan are ambiguous in that they may have either the epistemic (cf. 25a) or the root reading (cf. 25b).

- (25) El lladre pogué entrar per la finestra  
       "The thief could come in through the window."  
       a. It is possible that the thief came in through the window.  
       b. The thief was able/allowed to come in through the window. ((28) in Picallo (1985;201))

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<sup>22</sup> Picallo notes that the sentences in (24) would be ruled out by a locality condition suggested by Rizzi (1982/86b), which blocks A-chains interrupted by a coindexed lexical material:

(1) \* NP<sub>i</sub> ... cl<sub>i</sub> ... t<sub>i</sub> ... t<sub>i</sub>  
       where x<sub>i</sub> c-commands x<sub>i+1</sub>

If the epistemic or the root reading of modals represents the notion that modals are syntactically ergative or nonergative verbs at D-structure in Burzio's (1986) sense,<sup>12</sup> then when modals have only the epistemic reading, they are base-generated as ergative. Those ergative modals may not allow clitic climbing if they provide syntactic raising, like passive or subject-to-subject raising (i.e., A-movement). However, in Catalan, a Vx such as must, which has only the epistemic reading, does not behave as a raising verb. In (26a) with must, clitic climbing is allowed; (26a) is grammatical, unlike (26b) or (26c).

- (26) a. Ell es deu consider intel.ligent. (must + control V)  
           he himself must consider intelligent  
       b. \*Els teus amics, es, devien ser presentats t<sub>i</sub> t<sub>i</sub> (must + passive V)  
           your friends to each other must have been introduced  
       c. \*Ell, es, devia semblar t<sub>i</sub> intel.ligent t<sub>i</sub> (must + raising V)  
           he to himself must seem intelligent (cf. (16-17) in Picallo (1987))

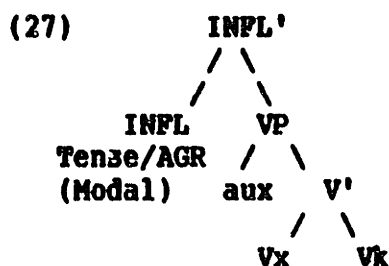
Descriptively speaking, whether an embedded verb triggers A-movement determines the grammaticality of the sentence, as shown in (26). Thus Picallo suggests that expletive Vx's are not raising verbs, since they fail to trigger the syntactic effect of raising and concludes that Vx is not generated either as a control or as a raising verb (or that Vx is not generated as a main verb).

Picallo, therefore, hypothesizes -- based on suggestions made by Strozer (1976;1981)<sup>13</sup> and Zubizarreta (1982)<sup>14</sup> -- that clitic climbing and

<sup>12</sup> This assumption is theory-internal. However, given the framework which assumes the notion of s-selection, this assumption does not seem to be controversial.

<sup>13</sup> Strozer (1981;179) suggests that Vx takes a VP complement instead of a CP complement. She justifies her suggestion by noting that the class of Vxs is extremely small, which does not offer a proper justification for a VP complement solution. The minimal productivity argument for VP hypothesis for one type of Romance causative construction (but not for 'restructuring' construction) can also be found in Burzio (1986;372). Burzio also considers VP complements as marked options.

auxiliary change can be obtained by an assumption that  $V_x$  can be base-generated either as a sister node of  $V_k$  or under INFL as a modal, as shown below (cf. Picallo (1985;1987)).<sup>15</sup>



Under this proposal, clitic climbing is allowed since  $V_x$  is not a predicate but an adjunct to  $V_k$ . Auxiliary change can be explained as Rizzi suggests: the rightmost verb is the main verb and the rest are semi-auxiliaries.<sup>16</sup>

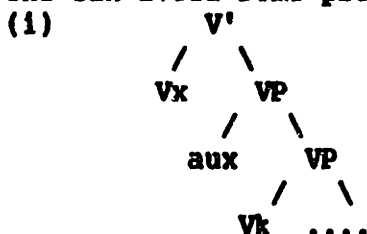
Even if Picallo apparently avoids a problem with the projection principle, her suggestion has another problem -- enriching D-structure; nontrivial formal problems of Rizzi's restructuring rule are simply carried over at D-structure. The structure (27) is, in fact, incompatible with other principles of UG. In the first place, the structure (27) is not allowed by the X-bar schema/constraints,<sup>17</sup> which are assumed to hold at D-

<sup>14</sup> Zubizarreta (1982) suggests that  $V_x$  may function as a secondary or as an adjunct predicate.

<sup>15</sup> Picallo (1985) argues that modals with the epistemic reading appear in Modal position in (INFL) and modals with the root reading and aspectuals appear in  $V_x$  position in (27). We do not discuss her arguments here.

<sup>16</sup> Picallo further argues that theta-structure of clauses with  $V_r$  is determined by  $V_k$  rather than  $V_x$ . We will discuss her arguments later.

<sup>17</sup> Under the base-generation approach, one might also suggest the following VP complementation (as Noam Chomsky (p.c.) notes), as shown in (i) in which one can avoid some problems with X-bar theory.





structure (and therefore at any other level of representation, given the wide interpretation of the projection principle we are assuming here). Since a  $V_x$  can be embedded by another  $V_x$ ,  $V'$  would be able to have more than one  $V_x$ . Moreover the structure in (27) is empirically inadequate. If Rizzi's data are right, then  $V'$  projection would be able to contain any elements such as adverbials (cf. 19), auxiliaries (cf. 10 and 20), complementizers (cf. 5 and 18) or *wh*-elements (cf. 21).<sup>10</sup> Thus, this approach does not actually explain the 'restructuring' construction sufficiently to satisfy both empirical and theoretical requirements.

In addition, Piccallo's argument that  $V_x$  may not be a raising verb raises a problem with Rizzi's data:

(28) Dopo anni di attesa, assistenza gli sta per essere portata, finalmente!

"After years of waiting, assistance to him is about to be given  
t<sub>1</sub>, at last!" ((125b) in Rizzi (1982:32))

In (28), part of the idiom chunk portare assistenza appears in the matrix subject position, which shows that the matrix verb is a raising verb (cf. 14-15); part of the idiom chunks fails to be base-generated in the subject positions, given the notion of D-structure and the D-structure condition (cf. Chapter 1). The fact that a raising verb allows clitic climbing, as

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(1) would not be compatible with the Korean 'restructuring' construction in which  $V_k$  is projected as a full clause containing an overt subject (cf. Section 3.4.). Our position, which assumes CP complementation, will not differ from (1) in spirit in assuming that  $V_x$  or aux selects CP instead of VP (cf. Section 3.3.). We will, however, show that CP complementation obtains both empirical and theoretical plausibility, which VP complementation fails to obtain.

<sup>10</sup> As for intervening adverbials and complementizers between  $V_x$  and  $V_k$ , one may assume that adverbials may appear between  $V_x$  and  $V_k$  and that complementizers are actually preverbal particles (cf. Burzio (1986)). However, intervening auxiliaries which go with  $V_k$  (10 and 20) and intervening *wh*-phrases (21) clearly undermine any base-generation approach. Note that intervening *wh*-phrases indicate that there must be an operator position (i.e., the SPEC of CP) between  $V_x$  and  $V_k$ .

in (28), suggests that raising verbs may instantiate 'restructuring' verbs. If so, (independently of an analysis of the Catalan fact shown in (24 and 26)) Picallo's argument that 'restructuring' verbs cannot be raising verbs is simply false or at most cannot be universally true. In fact, the Italian data strongly suggest that Vx's are base-generated as main verbs and that if they are ergative, they trigger raising (A-movement). To conclude, we reject any base-generation analyses which suggest a monoclausal structure.

The second approach -- the parallel structure approach -- comes from Zubizarreta (1982).<sup>19</sup> Zubizarreta notices that Vx does not behave exclusively as a non-main verb and it may not be treated as an auxiliary either (cf. Zubizarreta (1982;135-141); also cf. Kayne (1975); Pullum and Willson (1977)). Rather, Vx behaves as a main and non-main affixal verb at the same time. Zubizarreta thus suggests that this double property implies that the 'restructuring' construction has two parallel structures, one of which has Vx as an affix to V<sub>k</sub>:<sup>20</sup>

- (29) a. [<sub>S1</sub> NP<sub>1</sub> [<sub>VP</sub> V<sub>1</sub> [<sub>S2</sub> NP<sub>2</sub> [<sub>VP</sub> V<sub>2</sub> NP<sub>3</sub> ]]]]
- |                    |                    |                    |
- Maria<sub>1</sub>        quiere        e<sub>1</sub>        comprar    el libro
- |                    |                    |                    |
- [<sub>S</sub> NP<sub>1</sub> [<sub>VP</sub>                    [<sub>V</sub> V<sub>main</sub> + V ]                    NP<sub>3</sub>]
- b. Mary wants to buy the book."                    (cf. (77) in Zubizarreta (1982;165))

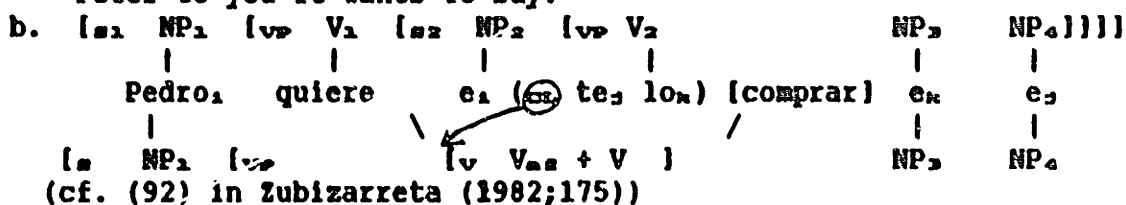
<sup>19</sup> See also Manzini (1983b) and Goodall (1985) for some different analyses with different empirical coverage under the dual/parallel structure approach. We will discuss the coanalysis of Di Sciullo and Williams (1987) -- another parallel structure analysis -- in Chapter 5.

<sup>20</sup> The bottom structure in this proposal is neither morphological nor syntactic (a morpho-syntactic level in Zubizarreta (1985)): Vx may be an affix to V across overt elements (morphosyntactically-bound morpheme). The morpho-syntactic level is also motivated to account for Romance causativization.

Given this parallel structure analysis, clitic climbing is explained as follows: A clitic is generated on the verb as in (30b), which functions as the head of a 'verbal complex' in that a clitic can percolate up to Vx. Linearization then takes place in phonology; auxiliary change would also be explained as in Rizzi (1982).

(30) a. Pedro te lo quiere comprar.

"Peter to you it wants to buy."



Zubizarreta suggests that this parallel structure avoids a problem with the projection principle and can dispense with Rizzi's restructuring rule, which has nontrivial formal problems. However, even if this approach avoids a problem with the projection principle, like the first approach, it does not eliminate some nontrivial formal problems with respect to the status of morphology and syntax, since Zubizarreta virtually admits that a head can dominate morphologically independent clusters of words, which Rizzi also has to assume. In other words, she postulates that the output of Rizzi's restructuring rule is base-generated in the bottom structure. Given that the bottom structure is largely redundant except for Vr structure, it would be better to find a way to derive Vr by a rule which is compatible with the projection principle.

In addition, the double structure does not explain some Catalan facts discussed in Picallo (1985). Picallo notes that in potential 'restructuring' sentences such as (31), in which the 'restructuring' reading is not forced, the sentence is ambiguous.

(31) He tornat a felicitar-la

a. (I) have come back to congratulate-her

b. (I) have congratulated-her again ((132) in Picallo (1985:246))

In the first reading (31a), a matrix verb is interpreted as a main verb but in the second reading (31b), it is interpreted as an adverbial. However, when the 'restructuring' reading is forced (for example, when clitic climbing has taken place, as in (32)), the sentence has only one meaning (32b), where *Vx* is interpreted more as an adverbial rather than as a motion verb.

(32) *L'he tornat a felicitar t<sub>i</sub>*

a. \*(I) *her<sub>i</sub>* have come back to congratulate *t<sub>i</sub>*

b. (I) *her<sub>i</sub>* have again congratulated *t<sub>i</sub>* ((136) in Picallo (1985;247))

Given (32), it is very difficult to accept double structure for the 'restructuring' construction in Catalan since the top structure is redundant or worse than redundant as it provides a non-existent sense (Noam Chomsky (p.c.)). Thus, it seems that double structure is not motivated cross-linguistically. Even if we assume that the top structure is selectively visible, what governs this selective visibility is not clear.

The third approach made by Burzio (1986) (also cf. Strozzer (1976;-1981); Ruveret and Vergnaud (1980)) suggests that the embedded VP moves to a matrix VP, based on Kayne's analysis of causative construction in French (movement of V-projection). Burzio (1986) suggests that an embedded VP moves to the right side of a matrix V, as shown in (33-4b); (33a) represents *Vx* as nonergative and (34b) *V1* (= *Vx*) as ergative.

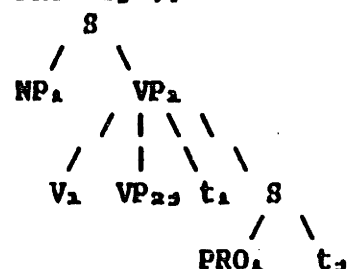
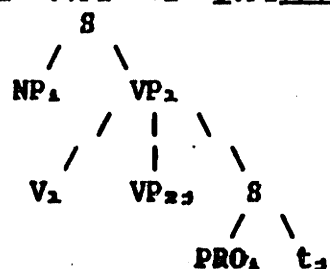
(33) a. [<sub>S</sub> NP<sub>1</sub> [<sub>VP1</sub> V<sub>1</sub> [<sub>S</sub> PRO<sub>1</sub> [<sub>VP2</sub> V<sub>2</sub> NP<sub>2</sub> ]]]]

b. [<sub>S</sub> NP<sub>1</sub> [<sub>VP1</sub> V<sub>1</sub> [<sub>VP2</sub> V<sub>2</sub> NP<sub>2</sub> ]], [<sub>S</sub> PRO<sub>1</sub> t<sub>3</sub> ]]

(34) a. [<sub>S</sub> e [<sub>VP1</sub> V<sub>1</sub> NP<sub>1</sub> [<sub>S</sub> PRO [<sub>VP2</sub> V<sub>2</sub> NP<sub>2</sub> ]]]]

b. [<sub>S</sub> NP<sub>1</sub> [<sub>VP1</sub> V<sub>1</sub> [<sub>VP2</sub> V<sub>2</sub> NP<sub>2</sub> ]], t<sub>1</sub> [<sub>S</sub> PRO t<sub>3</sub> ]]

(33b)



An apparent advantage of this approach (cf. fn. 10) is that VP-movement can also explain the faire-V order in Romance causative construction. Since the faire-V sequence is also explained by VP-movement, some similarities between 'restructuring' and causative constructions are explained. For example, clitic climbing is possible in the causative construction (35a), as in the 'restructuring' construction (35b).<sup>21</sup> VP-movement explains clitic climbing in both constructions in the following way.

- (35) a. Li<sub>i</sub> ho [<sub>VP</sub> fatti [<sub>VP</sub> leggere [ e<sub>i</sub> ]], [<sub>S</sub> a Mario t<sub>j</sub>]]  
 "I have had Mario read them<sub>i</sub>."  
 b. Li<sub>i</sub> ho [<sub>VP</sub> voluti [<sub>VP</sub> leggere [ e<sub>i</sub> ]], [<sub>S</sub> PRO<sub>i</sub> t<sub>j</sub>]]  
 "I have wanted to read them<sub>i</sub>." ((56) in Burzio (1986;343))

In (35a and b), clitic li does not cross a clause, as desired.

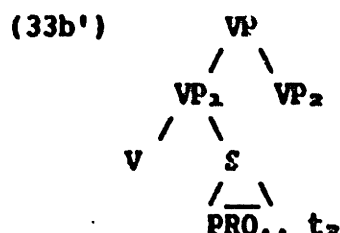
Although this approach describes the 'restructuring' phenomenon, it has some problems. First, this proposal also reveals empirical problems. It is not empirically adequate because it may fail to explain the word order in (18-21) in a plausible way since complementizers or wh-elements should appear on the right side of VP<sub>2</sub> (cf. fn 18). Second, VP<sub>2</sub>-movement would violate the projection principle with the wide interpretation: a VP node that moves (VP<sub>2</sub> in (33-34)) becomes a sister node to the complement of V<sub>1</sub>; the position of VP<sub>2</sub> in (33-34) suggests that VP<sub>2</sub> makes another complement at S-structure, violating the projection principle.

One could, however, assume that VP<sub>2</sub> is actually adjoined to VP<sub>1</sub> so that the structure is immune to the wide interpretation of the projection principle given the adjunction function  $\lambda$  in Chapter 2). After VP<sub>2</sub>-adjunction to VP<sub>1</sub> applies, S-structure would be like (33b') if the direc-

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<sup>21</sup> See Burzio (1986;343-8) for more similarities, which are not our immediate concern here.

tion of adjunction follows the head-parameter (cf. Kayne (1984); Choe (1987b)):



The structure in (33b') does not raise any empirical problems with respect to the data with intervening elements between  $V_k$  and  $V_x$  (cf. 18-21) since  $\text{VP}_2$ -adjunction does not change string order. There are, however, other empirical and theoretical difficulties with (33b'). First,  $\text{VP}_2$ -adjunction may fail to extend to 'restructuring' in head-final languages (cf. Section 3.4. for discussion of this point). Second, (33b') would raise another problem under the framework we are assuming.<sup>22</sup> Like the first and the second approaches, it requires additional mechanisms for the interpretation of the  $V_x$ - $V_k$  'verbal complex' (i.e., a rule that the rightmost V governs the choice of auxiliary). This rule would be somewhat counterintuitive given that the embedded VP moves to adjoin to the matrix  $V_x$ , as Picallo (1985) also points out; configurationally,  $V_x$ , instead of  $V_k$ , is syntactically prominent since  $V_k$  ( $\text{VP}_2$ ) lies within one segment of  $\text{VP}_1$  but  $V_k$ , instead of  $V_x$ , determines the auxiliary that the 'verbal complex' takes. Finally, given the licensing theory of transformation, what motivates VP-movement or why VP should adjoin to a matrix V is not clear.

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<sup>22</sup> Under the current framework in which VP is a barrier, clitics that move across two VP segments of two different VP categories would violate Subadjacency if segments can be barriers. However, whether segments can be barriers and if so under what conditions they can be barriers are all empirical issues that we will not pursue here. (But see Belletti and Rizzi (1986); Choe (1987b) for some suggestions that segments can be barriers).

To conclude, these three proposals avoid problems with the 'restructuring' phenomenon caused by the projection principle but raise other nontrivial theoretical problems either by enriching D-structure or by introducing VP-movement, which is questionable in status, given the projection principle and the licensing theory of transformation. In addition, each approach uniformly ignores some seemingly trivial empirical data concerning intervening elements, as given in (18-21). Under the syntactic position we are assuming, these problems are not trivial because functional categories and their projections that include A-bar SPEC positions have reality in syntax and therefore their positional/categorial status should be taken seriously. We therefore conclude that these three major approaches to 'restructuring' are not viable because they have not only empirical problems but also theoretical problems.

### 3.3. Proposal

In the preceding section, we saw that constituency change, which Rizzi considers a 'restructuring' effect, can be explained in terms of binding. As constituency change also raises nontrivial formal problems, we will consider the following as the 'restructuring' effects in Italian: clitic climbing and auxiliary change. In this section, we propose a transformational approach to the 'restructuring' phenomenon, which causes neither empirical nor theoretical problems and which gives insight into different types of complex words/predicates including 'complex predicates' obtained by the 'restructuring' process.

#### 3.3.1. The Restructuring Rule (RR) and the RR effects

To explain the 'restructuring' phenomenon, let us incorporate an idea that the 'restructuring' process may be a head-to-head process, like head-movement, as we discussed in Chapter 2. This idea came from the fact that in morphologically-complex predicates that contain auxiliary types of predicates, the RHR is not observed, while the RHR is observed in morphologically-complex predicates that contain predicates such as causative ones. To be concrete, in Chichewa, a head-initial language, the direction of affixation differs depending on the kind of matrix predicates; compare the morpheme order in (1a) with the usual morpheme order derived by head-movement in (1b).

- (1) a. Vx-V  
       b. V-Vc where Vc is a causative predicate and Vx is an auxiliary type of predicate (semantically-weak predicate)

We suggest that both the rule deriving 'restructuring' effects and the head-movement deriving morphological amalgamation apply to the case of



(1a). We reason that the morpheme order in (1a) is obtained because the application of the rule deriving 'restructuring' effects prevents the RHR from applying to the outputs of head-movement. Since the rule deriving 'restructuring' can coocur with head-movement, we suggest that the 'restructuring' phenomenon is governed by a head-to-head transformational rule.

If 'restructuring' is derived by a head-to-head transformation, one might consider a covert version of head-movement as a mechanism governing 'restructuring' in Italian assuming that two heads are coindexed in syntax and amalgamated by head-movement in LF. The properties of 'restructuring' construction, however, are not obtained from the output of a covert version of head-movement. First, there is no systematic way to explain why adjunction is rightward instead of leftward when it applies to an auxiliary predicate. The property of the Italian version of (1b) also significantly differs from that of the Italian version of (1a): Causative complex predicates in Italian do not behave like complex predicates with Vx's in Italian. Causative construction, like 'restructuring' construction, allows clitic climbing, as Rizzi (1982;28-29) notices, but no auxiliary change is observed in causative construction.<sup>2</sup> Matrix verbs in the Faire infinitive construction (cf. Kayne (1975)) all require avere as the auxiliary, but they do not allow the rule avere --> essere to apply, whether or not a clitic climbs, as shown in (2) in which the embedded verb requires the auxiliary essere.

(2) a. Mario {ha/\*è} {fatto/lasciato/visto} venire il medico<sub>i</sub>.

b. Mario lo<sub>i</sub> {ha/\*è} {fatto/lasciato/visto} venire t<sub>i</sub>.

"Mario has {had/let/seen} the doctor/him come." ((113) in Rizzi (1982;28))

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<sup>2</sup> In subsection, 3.3.6., we discuss why the causative construction allows clitic climbing but not auxiliary change.

One more problem with an LF-head movement approach to 'restructuring' comes from the semantics of Vx's. Semantically speaking, in most cases, the V-Vc sequences illustrate simple juxtaposition among V's while the Vx+Vk sequences illustrate a main-auxiliary relation. Thus a head-movement approach would not offer any insight into the semantics of the complex predicates in (1a). Also, given the present understanding of morphologically-motivated head-movement, it is unlikely that 'reanalysis' or 'restructuring' can be explained in terms of LF-head-movement.

One rule (other than head-movement) that affects heads, we suggest, operates on categories (X-heads), giving rise to certain 'abstract reanalysis' effects. There are two good reasons to suggest that one of the rules governing (1a) affects categories. First, unlike (1b), the morpheme order does not obey a morphological principle such as the RHR but reflects the string order of X-heads in syntax, which suggests that the rule may not be morphologically motivated. Second, one of the 'restructuring' effects--clitic climbing--suggests that 'restructuring' is a kind of abstract 'reanalysis' or a process of reinterpreting the categorial status of X-heads. For these reasons, 'restructuring' is, we suggest, a phenomenon of weakening the categorial status of projections in a certain way and it is derived by an X-head-to-X-head transformation.

In fact, in the generative framework, two kinds of transformation or operation have been discussed in the literature: transformations which affect terminal strings (A/A-bar movement) and operations which affects nodes or categories. The former are now called move-alpha, by which terminal strings change their positions, leaving traces in the positions from which they move (cf. X/Xmax adjunction/substitution in Chomsky (1986b); also cf. Chapter 2). The latter are not well-understood (and are

not usually considered as transformational) but have been discussed in terms of node deletion (cf. tree-pruning conventions (Ross (1967) or S-bar deletion (Reis (1973); Vergnaud (1982); Chomsky (1981)) and in terms of various versions of reanalysis (in addition to Rizzi's restructuring rule). There have been many proposals on reanalysis for various reasons: Chomsky's (1975; 240, fn. 24) reanalysis of the phrase make the claim;<sup>2</sup> Hornstein and Weinberg's (1981) reanalysis for preposition standing; the thematic rewriting rules (Rouveret and Vergnaud (1980)) for French causativization; Di Sciullo and Williams's (1987) coanalysis; and Zubizarreta and Vergnaud's (1982) notion of virtual structure for 'free word order.' It seems that UG must have transformations or operations which affect categories or nodes, giving rise to change in some functional interpretation of categories. If we consider the phenomenon as governed by a transformation, given the current modular approach to grammar (cf. Chomsky (1981; 1986a and b)), the transformation should be constrained by universal principles of UG. The rule should not be construction-specific or language-particular; it should be motivated by some theoretical necessity derived from the interaction of subtheories of UG. The rule also should satisfy the licensing theory of transformation in motivating the rule application.

It seems that the semantics of Vx's trigger the rule or that the rule is governed by the semantics of Vx's. As Rizzi notes, Vx's are semantically classified in a significant way. Vx's do not express the main action or

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<sup>2</sup> According to Rizzi (1982; fn 35)), Chomsky (1974; The Amherst Lectures) also allows the existence of optional (nontransformational) restructuring rules. The rules reanalyze the string [take]<sub>v</sub> [advantage]<sub>NP</sub> [of Mary]<sub>PP</sub> as the string [take advantage of]<sub>v</sub> [Mary]<sub>NP</sub> and account for passive sentences (iii) along with (ii) below:

- (i) Bill took advantage of Mary.
- (ii) Advantage was taken of Mary by Bill.
- (iii) Mary was taken advantage of by Bill.

state of verbal complexes. Vx's have thus been called 'semi-auxiliaries' in the literature (cf. Strozer (1981); Picallo (1985) and references therein; also cf. Napoli (1981)).<sup>3</sup> Nonetheless, syntactically Vx's do not behave like modals or the auxiliary verb *do* (see Zubizarreta (1982); Picallo (1985)). Since Vx should be syntactically base-generated as a main verb (given the syntactic position we are assuming here)<sup>4</sup> but semantically an auxiliary, let us call Vx an auxiliary predicate.<sup>5,6</sup>

Rizzi suggests that the auxiliary aspect is derived because Vx is base-generated as a main verb at D-structure but ~~becomes~~ an 'auxiliary' of another main verb after the application of the restructuring rule. However, given that the rule is triggered by a certain class of verbs, the

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<sup>3</sup> Napoli (1981) also claims that the derived structure of the verbal complex in a restructured sentence (Vr here) is identical to that of a complex of an auxiliary + past participle, so that the same semantic interpretation rules apply to both.

<sup>4</sup> Ross (1969) first suggests that auxiliaries (and modals) are base-generated as main verbs. A claim that all modals and auxiliaries should be base-generated as main verbs can also be found in Pullum and Wilson (1977) (cf. references therein). Our notion of 'restructuring' in terms of RR will not be incompatible with those lines of research.

<sup>5</sup> Auxiliary verbs such as *do* have no semantics of predicates but Vx has the semantics of predicates. Picallo (1985; 245) notes that "the reading of aspectual verbs under ['restructuring'] is not that of a predicate, expressing motion or otherwise; rather these verbal elements have the function of a VP adverb." (also cf. Strozer (1981) and references in Picallo (1985; ch. 4; fn.26)). Thus Picallo suggests that Vx has no predicative function. The suggestion is too strong to admit if Vx is base-generated as a main verb. From our point of view, we suggest that Vx is an auxiliary predicate whose semantics (but not whose syntax, as we will see) is close to that of a secondary or adjunct predicate in Zubizarreta's (1982) sense.

<sup>6</sup> From this point of view, so-called semi-auxiliary expressions such as be willing to, be going to, or (get/come) to are auxiliary predicates, although English has no auxiliary change or clitic climbing to confirm 'restructuring' effects (also cf. Akmajian and Wasow (1975)). However, in Appendix III of this Chapter, we discuss some 'restructuring' effects with respect to the so-called 'neg-raising' phenomenon found in sentences with those verbs.

modal/aspectual/motion expressions, we suggest that Vx's function as auxiliary predicates by virtue of their semantics (but not because of the rule effects). Thus under the wide interpretation of the projection principle (cf. Chapter 2) and a principle of FI, changing Rizzi's logic slightly, we suggest that a certain property/feature of a V, which is obtained in the Lexicon and which is based on the 'defective' semantics of the V, is projected to an X-head and that the projected feature characterizes the categorial property of the X-head. The feature then triggers the 'restructuring' phenomenon without changing terminal strings or syntactic structure.<sup>7</sup> This will be our rule of restructuring.

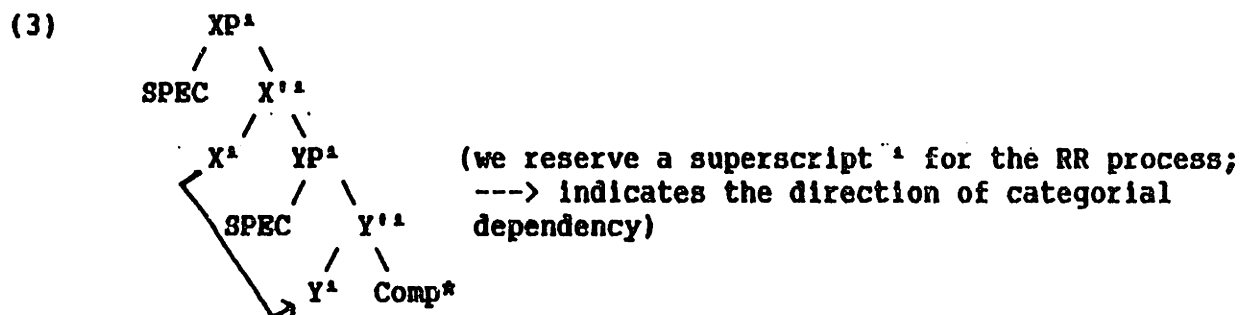
Let us suggest that because of their defective semantics, Vx's as predicates are lexically determined to depend upon other predicates and that the dependency is categorial in such a way that the sentences with Vx's may allow clitic climbing and auxiliary change, as we will discuss. In other words, the projections of such predicates are categorially weak so that they are categorially dependent upon other projections in a certain way. More generally, a certain X-head (X) is categorially dependent upon another X-head (Y) in a certain way because of its Lexical properties (or because of its semantics).<sup>8</sup> UG then includes the feature [+/-Categorial

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<sup>7</sup> Rizzi's assumption that the changes in the syntax and the semantics of the Vx+Vk sequence are obtained by the rule surely violates the wide interpretation of the projection principle and a principle of FI (cf. Chapter 2). Our analysis differs from Rizzi's in that we motivate RR based on the defective semantic properties of Vx class verbs (X-heads) or more generally based on the semantics of certain classes of X-heads with certain common properties.

<sup>8</sup> It is worth noting that ECM predicates cross-linguistically form a similar class of verbals (epistemic verbs) and that small clause predicates (perception or causative type verbs) also form a semantically significant class of verbs. We will suggest, in Chapter 4 and in this Section, that semantically-restricted small clause or ECM verbs trigger different instantiations of RR from one deriving 'restructuring.'

Dependency], which we abbreviate as [+/-CD] (we will characterize the notion of categorial dependency shortly in Section 3.3.5.). Given the licensing theory of transformation, we suggest that X-heads with [+CD] should be dependent upon other X-heads and that the feature [+CD] triggers coindexing in the manner given in (3):



The conventions governing the process (3a), which we call RR (the Restructuring Rule), are as follows:

- (4) a. RR: coindex X-heads (from top to bottom)  
 b. index percolation within RRed projections (because of X-bar conventions/feature percolation conventions)

RR derives a relationship/link between  $X^1$  and  $Y^1$ , which indicates categorial dependency. We call the linked/related unit  $X^1+Y^1$  an R-complex word (cf. fn. 2 in Section 3.0.). Since X always governs  $YP^0$  when X and Y are linked by RR, we modify (4), as in (5):

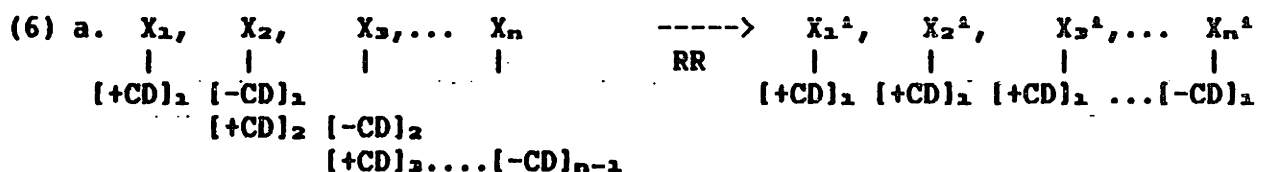
- (5) Coindex a [+CD] X-head with its governed [-CD] X-head to form an R-complex multi X-head projection.

[+CD] X-heads are the triggers of RR and [-CD] X-heads are the targets of RR. Because of (5), a [+CD] X-head is covertly amalgamated with a [-CD] X-head through coindexing only if the former governs the latter.<sup>20</sup>

<sup>20</sup> Remember that the notion of selection applies to both functional and lexical items (i.e., Lexical items that project X-heads in syntax). Given that 'restructuring' applies to head-complement relations, we will infer the notion of selection by using the notion of government in the formulation of RR.

<sup>20</sup> Picallo (1985/87) notes that purpose clauses can also be 'restructured.'  
 (1) *Li 'he tornat a felicitar t<sub>i</sub>*

While (5) explains local dependency, it does not explain global dependency as in the Italian 'restructuring' data. RR should extend to explain the categorial dependency between  $V_x$  and  $V_k$  in Italian. Let us thus suggest that Italian 'restructuring' verbs optionally have feature [+CD] in the Lexicon and that [+CD] X-heads (triggers) are subcategorized for [-CD] X-heads (targets) as a Lexical property (categorial dependency subcategorization). Since C and I intervene between  $V_x$  and  $V_k$ , the categorial dependency subcategorization of  $V_x$  should be obtained through the intermediate categorial dependencies of C and I by virtue of the transitivity of dependency. In other words,  $V_x$  is categorially dependent upon  $V_k$  since it is categorially dependent upon C, which is categorially dependent upon I, which is also dependent upon  $V_k$ . We suggest that  $V_x$  depends categorially upon  $V_k$  (non $V_x$ ) when intermediate categorial-dependencies are linked in terms of coindexing. We then interpret coindexing in the following way.



- b. RR: Make all the categorial dependency links between a trigger of RR and its target the categorial dependency link of the trigger.  
 c. def. = X is categorially dependent upon Y only if X governs the projection of Y.

The rule above dispenses with (5) but implies that the notion of government applies to each categorial dependency link. Whether the dependency between a trigger and its target is local or nonlocal, the rule applies in such a

- a. \*(I) her<sub>i</sub> have come back to congratulate t<sub>i</sub>.  
 b. (I) her<sub>i</sub> have again congratulated t<sub>i</sub>. ((136) in Piccallo (1985;247))  
 However, when the 'restructuring' meaning is forced, a purpose clause is interpreted as a main clause, as shown in (ib). The 'restructuring' effect in (i) suggests that a purpose clause is base-generated as a complement of  $V_x$  or that it is governed/selected by  $V_x$ .

way that there is only one categorial dependency relation between a trigger and its target.

RR implies the following: First, categorial amalgamation is abstract or covert since no constituency change takes place. Second, the process (coindexing) is strictly local, given the MC.<sup>21</sup> Thus when X[+CD] is subcategorized for Y[-CD], then the X-heads between X and Y should possess the intermediate local dependency links defined in (6c). As for the level of the application of RR, since 'restructuring' affects syntactic processes such as auxiliary change or clitic climbing, RR applies at D-structure/in syntax. From the point of view of the licensing theory of transformation, [+CD] categories would not properly be licensed as categories to be interpreted at LF unless they link with Lexically-designated/subcategorized [-CD] categories through RR.

Luigi Rizzi (p.c.), who attributes the observation to Richard Kayne, has pointed out to us that when INFL is not 'rich' (no [+Tense] or no [+Agr]), 'restructuring' is possible; in Italian 'restructuring,' the embedded verbs are infinitival (not finite). If X-heads are 'weak' in phonological contents, they tend to be [+CD]). If [+Tense] or [+Agr] is related to the notion of phonological richness (even though it may not be the case that if X-heads are [+CD], they are 'weak' in phonological content. Thus we may need the notion of 'phonological richness.' [+CD] X-heads can be classified in terms of 'semantic richness,'<sup>22</sup> as Rizzi also

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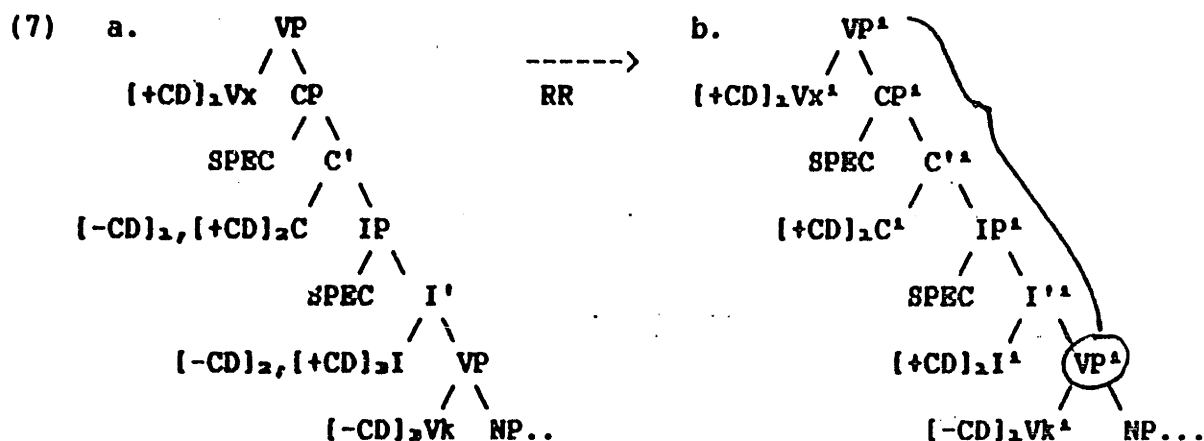
<sup>21</sup> The MC prevents an X-head from being restructured with another X-head across an X-head.

<sup>22</sup> Given that Vx is semantically weak, James Higginbotham (p.c.) also notes that the main verbs in the Italian cases may be demodalized verbs (or modals) so that the theta-discharge of external argument in Higginbotham's (1985b) sense takes place only once in matrix clauses (cf. also Piccolo (1985)). However, in the present proposal, theta-discharge in Higginbotham's sense occurs in both Vx and V<sub>k</sub> clauses (cf. the notion of overlapp-



notices that semantically-impooverished verbs trigger 'restructuring.' In short, the notions 'semantic richness' and/or 'phonological richness' may be necessary for the feature [+CD]. These properties of [+CD] explain why the Italian 'restructuring' phenomenon does not involve finite embedded verbs<sup>23</sup> or verbs that have no auxiliary or helping meaning.

Under the above notion of RR, the process governing Italian 'restructuring' is illustrated in terms of V-to-V RR as below:



To explain clitic climbing, a 'restructuring' effect, we suggest that  $XP^1$  in the domain of RR is categorially defective in that  $XP^1$  is not a barrier: If cliticization is movement and therefore subject to Subjacency<sup>24</sup> (and perhaps to the ECP) (cf. the clause-bounded nature of cliticization), then clitic climbing in non-'restructuring' environments is interpreted as violating Subjacency. On the other hand, clitic climbing is observed in

ing in subsection 3.3.5.).

<sup>23</sup> In Section 3.4., we show, based on Korean 'restructuring,' that [+Agr] does not block 'restructuring.' In Appendix III of this Chapter, we also discuss the possibility that V-to-V RR applies across [+Tense] in English. If the discussion in Appendix III is on the right track, then the notion of phonological richness is a relative notion in that a different class of predicates requires a different degree of phonological weakness.

<sup>24</sup> It is assumed that Subjacency effects are weak. However, the effects of the clause-bounded condition of cliticization are strong. Given the strong Subjacency effects of A-movement (cf. Chomsky (1986b)), this strong Subjacency effects may suggest that cliticization is mediated by A-movement.

'restructuring' environments because nodes governed by  $Vx_1^A$  ( $CP_1^A$ ,  $IP_1^A$  and  $VP_1^A$ ) are not barriers and therefore clitic climbing does not cross any barriers (no Subjacency violations). In fact, in (7b), any element within a matrix VP (=  $VxP$ ) lies under the government domain of  $Vk^{10}$  as if any intervening projections between a matrix VP and the most embedded VP were not visible or were linked with each other, forming one maximal projection (the embedded VP).<sup>10</sup> This effect is obtained because all  $[+CD]_1^A$  X-head projections are categorially parasitic to a  $[-CD]_1^A$  X-head projection. This account is also consistent with the idea of R-complex words: X-heads under the domain of RR are independently projected but they are categorially linked through RR because of the features  $[+/-CD]$ , forming a complex unit.

At this point, let us explain auxiliary change in terms of the parasitic nature of  $[+CD]_1^A$  X-heads by suggesting that  $[-CD]$  categories are the syntactic-heads of R-complex words, which we will abbreviate as s-heads. Descriptively speaking, the ergativity of the s-head determines

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<sup>10</sup> As Noam Chomsky (p.c.) has brought to our attention, this effect displays a certain version of Baker's GTC formulated as in (1) (cf. Baker (1985/to appear)):

(1) The government transparency corollary (the GTC): A lexical category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position.

In fact, the notion of RR has the following effect: Descriptively speaking,  $[-CD]$  X-heads which are categorially linked with  $[+CD]$  X-heads govern everything which the latter governs (see Section 4.1. for the formalism of this effect). However, we will argue in Chapter 5 that grammar does not include the GTC (a head-movement effect) as formulated in (1).

<sup>11</sup> The notion of virtual projection in Zubizarreta and Vergnaud's (1982) sense is similar to the notion of linking of categorial projections through RR here. However, the latter is more restricted than the former. Virtual projections exhibit a maximal flexibility of the precedence relation. On the other hand, linked projections show a rigid precedence relation, assuming the head parameter; as we will see, the projections of M/R-complex words derived by RR and head-movement, which correspond to actual projections in their terms, will have more flexibility on the history of domination than x-analysis does in Zubizarreta and Vergnaud (1982).

that of a complex word, given that the ergativity of verbs determines auxiliary assignment (cf. Burzio (1986); cf. Chapter 5). Let us further suggest that the grammatical feature [+/-ergativity] that indicates the ergativity of a predicate and that the grammatical features of complex words are determined by the following grammatical feature percolation convention:<sup>17</sup>

(8) The Grammatical Feature Percolation Convention (the GFPC):

The grammatical features of s-heads ([-CD] X-heads) take precedence over those of non-s-heads in percolation.

Since the feature value obtained by the GFPC does not change deep ergativity of complex words or of members of complex words because of the projection principle, we call the feature values obtained by the GFPC formal or surface values. Consequently, [-CD] X-heads determine the formal ergativity of R-complex words but do not change the deep ergativity of R-complex words, consistent with the wide interpretation of the projection principle. The formal ergativity of  $V_r$  is in fact determined by  $V_k$  in Italian (cf. Rizzi (1982)),<sup>18</sup> and auxiliary change does not signify change in deep ergativity (i.e., change in theta-structure). This proposal

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<sup>17</sup> By analogy with the feature percolation convention II in Lieber (1981) and Marantz (1984), one may also assume the following:

(i) GFPC II: when the s-head is unspecified for the value of some grammatical feature, that feature of the non-s-head percolates to become the value for the combination of non-s-head plus s-head.

We, however, have no empirical data in favor of or against (i).

<sup>18</sup> Consider the following data from Burzio (1986:367) in which  $V_1$  and  $V_3$  are verbs that normally take avere and  $V_2$  is a verb that normally takes essere.

(i) Maria sarebbe voluta andare a prenderli lei stessa

"Maria would have (essere) wanted ( $V_1$ ) to go ( $V_2$ ) to fetch ( $V_3$ ) them herself."

If  $V_3$  is the target of  $V_x$ -to- $V$  RR in (i), then the auxiliary that the R-complex predicate takes should be avere. However, in (i) with the clitic in the most embedded clause,  $V_1$  takes essere. The data suggest that  $V_2$  is the s-head and that RR takes place between  $V_x$  and the second embedded  $V_x$ , and therefore that the target of 'restructuring' is not always the most embedded verb.

explains the two 'restructuring' effects in Italian (and in Romance languages) in the following ways:

- (9) a. Clitic climbing is allowed since RRed projections ( $XP_1^A$ ) are not barriers in a domain of RR.  
 b. Because of the GFPC, the formal ergativity of an R-complex word (realized as an auxiliary change) is determined by a [-CD] X-head ( $V_k$ ), which is the s-head of the R-complex X-head.<sup>19</sup>

While the present proposal accounts for the two 'restructuring' effects in terms of general principles, as in (9), it also has some advantages. Although an RRed  $YP^A$  is categorially-defective in that it is not a barrier, the categorial defectiveness does not prevent the  $YP^A$  from being the landing site of a movement rule or from undergoing A or A-bar movement (for example  $YP^A$ -movement) since the  $YP^A$  is not categorially amalgamated in syntax. In fact, Rizzi (1982;44, fn.26) notes that 'restructuring' may fail to trigger obligatory clitic climbing. When the subject is a third person NP, clitic climbing is not obligatory even when the 'restructuring' has applied, as in (10) (which complete the pattern in

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<sup>19</sup> Rizzi (1982;39) and Burzio (1986;373) note that when 'restructuring' has applied (ib), it is impossible for both  $V_x$  and  $V_k$  to take auxiliaries at the same time, unlike (ia) in which no 'restructuring' takes place, while it is possible for either  $V_x$  or  $V_k$  to take an auxiliary (ii).

(i) a. A ques'ora, Mario avrebbe dovuto averlo già finito, il suo lavoro.  
 "At this time, Mario would have had to have already finished it, his work."

b. \*A quest'ora, Mario lo avrebbe dovuto aver già finito, ....

cf. (ii) Mario lo deve aver incontrato l'anno scorso

"Mario him must have met last year."

(cf. (150) and (146) in Rizzi (1982;38-9))

We have no explanation for this.

(12) in Section 3.2.):<sup>20</sup> Auxiliary change indicates that RR has applied although no clitic climbing has taken place.

(10) Maria è dovuta venir<sub>ci</sub> molte volte.

"Maria has had to come there many times." ((1) in Rizzi (1982;44, fn. 26))

Burzio (1986;327) provides one clear case in which clitic climbing is not obligatory in the 'restructuring' construction.

(11) a. Mario ci sarebbe proprio voluto andare

"Mario there would be really wanted to go."

b. Mario sarebbe proprio voluto andarci

"Mario would be really wanted to go there."

c. Mario avrebbe proprio voluto andarci

"Mario would have really wanted to go there."

d. \*Mario ci avrebbe proprio voluto andare

"Mario there would have really wanted to go." ((14-15) in Burzio (1986;327))

In (11d), auxiliary change does not appear, which means that 'restructuring' has not applied in (11). As we predict, no clitic climbing is allowed. In (11b), even though RR has applied, as we see auxiliary change, cliticization has applied in the embedded clause. If clitics move between INFL and VP (as Kayne suggests; but also cf. Kayne (1987)) or move to VP, the grammaticality of (10 and 11b) shows that the subconstituents of the RR domain are not destroyed so that they can be the landing sites of clitic-movement. Note also that RR overcomes the theoretical problems of Rizzi's restructuring rule, without losing its descriptive or empirical adequacy.

<sup>20</sup> When the matrix subject is not a third person NP, clitic climbing is obligatory in a 'restructuring' environment, as we see in the contrast between (1b) and (1c) (cf. 11b and c).

(1) a. Ci siamo potuti venire solo poche volte.

"We have been able to come here only a few times."

b. \*?Siamo potuti venirci solo poche volte.

c. Abbiamo potuto venirci solo poche volte.

d. \*?Ci abbiamo potuto venire solo poche volte. ((11) in Rizzi (1982;44, fn.26))

We assume that the ungrammaticality of (1b) is obtained for independent reasons. In Sections 3.4. and 4.1., we will confirm the notion, based on Korean and English data, that RR does not prevent transformations from applying to the subconstituents of an RR domain.

RR does not change structure so that every terminal string is in-situ; no new categories such as Vr are introduced (no constituency change). Thus any adverbs or wh-phrases (cf. 19 and 21 in Section 3.2.) may intervene between Vx and Vk and therefore Rizzi's data, which raise empirical problems under any other approaches, are predicted under this analysis. Since no theta-structure is changed, RR also does not cause a problem with respect to the wide interpretation of the projection principle.

One illustration that theta-structure is not changed by 'restructuring' comes from Catalan, as described by Picallo (1985). In Catalan, as in the Romance languages generally, the EN/NE partitive clitic moves from a quantified NP, leaving a quantificational determiner only when the quantified NP is base-generated in the direct object position (the object positions of ergative or nonergative verbs).<sup>21</sup> The quantificational determiner may also undergo A-bar wh-movement, as shown in (12c).

- (12) a. Han sortit algunes persones  
           "Has left some people"  
       b. N'han sortit algunes  
           "EN/NE has left some"  
       c. Quant n'han sortit  
           "How many EN/NE have left" (cf. (29 and 30) in Picallo (1985;202))

EN/NE also climbs in the 'restructuring' environment, as shown in (13), in which underlined verbs are ergative:

- (13) a. N'hi tornaven a créixer moltes t.  
           "EN/EN there, come back to grow many t."

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<sup>21</sup> Thus partitive cliticization is possible only from the direct object position or the (postverbal) Nominative complement position of an ergative verb (cf. Picallo (1985;202)) in Catalan, as in Italian (cf. Belletti and Rizzi (1981)). Cliticization from the subject position (1a) or from a postposed subject position (1b) is not possible:

- (1) a. \*Algunes n'han dormit en aquell hotel  
           "Some EN/NE have slept in that hotel."  
       b. \*En parlaven molts  
           "EN/NE were speaking many." (cf. (31b) and (33b) in Picallo (1985;203))

- b. *N'hi* comencaven a creïxer moltes *t*.  
 "EN/NE there<sub>i</sub> started to grow many *t*<sub>i</sub>" ((41 and 43a) in Picallo (1985;207-8))
- (14) a. \*Quants *te*<sub>i</sub> *n'*arribaren a escriure cartes *t*<sub>i</sub>.  
 "How many to-you<sub>i</sub> EN/NE arrive to write letters *t*<sub>i</sub>."
- b. \*Quants *te*<sub>i</sub> *n'*commencen a escriure cartes *t*<sub>i</sub>.  
 "How many to-you<sub>i</sub> EN/NE start to writed letters *t*<sub>i</sub>" ((40 and 42a) in Picallo (1985;207-8))

In (13 and 14), *hi* and *te* move from the embedded clauses, which indicates that 'restructuring' has taken place. In these 'restructuring' environments, when EN/NE does not move from a direct object position, EN/NE clitic climbing is not allowed, as shown in (14). But, when a clitic moves from the direct object position (from the object position of the embedded ergative verb), EN/NE clitic climbing is possible, as shown in (13). Based on the facts discussed above, Picallo concludes that the ergativity of *V<sub>k</sub>* determines whether clitic climbing is possible. On the other hand, the ergativity of *V<sub>x</sub>* does not trigger EN/NE cliticization: When the EN/NE clitic moves from a nonobject position in an embedded clause, EN/NE clitic climbing is not possible in a 'restructuring' environment, even if *V<sub>x</sub>* is ergative, as shown in (14a).<sup>22</sup> Based on the behavior of EN/NE cliticization shown in (13-14), Picallo also concludes that *V<sub>k</sub>*, instead of *V<sub>x</sub>*, determines theta-structure.

Under the present analysis, one might suggest that the notion of s-head determines the core theta-structure of R-complex predicates. However, RR does not change theta-structure (theta-structure of *V<sub>x</sub>* is not affected by that of *V<sub>k</sub>* through RR).<sup>23</sup> Under the current proposal, the Catalan facts described by Picallo are in fact not surprising or unexpected. The

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<sup>22</sup> Note that whether *many* is wh-moved does not affect the grammaticality of sentences in (14) (cf. (12c)).

<sup>23</sup> RR will, however, change the syntactic/Case structure of theta-structure (or argument structure) subject to RR conventions, as we will propose in subsection 3.3.5..

behavior of Catalan partitive cliticization shown in (13 and 14) is predicted since theta-structure is not changed by V-to-V RR: The theta-structure of the embedded clause remains intact and the matrix ergativity does not affect partitive cliticization. Only when partitive clitics move from direct object positions (cf. 13) are the sentences grammatical. The sentences in (14) are not grammatical, since the partitive clitic does not move from the direct object position.

To summarize, we arrive at the following RR effects, which are compatible with principles of UG:

- (15) RR effects:
1. [-CD] X-heads are s-heads of R-complex words.
  2.  $XP_i$  is not a barrier in the RR domain
  3. grammatical features of R-complex predicates (such as [+/-ergativity] are determined by the s-heads of R-complex words because of the GFPC
  4. no constituency change in syntax
  5. no change in theta-structure

Note that the rule RR is transformational in a broad sense in that it applies in the syntactic component, obeying principles of UG. We suggest that this covert RR is an instantiation of the broader notion of affect-alpha, i.e., affect-category. In accordance with the idea of transformational rules and with the licensing theory of transformation, RR is productive in that RR applies whenever X-heads are [+CD].

### 3.3.2. Overt RR: combination of RR and head-movement

We have seen in Chapter 2 that in polysynthetic languages, a certain class of verbs (which are semantically auxiliaries) may also be morphologically amalgamated, as shown in (16a) (cf. 1a). We noted that in head-initial languages, the morpheme order in constructions containing these verbs differs from that in causative construction: the former preserves string order of D-structure, while the latter does not.



(16) Chichewa (a head-initial language)

a. Ndi-ka-pemp-a pamanga

1sSP-go-beg-asp maize

"I am going [to beg maize]." (Watkins (1937;98))

b. Buluzi a-na-sek-ets-a ana

lizard SP-past-laugh-cause-asp children

"The lizard made the children laugh." ((42c) in Baker (to appear; Chapter 4))

The reasoning that the complex words containing auxiliary type verbs exhibit the string-preserving property consistent with the head-parameter is empirically supported by the morpheme order of complex words in head-final languages. Consider (17a), which contains an auxiliary type verb, and (17b), which contains a causative verb. The morpheme order in (17b) is consistent with the RHR and that in (17a) reflects the string order.

(17) a. Eskimo (a head-final language)

anguti-up annak takku-guma-va-a

man-erg woman-abs see-want-ind-3s/3s

"The man wants to see the woman." (14b) in Grimshaw and Mester (1985))

b. nutara-up arnaq ani-ti-taa

child-erg woman-abs go out-caus-3sg./3sg.

"The child made the woman go out." (cf. (4a) in Jensen and Johns (in press))

Since the order derived by the RHR and that derived by the string-preserving property are the same, in head-final languages, whether a matrix verb is Vx or not, the morpheme order is predicted to be the same. In other words, head-final languages are not predicted to instantiate the order in (1a) under the assumption that the morpheme order in (16a) and (17a) reflects the head-parameter and the predication seems to be borne out.

In Chapter 2, we also suggested that head-movement is motivated by a certain morphological dependency of terminal strings, obeying some morphological principles such as the RHR repeated in (18b), which applies to lexically-derived words, and that head-movement is leftward because of the RHR.

(18) a. clean[-V,+N]

clean[+V,+N] -ness[-V,+N]

b. the RHR: In morphology, the (morphological) head of a morphologically complex word is the righthand member of that word.

If the complex verbals in (16a) are derived by head-movement, then we predict that the morpheme order should be V<sub>k</sub>-V<sub>x</sub> (beg-go) in the case of Chichewa since head-movement would be leftward because of the RHR.<sup>24</sup> The actual morpheme order is V<sub>x</sub>-V<sub>k</sub> (go-beg) reflecting the string order of X-heads obtained by the head-parameter, inconsistent with the RHR, while the morpheme order see-want in Eskimo (head-final language) is seemingly consistent with the RHR.

Let us now discuss the mechanism governing morphologically-complex R-complex words, which can also explain the string-preserving property of RR in (16-17a). We first propose that if an X-head X is categorially dependent on an X-head Y in the way we suggested, but the terminal string of the X-head Y is morphologically dependent on that of the X-head X, the two X-heads undergo overt RR (RR accompanied by head-movement) to form a morphologically-complex R-complex word, which we call an M/R-complex word. In other words, in (16-17a), RR (an X-head-to-X-head transformation) is overtly realized through morphological amalgamation in a certain way, which will be discussed below.

We formalize the mechanism governing morphological amalgamation (i.e., head-movement) as the following: The terminal string of an X-head has the

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<sup>24</sup> If 'restructuring' is optional and therefore go-beg is derived by head-movement in Chichewa, we would have the beg-go complex word. The lack of such a word (cf. Watkins (1937)) suggests that in Chichewa, V<sub>x</sub>'s are always [+CD] in the Lexicon. Remember that we are assuming that in Italian, V<sub>x</sub>'s are either [+CD] or [-CD] in the Lexicon, triggering either 'restructuring' or control constructions.

feature [+Morphological Dependency] or the feature [-Morphological dependency], which we abbreviate [+MD] or [-MD]. Heads with [+MD] should move to other heads to form morphologically-complex units to satisfy their morphological dependencies, deriving H-chains. The morphological amalgamation motivated by the feature [+MD] is an instantiation of head-movement (i.e., head-adjunction) and we call such complex words derived by head-movement M-complex words.

Consider first one typical example of noun-incorporation, analyzed in terms of head-movement by Baker:

- (19) a. Yao-wir-a?a ye-nuhwe?-s ne ka-nuhs-a?  
 pre-baby-suf 3fs/3n-like-asp the pre-house-suf [V + N]  
 "The baby likes the house."  
           ^                  |  
           |                  |  
 b. Yao-wir-a?a ye-huhs-nuhwe?-s [N-V]  
 pre-baby-sur 3fs/3n-house-like-asp  
 "The baby house-likes." (cf. (14a and b) in Baker (to appear; Chapter 3); Mohawk data from Postal (1962))

After N left-adjoins to V, the categorial status of N-V is V consistent with the RHR since N-V takes INFL elements as V does. Thus V but not N determines the categorial status of N-V, which is consistent with the RHR and the (categorial) feature percolation convention (the CFPC) repeated below from Chapter 2 (with some necessary modifications):

- (20) Categorial Feature Percolation Convention (convention I):  
 the categorial features of morphological heads (m-heads) take precedence over those of non-m-heads in percolation (cf. Lieber (1981;49-50); Marantz (1984;122)).

The [-MD] head (the target of head-movement) seems to be the head of a word in a purely morphological sense (which we call morphological head or m-head for short), as the [-MD] head that lies on the right side within a morphologically-complex word determines the categorial feature of a complex word (cf. 18a). A [+MD] element is thus adjoined to the stem position (through leftward adjunction) but not to the affix position. Whether a word is

derived by head-movement (cf. 19) or it is derived in the Lexicon (cf. 18a), the RHR is observed in an interesting way.

Given trace theory, suppose that head-movement is always raising but not lowering. Then  $V_x$  is [-MD] and  $V_k$  [+MD]. Given these two features, we propose the following combinations in which  $X$  is hierarchically higher than  $Y$  and in which underlined elements have the features mentioned to the right and at the bottom:

(21) Head-initial languages:

|       |             |             |          |  |    |       |   |          |  |       |
|-------|-------------|-------------|----------|--|----|-------|---|----------|--|-------|
| a.    | $X^1$       | +           | $Y^1$    |  | b. | $X$   | + | $Y$      |  |       |
|       |             |             |          |  |    |       |   |          |  |       |
|       | a           |             | <u>b</u> |  |    | a     |   | <u>b</u> |  | [-MD] |
| <hr/> |             |             |          |  |    |       |   |          |  |       |
| c.    | $X^1 Y^1$   | (= $XY^1$ ) |          |  | d. | $X$   | + | $Y$      |  |       |
|       | \ /         |             |          |  |    |       |   |          |  |       |
|       | a- <u>b</u> |             |          |  |    | b-a   |   | <u>t</u> |  | [+MD] |
| <hr/> |             |             |          |  |    |       |   |          |  |       |
|       | [+CD]       |             |          |  |    | [-CD] |   |          |  |       |

(22) Head-final languages:

|       |             |             |       |  |    |          |   |     |  |       |
|-------|-------------|-------------|-------|--|----|----------|---|-----|--|-------|
| a.    | $Y^1$       | +           | $X^1$ |  | b. | $Y$      | + | $X$ |  |       |
|       |             |             |       |  |    |          |   |     |  |       |
|       | <u>b</u>    |             | a     |  |    | <u>b</u> |   | a   |  | [-MD] |
| <hr/> |             |             |       |  |    |          |   |     |  |       |
| c.    | $Y^1 X^1$   | (= $YX^1$ ) |       |  | d. | $Y$      | + | $X$ |  |       |
|       | \ /         |             |       |  |    |          |   |     |  |       |
|       | <u>b</u> -a |             |       |  |    | <u>t</u> |   | b-a |  | [+MD] |
| <hr/> |             |             |       |  |    |          |   |     |  |       |
|       | [+CD]       |             |       |  |    | [-CD]    |   |     |  |       |

(The feature [+/-CD] is projected from terminal strings to Xo-categories, but the feature [+/-MD] is not projected to Xo-categories.)

By proposing the actual categorial amalgamation, shown in (21-22c), which guarantees the string-preserving property of RR, we suggest that overt RR is an instantiation of move-category, whose effects will be discussed shortly. [+CD] X-heads trigger RR either through categorial amalgamation through coindexing (21-22a; affect-category) or through both categorial and morphological amalgamation (21-22c; move-category). (21-22a) are instantiations of R-complex words derived by RR (cf. Italian 'restructuring'), (21-22c) are instantiations of M/R-complex words derived by overt RR. (21-

22d) are instantiations of M-complex words derived by head-movement (move-alpha). Since RR relates X-heads to X-heads, it differs from the head-movement that relates heads to heads. First, overt RR does not (or does not need to) leave a trace since it is a sort of a categorial movement rule (move-category). Second, RR creates a complex category. Third, RR is triggered by the feature [+CD], while head-movement is triggered by the feature [+MD]. Note also that the structures in (21-22) correctly imply that in head-initial languages the morpheme order of complex words may differ depending on syntactic derivations, while in head-final languages the morpheme order of complex words does not. In fact, only in head-initial languages are both leftward and rightward affixation attested; in head-final languages, only rightward affixation is attested.

We can now ask what determines the m-headness in the cases of M/R-complex words. If the RHR should hold for M/R-complex words such as the Vx-Vk complex word in Chichewa, Vk, which is [+MD], would be the m-head under the RHR since the morpheme order is always Vx-Vk. On the other hand, Vx would be the m-head if the feature [+/-MD] determines m-headness. We suggest that in the case of M/R-complex words, the RHR does not hold since the RHR does not play a consistent role in determining the m-headness, as we see in the different morpheme order in Chichewa and Eskimo (16-17). In Eskimo languages, if the RHR holds for M/R-complex words, Vx, which is [-MD], would be the s-head, in contrast to Chichewa since the morpheme order is Vk-Vx. Thus to avoid this cross-linguistic inconsistency, we suggest that [-MD] heads are the m-heads of both M- and M/R-complex words, just as [-CD] X-heads are the s-heads of both R- and M/R-complex words. Because RR applies top to bottom, the s-head of an R-or M/R-complex word is a governed ([-CD]) X-head; because head-movement is raising, the m-head of

an M- or M/R-complex word is the governing head. The present analysis also suggests that [+CD] X-heads are syntactically-bound morphemes but adjoined [+MD] terminal strings are morphologically-bound morphemes. The notion of head in syntax therefore differs from that of head in morphology (cf. Williams (1981a)). While [-CD] X-heads are s-heads of R- or N/R-complex words, [-MD] heads are m-heads of M- or M/R-complex words; the [-CD] X-heads and [-MD] heads play different roles with respect to the two feature percolation conventions, the GFPC and the CFPC, in (8 and 20).

Under the present notion of head-movement, we delimit head-movement effects as follows (cf. the adjunction function  $\lambda$ ):

- (23) Head-movement effects:
1. [-MD] X-heads are m-heads of M- or M/R-complex words.
  2. the categorial features of m-heads take precedence over those of M- or M/R-complex words, subject to the categorial feature percolation convention (the CFPC)
  3. no change in theta-structure/no change in the barrierhood of projections

Head-movement changes neither syntactic structure nor the barrierhood of categorial projections since it has nothing to do with the categorial status of X-heads, unlike RR. The notions of RR and head-movement and their effects shown in (15 and 23) suggest that M-complex words and M/R-complex words differ morphologically, syntactically, and semantically. RR is motivated by certain weak semantics of morphemes (semantics), triggering the defectiveness of categorial projections (syntax) and triggering the morpheme order inconsistent with the RHR (in head-initial languages) (morphology; cf. Chapter 5). On the other hand, head-movement is motivated by a morphological reason, triggering the RHR but not the categorial or semantic defectiveness.

### 3.3.3. Three types of noun-incorporation



Ponapean (a head-initial language) noun-incorporation data, for example, exhibit the V-N morpheme order, as shown in (28).

(28) I pahn ihkos-likou (V-N)  
 I will pleat(INTRANS)-dress "I will dress-pleat." ((3c) in Rosen (1987); originally from Rehg (1981;209-10))

The string order has been changed from V + N to N-V in (26-27), consistent with the RHR, while in (28), the string V + N order is preserved (V-N) consistent with the head-parameter.

The different morpheme order in (26-28) seems to be related to certain differences between the noun-incorporation in (26-27) and that in (28). Rosen (1987), for example, observes that noun-incorporation in Ponapean differs from that in Mohawk or Tuscarora: in Ponapean there are two forms of the verb pleat: the transitive form (29a) and the intransitive form (29b).

(29) a. I pahn ihkose likou ehu  
 I will pleat(TRANS) dress a "I will pleat a dress."  
 b. I pahn ihkos  
 I will pleat(INTRANS) "I will pleat." ((3b and c) in Rosen (1987); originally from Rehg (1981;209-10))

When N is incorporated to V, V takes the intransitive form rather than the transitive form, as we see in (28). On the other hand, the Mohawk (26) and Tuscarora (27) data show that formal transitivity remains intact, as we see agreement on the verbs in (26-27) in which both subject and object agreements appear. Rosen (1987) also observes that Ponapean employs no doubling, while Mohawk and Tuscarora do. In Mohawk and Tuscarora, the complex verb which contains N, whose semantic is generic, is sometimes accompanied by a more specific NP in the object position, as shown below.<sup>25</sup>

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<sup>25</sup> The property of noun-incorporation shown in (30) reminds us of Topicalization in Korean: Korean employs both base-generated topicalization and topicalization with a gap (also cf. 9 in Section 3.1.).

(1) a. Chelswu<sub>1</sub>-nun [t<sub>i</sub> ttokttokha-0-ta-ko] {ku<sub>1</sub>/\*<sub>2</sub>}-ka sayngkakha-n-ta  
 -TOP intelligent-pres-em-comp he-sub think-pres-em



(30) Mohawk ((25) in Rosen (1987); originally from Mithun (1984;870))

- a. Tohka niyohsera:ke      tsi nahe' sha'te:ku niku:ti rabahbot  
 several so-it-year-numbers so-goes eight      of-them bullhead  
 wahu-tsy-ahni:nu ki rake'niha  
 he-fish-bought      this my-father

"Several years ago, my father bought eight bullheads."

Tuscarora ((26) in Rosen (1987); originally from Williams (1976;60))

- b. ne-hra-taskw-ahkw-ha?      ha? tsi:r  
 dual-masc-'animal'-'pick up'-serial      emph 'dog'

"He picks up domestic animals." (He is a dog catcher.)

These two differences between Mohawk/Tuscarora and Ponapean that Rosen (1987) observes -- change in transitivity and the lack of doubling in Ponapean but not in Mohawk and Tuscarora -- are nicely incorporated into the notions of s-head and m-head: Mohawk and Tuscarora noun-incorporation (16-27) is derived by head-movement, because morpheme order reflects the RHR and Ponapean noun-incorporation (28) is derived by RR, because morpheme order reflects the head-parameter. Thus V in (26-27b) represents the s-head and m-head. The syntax of a verb remains intact: V (m-head) is on the right side, determining the categorial status of N-V, consistent with the RHR and the categorial feature percolation convention in (20). On the other hand, in the Ponapean data (28), V is [-MD]. V is the m-head, which determines the categorial status of the V-N M/R-complex word. Thus a V-N M/R-complex word is categorially a verb and therefore takes an (in)transitive marker, like any other verb. While in Mohawk and Tuscarora, V is the s-head of the N-V M-complex word, in Ponapean, N is the s-head of the V-N

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"As for Chelswu{<sub>1</sub>/\*<sub>3</sub>}, he<sub>1</sub> thinks that t<sub>1</sub> is intelligent."

- b. kkot-nun      cangmi-ka choyko-i-0-ta  
flower-TOP rose-sub best-be-pres-em

"As for flowers, roses are best." (cf. Li and Thompson (1976))

Topicalization is derived by operator-movement since topicalized sentences show Strong Cross-Over effects, as shown in (1a). An instantiation of doubling in (1b) and one in (30) suggest that head-movement has a property of A-bar movement, like Topicalization. (However, see Koopman (1984) who suggests that head-movement is like A-movement in some (partially-theory-internal) respects.) This similarity, however, provides a clear argument neither in favor of a movement approach of noun-incorporation nor against it.

M/R-complex word. We have seen that the s-head takes priority in determining the grammatical features of complex words such as [+/-ergativity] because of the GFPC. If the transitivity of predicates is indicated by a grammatical feature [+/-transitivity], then, because of the GFPC, s-heads determine the transitivity of V-N or N-V complex words, just as s-heads determine formal ergativity in Italian (auxiliary change). Because N, which is the s-head, does not take a complement and therefore is intransitive, the V-N R-complex predicate becomes formally intransitive, while the N-V M-complex word becomes formally transitive because V, which is the s-head, is transitive (cf. the GFPC). Remember that the value obtained by the GFPC indicates the formal or surface value but not the deep one.<sup>26, 27</sup> Thus this approach implies that the noun-incorporation in Ponapean does not change theta-structure although the syntactic object position is not available in syntax.

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<sup>26</sup> Based on the transitivity change in (28), Rosen suggests that noun-incorporation in Ponapean affects the theta-structure of a main verb (from deep transitivity to deep intransitivity in our terms) and that noun-incorporation is not applied in syntax but rather is derived by compounding in the Lexicon. Under the syntactic position, we suggest that in Ponapean, no theta-structure is changed and no theta-role is deleted, so that deep transitivity is changed. Thus in (28), only the surface formal transitivity of verbs is changed.

<sup>27</sup> Since theta-roles are determined by the s-selectional property of V and the theta-roles are preserved at every level of representation, theta-structure or deep transitivity is not changed, but the syntactic realization of theta-structure where V and N are RRed (i.e., argument structure) is changed. Determining the exact nature of formal change in theta-structure in the case of V-N M/R-complex words requires further research. However, it seems that certain syntactic markers of certain elements, such as (in)transitivity markers, may not indicate the deep transitivity of clauses. We therefore assume that there is a unique way to predict some correlation between syntactic markers and (abstract) semantic markers (if there are any) and that there is an area of semantics which is apparently independent of syntax (apparentcy therefore is empirical in that it depends on whether correlation is entirely predicted by principles of UG).

We can also explain why noun-incorporation derived by RR allows no doubling: Given the structure derived by N-to-V overt RR in (24), no syntactic position for doubling is available. On the other hand, the structure derived by head-movement allows a syntactic position for doubling since head-movement creates a (segmental) position while leaving a trace in an original position, forming an H-chain (cf. 25). We may, therefore, suggest that doubling is obtained when there are positions available. The lack of doubling in RR cases can then be attributed to the structure obtained by RR in which no segmental positions are motivated. To summarize, some differences in syntactic and morphological structure between the two types of noun-incorporation<sup>20</sup> are nicely predicted under the present analysis, which suggests that morpheme-order signifies (syntactic) derivations.

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<sup>20</sup> Rosen (1987) suggests, without observing morpheme order, that there are two different kinds of noun-incorporation: (A) noun-incorporation described by Baker and (B) noun-incorporation of the Ponapean type. Rosen claims that these two types of noun-incorporation have different properties in incorporated construction, as shown below:

- | (1) type A                                                      | type B                                                            |
|-----------------------------------------------------------------|-------------------------------------------------------------------|
| a. complex verbs are transitive when the object is incorporated | a. complex verbs are intransitive when the object is incorporated |
| b. doubling                                                     | b. no doubling                                                    |
| c. modifiers can be stranded                                    | c. modifiers cannot be stranded                                   |

Based on this observation, Rosen (1987) suggests an analysis of two different noun-incorporations under the strong lexicalist position. We do not attempt to argue against her position here (but see Chapters 2 and 5).

Under our analysis, the first two differences are predicted, as we discussed above. As for the third difference, we suggest that when RR is triggered, [+CD]X-heads (V) select 'weak' complements that have weak functional categories so that determiners or modifiers within NPs tend to be unrealized. Note that Vx's in Italian usually select CP's in which C and I are phonologically weak. If noun-incorporation is derived by head-movement, no such 'weakness' is motivated so that modifiers are selected at D-structure and stranded after head-movement applies. Although the difference in (1c) is conceivable, given the notion of [+CD], it is not theoretically necessary under the present analysis, as the first and the second differences are.

## 3.3.3.2. V-to-N covert RR

Given the V-N M/R-complex words discussed in the preceding subsection, we expect there to be V+N R-complex words. In fact, among Mithun (1984)'s four types of noun-incorporation obtained by cross-linguistic survey, one type of noun-incorporation (Type I in Mithun (1984)) includes the following three interesting properties: "(I) [A] V and its direct object are simply juxtaposed to form an especially tight bond. (II) The V and N remain separate words phonologically; (III) but ..., the N loses its syntactic status as an argument of the sentence, and the [V+N] unit functions as an intransitive predicate (p. 849)." For example, the data concerning the placement of manner adverbs and case-marking in ergative languages<sup>20</sup> exhibit the three properties of the V+N unit mentioned above:

- (31) a. Sah el twem upac mitmit sac  
 Sah he sharphen diligently knife the  
 "Sah is sharpening the knife diligently."  
 b. Sah el twetwe mitmit upac  
 Sah he sharpen knife diligently  
 "Sah is diligently knife-sharpening."
- (32) a. Na'e inu 'a e kavá'e Sione.  
 PAST drink ABS CONN kava ERG John  
 "John drank the kava."  
 b. Na'e inu kava'a Sione  
 PAST drink kava ABS John  
 "John kava-drank." (Kusaien and Tongan data; (7-8) in Mithun (1984:851); originally from K.-D. Lee (1975b); Churchward (1953), respectively)

In Kusaien, as we see in (31b), the sequence of V and (bare) N does not allow an intervening adverb as if V and N form a unit. In an ergative language (Tongan), where "subjects of transitive sentences are in the ergative case, while subjects of intransitive sentences are in the absolu-

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<sup>20</sup> For more properties, which are not incompatible with the present analysis, see Mithun (1984:849-854)); Mithun's Type I noun-incorporation also includes a morphologically-complex V-N word, which has properties similar to the morphologically-independent V+N unit in that V and N are linked in a certain way, which is not incompatible with the notion of an M/R-complex word.

tive," when V and (bare) N are 'juxtaposed,' the case-marking of the subject is absolutive, as we see in (32b).

We suggest that V and N in these languages are covertly RRed and that the s-head of V+N (i.e., N) determines the formal transitivity of the R-complex word; the R-complex word does not allow an intervening element in Kusaien.<sup>30</sup> Mithun also notes that the V+N bond is semantic as well as syntactic: "The addition of the noun refines the meaning of the verb in question, limiting its application to the set of objects named by the noun. ((Harrison (1976; 162) cited by Mithun (1984; 850)))" We suggest these semantics of the V+N unit are obtained because of the weak semantics of V that trigger V-to-N RR, as in the 'restructuring' construction. To summarize, the noun-incorporation data derived by covert RR illustrate both formal change in transitivity and the weak semantic property of a predicate that triggers RR.

In fact, it seems that this 'V+N bond' also appears in English, as we see in a well-known example of a 'reanalyzed complex word,' i.e., make the claim (cf. Chomsky (1975b; 240); Ross (1967)):<sup>31</sup> the phrase make the claim behaves as if it were a verb with respect to wh-movement.

(33) a. \*Who did John believe the claim that Mary said that Tom saw?

b. Who did John make the claim that Mary said that Tom saw? (cf. Chomsky (1975b; 90))

The present approach suggests that make and claim but not believe and claim are linked by RR (perhaps optionally). In syntax, when N (claim) is RRed with V (make), NP fails to form a barrier and therefore wh-movement is

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<sup>30</sup> As we will see in the next subsection, the Korean V<sub>k</sub>+V<sub>x</sub> sequences (R-complex words) also do not allow intervening adverbs.

<sup>31</sup> Other 'reanalysis' data in English are idiomatic expressions such as take advantage of. We leave open whether they also fall under our explanatory domain.

possible across a complex NP, in contrast to (33b). In the semantic side, the s-head of make the claim (claim (N)) seems to be semantically more prominent than make: 'The noun claim 'refines the meaning of' the verb make or make the claim just means claim (Jim Higginbotham (p.c.)). English data seem to show the RR effect 2 in (15), which also explains clitic climbing, in addition to the semantics of RR predicates.

### 3.3.3.3. More N-to-V head-movement

One more interesting piece of noun-incorporation data comes from the Greenlandic Eskimo as described by Sadock (1980). Because Greenlandic Eskimo is a head-final language, morpheme order does not indicate whether morphologically-complex words are derived by head-movement or by overt RR. However, there seems to be evidence that noun-incorporation in this language is derived by head-movement: First, in Greenlandic Eskimo, doubling occurs:<sup>22, 23</sup>

- (34) a. Qimmimik pegarpog  
           dog-INST thing-have-INDIC-3sg.        "He has a dog."  
       b. Sapanngamik pisivoq  
           bead-INST thing-get-INDIC-3sg.        "He bought a bead."  
           ((24-5) in Sadock (1980))

<sup>22</sup> In our opinion, Rosen (1987) wrongly reports that Greenlandic Eskimo has no doubling.

<sup>23</sup> Greenlandic Eskimo also allows modifier-stranding.

- (i) a. sapanngamik kusanartumik                    posivoq  
           bead-INST    beautiful-NOM-INST    thing-get-INDC-3sg.  
           "He bought a beautiful bead."  
       b. Kusanartumik                    sapangarsivoq  
           beautiful-NOM-INST bead-get-INDIC-3sg.  
 (ii) Palasip            illuanukarpog  
       priest-REL    house-3sg-ALL-go-INDIC-3sg.  
       "He went to the priest's house."  
       (cf, (26-7) and (61) in Sadock (1980))

The employment of doubling in this language indicates that head-movement derives noun-incorporation. The modifier-stranding in (i) and (ii) is predicted under our head-movement analysis of the Eskimo noun-incorporation.

Sadock (1980) notes that when a noun is not incorporated, a morpheme (which Sadock calls the 'empty stem' pi- and which he glosses as thing) appears, as shown in (34). This 'empty stem' does not appear when a noun is incorporated, as in (35a), while it appears when a noun which means 'something' is incorporated, as in (35b).

- (35) a. Sapangarsivoq "He bought beads."  
           beads-get-INDIC-3sg.  
       b. Pisivoq "He bought something."  
           thing-have-INDIC-3sg. ((19 and 22) in Sadock (1980))

In (34), some effects of noun-incorporation are also observed: When a verbal has no pi-, as in (36b), the object appears with ACC (= ABS), but when it has pi-, as in (34), the object appears with OBL (= INST).

- (36) a. Arnaq        tikippoq        "The woman came."  
           woman-ABS    come-INDIC-3sg.  
       b. Arnaq        takuvara        "I saw the woman."  
           woman-ABS    see-INDIC-1sg./3sg. ((1-2) in Sadock (1980))

Crucially, in a noun-incorporation data, the stranded modifier of the object NP (with a nominalizera) also receives OBL, as shown in (37).

- (37) a. Angisuunik        qumutegarpog<sup>34</sup>  
           big-NOM-pl-INST sled-have-INDIC-3sg.  
           "He has a big sled."  
       b. Kusanartumik        sapangarsivoq  
           beautiful-NOM-INST bead-get-INDIC-3sg.  
           "He bought a beautiful bead."  
       ((29 and 27) in Sadock (1980;308 and 307))

Thus it seems clear that (34) instantiates doubling.

Since doubling is possible in this language, we predict that noun-incorporation in this language is obtained by head-movement but not by RR. However, some apparent RR effect appears. Greenlandic Eskimo shows some change in the formal transitivity of verbs when nouns are incorporated. In Greenlandic Eskimo, as we see in (36b), a transitive verb takes both

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<sup>34</sup> In glosses, NOM = nominal particle.

subject and object agreements but when an object is incorporated, as in (37) or in (34-35), a verb is formally intransitive in that no object agreement appears, as with an intransitive verb (cf. 36a).

At this point, one might suspect that the change in the formal transitivity in the noun-incorporation construction in Greenlandic Eskimo shows that RR is involved. However, even though the verbs in (37) are formally intransitive, as in (36a), the objects appear with OBL, which says that while the object position remains intact, the transitivity of the predicate is changed. Thus the change in the formal transitivity in Greenlandic Eskimo differs from that in Ponapean: In Ponapean, both change in formal transitivity and a sort of change in syntactic transitivity take place: verbs are formally intransitive and have no syntactic object positions (we reasoned that no syntactic object position appears since the X-head of the syntactic object position is categorially amalgamated with V). On the other hand, in Greenlandic Eskimo, only change in formal transitivity takes place since the objects appear syntactically with OBL although verbs are formally intransitive.

Fortunately, Sadock (1980) notes that the intransitivity in (34 and 37) results from an independent cause (as Rosen also notes): A verb is formally intransitive when an object is indefinite, as shown in (38b) in which noun-incorporation does not take place, unlike (38a) in which the object is definite.

- (38) a. Neqi            nerivara  
          meat (ABS) eat-INDC-1sg/3sg  
          "I ate the meat."  
       b. Neqi            nerivunga  
          meat-INST eat-INDC-1sg  
          "I ate meat."            ((9-10) in Sadock (1980;305))

Sadock (1980;307) also notes that when a noun is incorporated, the object is always understood as indefinite: Thus an incorporated verb is always



formally intransitive (as in (38b)), so that a stranded modifier takes OBL (= INST) rather than ACC (= ABS). Owing to this fact described by Sadock, we suggest that the change in the formal transitivity in the noun-incorporation data in this language derives from two independent language-specific properties: (i) the indefiniteness of the object changes the formal transitivity of a verb, as in (38b), and (ii) incorporated nouns are always indefinite. Thus we conclude that the change in the formal transitivity in Eskimo does not provide counterexamples to our analysis that the Eskimo noun-incorporation is derived by head-movement in this language.

### 3.3.4. Two types of morphologically-complex predicates

The third set of data included in our proposals comes from morphologically-complex verbs/predicates in Eskimo languages (polysynthetic languages). In Eskimo, two (or more) predicates are morphologically-amalgamated and form words at the surface.<sup>35</sup> We predict that the properties of complex predicates differ depending upon the types of subpredicates of complex predicates. In fact, in Eskimo, depending on the type of matrix predicates -- -guma- type verbs and -kqu- type verbs --,<sup>36</sup> argument structure<sup>37</sup> differs.<sup>38, 39</sup>

<sup>35</sup> Sadock (1980) and Smith (1982) show that morphologically-complex predicates in Eskimo languages are words.

<sup>36</sup> Grimshaw and Mester (1985;6-11) suggest the following two types of verbals in Eskimo languages.

(i) -guma- (want) type verbs: -gasua- (attempt); -gia- (begin to); -gunna- (be able to)

(ii) -kqu- (order to) type verbs: -qi- (consider); -ti- (cause)

It is interesting to see that the verbs in (i) are semantically auxiliary verbs and that those in (ii) are not. ((ii) contains a causative verb.) We will show that the verbs in (i) trigger RR while those in (ii) trigger head-movement.

<sup>37</sup> Remember that by 'argument structure,' we mean the syntactic/Case structure of theta-structure in a clause (or in a CFC in Chomsky's (1986b) sense).

<sup>38</sup> In a complex verbal with -guma-, no overt embedded subject is possible either with NOM (= ERG) or with ACC (= ABS) when an embedded verb is transitive.

(i) \*angu-tu {sugusi-up/sugusik} taku-kqu-vaa .annak  
man-ERG child-ERG/chile-ABS see-want-3sg(SUBJ)/3sg(OBJ) woman-ABS  
"The man wants the child to see the woman." ((i) in fn. 17 and (26) in Grimshaw and Mester (1985); also cf. Smith (1982))

However, with an antipassive morpheme (APASS) affixed to a matrix verb, an embedded subject is overtly realized with OBL Case.

(ii) angutik anna-mik taku-0-kqu-ji-juk siitsi-mik  
man-ABS woman-INST see-APASS-want-APASS-3sg(SUBJ) squirrel-INST  
"The man wants the woman to see the squirrel." ((35) in Grimshaw and Mester (1985); also cf. Smith (1982))

In (40b), we use an example other than see-kqu- case in (40a) because of the complexity of the data in (ii). -kqu- and -quu- are the same type of predicates in that they allow overt embedded subjects; they belong to the verb class (ii) in fn. 36.

- (39) a. angutik tiki-guma-vuk  
 man-ABS arrive-want-3sg(SUBJ)  
 "The man wants to arrive."  
 b. anguti-up annak taku-guma-vaa  
 man-ERG woman-ABS see-want-3sg(SUBJ)/3sg(OBJ)  
 "The man wants to see the woman."  
 ((14) in Grimshaw and Mester (1985); also cf. Smith (1982a;168))
- (40) a. anguti-up annak tiki-kqu-janga  
 man-ERG woman-ABS arrive-want/order to-3sg(SUBJ)/3sg(OBJ)  
 "The man wants the woman to arrive."  
 ((18) in Grimshaw and Mester (1985); also Smith (1982a))  
 b. Quag uatsin-nut niri-qqu-a-a  
 frozen-meat-ABS(sg) us-DAT(sg) eat-tell-IND-3sg-3sg  
 "He told us to eat the frozen meat."  
 ((23) in Grimshaw and Mester (1985); from Fortescue (1984;43))

When an embedded V is ergative, in a sentence with a -guma- type matrix verb (39a), only one overt argument appears, while in a sentence with a -kqu- type matrix verb (40a), two overt arguments appear. On the other hand, when an embedded verb is transitive, in a sentence with a -guma- type matrix verb (39b), two overt arguments appear, while in a sentence with a -kqu- type matrix verb (40b), three overt arguments appear with an embedded subject taking DAT. In addition, depending on the position of ergative predicates, argument structure again differs from (39a) or from (40a), as shown in (41) in which the matrix predicate is ergative. In (41), two arguments appear (unlike (39a)) but one of the two arguments takes OBL (unlike (40a)).

- (41) tuttuk anguti-mut aattu-ganni-tuk  
 caribou man-Term cut-easy-3sg  
 "The caribou is easy for the man to cut (skin)." (from Smith (1982a;-179))

The difference in argument structure in (39-41) suggests that Case-assignment of complex predicates may vary depending on the ergativity/transitivity of subpredicates and depending on the types of matrix predi-

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\*\* These two sets of data are also discussed by Baker (1987) under the framework with head-movement in Baker's (1985/to appear) sense.

cates (on the syntactic derivations of complex predicates). Since the notion of m-head is purely morphological, let us suggest that only s-heads are responsible for Case-assignment in the cases of M/R-complex words while any member of R-complex words dominated by an X-head in syntax can assign Case.<sup>40</sup>

- (42) RR effect: 6. a. The s-heads of M/R-complex words are visible with respect to Case-assignment.  
b. Any member of R-complex words as a syntactic unit is visible with respect to Case-assignment.

However, by definition, both [-MD] and [+MD] heads are s-heads since they are both [-CD]. Fortunately, there is evidence that the m-head (the target of head-movement) is visible with respect to Case-assignment in the case of an M-complex word. In the noun-incorporation data derived by head-movement (Mohawk and Toscarora), V-N assigns ACC to its object position and V-N is formally transitive. If N is the s-head of the V-N M-complex word, then V-N would not assign Case. We thus suggest for the expository purpose that X[-MD] (V) is the s-head and the m-head. Given the structure obtained by head-movement, this suggestion is not formally implausible since [-MD] X-heads form categories in the Xo-structure formed by head-movement. We therefore further suggest that only the s-head can assign Case, as the data suggest that not more than one argument is assigned ACC (cf. 39-40).

To explain the argument structures in (39-41) under the current framework, let us divert our concern to the Case theory we adopt here. We first assume, following Choe (1985a), that any structural Case-assigner bears the Case feature [+structural Case] (= [+SC]), which indicates a category's capacity to assign a structural Case (NOM or ACC). Under this framework, structural Case is assigned by an X-head which has the Case

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<sup>40</sup> Some empirical data for (42b) will be discussed in Chapter 4.

feature [+SC]. We assume, as Choe (1985a) suggests, a version of Burzio's generalization: The Case feature [+SC] of a verb is licensed iff the verb assigns a logical subject theta-role (or when the verb is not ergative in Burzio's (1986) sense). Under this assumption, even when V[+SC] takes no object to assign Case, it has a capacity to assign ACC to any bare NP under its government domain.<sup>41</sup> V[+SC] assigns Case to its direct object (it may be that Case assigned by V is primarily linked with the object position) but when there is no direct object available, it assigns ACC to any available bare NP under its government domain. Given the property of Case assignment in (8) in Chapter 1, INFL with the feature [+SC]<sup>42</sup> has a capacity to assign NOM and [-N] with the feature [+SC] has a capacity to assign ACC.

At this point, let us introduce the notion of Case-transitivity: X is Case-transitive iff it has [+SC]. Given this notion, both an intransitive V and a transitive V with [+SC] are Case-transitive, and all nonergative

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<sup>41</sup> Our assumption or generalization differs from Burzio's generalization shown in (1) in a very technical sense but with different empirical consequences:

(1) If VP assigns theta-role to its subject, V assigns Case (ACC) to its object. (cf. Chomsky (1981))

For the case of intransitive verbs, (1) is open to many interpretations, while our assumption explicitly suggests that intransitive verbs can assign ACC when a syntactic bare NP is available, as in an ECM environment. In other words, whether or not V takes a logical object, if V assigns a logical subject theta-role, V can assign ACC. Note that ECMed arguments are not objects of matrix verbs.

See also Belletti (1986;45) for another reformulation of Burzio's Generalization: No Th-role to the subject position iff no structural Case to the object position. Belletti's formulation does not imply that intransitive verbs can assign ACC, while our formulation does.

<sup>42</sup> Given the discussion in Section 3.1., we assume that when INFL is [+Agr], INFL has [+SC]. Like ACC, NOM is assigned to any bare NP under the government domain of INFL[+SC]; NOM can be assigned to a non-logical subject as in raising construction.

(1) John seems to be happy.

Thus both ACC and NOM are structural Case in that they are not theta-linked (cf. Chomsky (1985/86a); Choe (1985a)).

verbs are Case-transitive, regardless of its (deep) transitivity. Given the noun-incorporation data we discussed above, we thus suggest that what is percolated by the GFPC is the feature [+/-Case-transitivity] (or [+/-SC]), instead of [+/-transitivity]: If the s-head of a complex word is Case-transitive, then the complex predicate is Case-transitive. If a complex predicate is Case-transitive, it assigns ACC to a bare NP whether it is transitive or intransitive. Note also that we can extend this notion to the formal ergativity found in Italian. Since V[-Case transitive] is ergative, when the s-head of a complex word is [-Case transitive] or lacks the Case feature [+SC], the complex verb is formally ergative. If that is so, then we can unify the notions of formal ergativity and formal transitivity in terms of the notions of non-Case-transitivity and Case-transitivity; what percolates because of the GFPC is not [+/-ergativity] or [+/-transitivity] but the feature [+/-Case transitivity], which corresponds to the notion of formal ergativity/transitivity (also cf. Section 4.2. for the change in formal ergativity found in Italian psych-verb construction).

Under this Case theory, the s-head determines the Case-transitivity of complex words; in other words, only the Case feature of an s-head is visible for Case assignment.

- (43) the feature [+SC] of the s-head of an M/R- or M-complex head is visible with respect to Case assignment  
 (i) the s-head of an M/R-complex word is [-CD]  
 (ii) the s-head of an M-complex word is [-MD]

(43) implies that complex verbs derived by RR or head-movement can assign at most one Case, which is consistent with the fact that no two ACC Cases are assigned in a clause with a complex predicate.<sup>43</sup> Suppose that the V1-

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<sup>43</sup> In Choe (In progress), we discuss the idea that both V1 and V2 of V1-V2 M- or M/R-complex words can assign Case in certain environments, i.e., NP-adjunction environments.

V2 word in which V1 is an embedded verb is derived by head-movement in a head-final language. According to our notions of s-head and m-head, V2 is then the m-head and the s-head. V1-V2 can assign Case only when V2 (s-head) has [+SC]. If so, then the complex verbal would be able to assign ACC to any available bare NP under its government domain whether or not V1 is ergative. In the case of V1-V2 M/R-complex words, then, V1 is the s-head while V2 is the m-head. Thus if V1 (an embedded verb) is ergative, V1-V2 fails to assign Case to a bare NP, while if V1 is nonergative (Case-transitive), V1-V2 can assign Case. These cases are instantiated in (39) and (40).

In (39), when V1 (-tiki- (= arrive)) is ergative (39a), V2 (-guma- (= want)) does not assign Case to the embedded object so that it moves to the subject position; when V1 is nonergative (39b), V2 assigns Case to the embedded object. Because no other governor is available for the embedded subject,<sup>44</sup> it is PRO. In (39), V1 instead of V2 governs the Case-transitivity of a complex predicate, which indicates that -guma- (V2) is [+CD] and triggers RR. On the other hand, in (40), whether V1 is ergative (40a) or not (40b), one argument is assigned ACC: When V2 is intransitive, the embedded subject is assigned ACC; when V2 is transitive, the embedded object is assigned ACC by V1-V2. In the latter case, DAT is assigned to the embedded subject probably by P. Thus in (40), V2, instead of V1, governs the Case-transitivity of a complex predicate, which indicates that V1 is [+MD] and triggers head-movement.

Up to now, we have shown that the difference in argument structure between (39) and (40) results from the different derivations of complex

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<sup>44</sup> Or because no independently-motivated Case assigner for the subject is provided in this construction.

predicates: the complex verbals in (39) are derived by RR accompanied by head-movement (M/R-complex words); those in (40) are derived by head-movement (M-complex words). In fact, this conclusion is interesting since -kqu- verbs are called causative type verbs which always allow embedded subjects, while -guma- verbs are semantically auxiliaries and do not allow overt embedded subjects, as is true of 'restructuring' verbs (cf. fn. 36). Thus, like the causative construction, PRO is not allowed in the -kqu- construction, while like the 'restructuring' construction, an overt NP is not allowed in the -guma- construction.<sup>45</sup>

In the third set of data (41), the ergativity of V2 governs the Case-transitivity of V1-V2 since the embedded object moves to the subject position. Under an assumption that the complex word in (41) is derived syntactically, as Smith (1982) argues, we conclude that in (41) V2 is the

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<sup>45</sup> Even when an embedded verb is intransitive, the two cases differ.

(i) a. atuatsi-guma-juk  
read-want-3sg.(SUB) "He wants to read." ((13c) in Grimshaw and Mester (1985;6))

b. malit-tau-guma-galuat-tut  
follow-pass-want-really-3pl.  
"They do really want to be followed." (from Smith (1982;181))

(ii) a. arna-up angut ani-qu-vaa  
woman-ERG man-ABS go out-tell-3sg./3sg.  
"The woman {tells/wants} the man to go out." ((3d) in Jensen and Johns (in press))

b. utit-ti-tau-kqu-vauk  
return-cause-pass-want/order to-3sg./3sg.  
"He wants it to be returned." (from Smith (1982;182))

In (ia) with -guma-, only one argument appears and verbs are formally intransitive; in (ii) with -kqu-, two arguments appear, and V-V is formally transitive since subject agreement and object agreement appear on it. (Note that unlike the English translations, the embedded subject in (iib) triggers [+person] agreement (cf. Smith (1982;182)). Under our analysis, the formal intransitivity of complex verbals in (i) is also explained since an embedded verb (the s-head) is (formally) intransitive. As for the null embedded subject, we assume that -guma- type verbs are 'control' verbs at D-structure. In (ii), since a matrix verb is the s-head, complex verbs are formally transitive.



s-head, which means that V1-V2 in (41) is derived by head-movement.<sup>46</sup> The data in (41) show that even when a complex word is derived by the same transformation (head-movement), dependent on the nature (ergativity) of an s-head, the argument structure differs.<sup>47</sup> This is exactly what we predicted under the notions of s-head and m-head.<sup>48</sup>

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<sup>46</sup> Noam Chomsky (p.c.) reminds us of the similarity between (41) and the tough construction in English.

(i) John is easy to please.

Suppose, by analogy with LF-wh-movement, that please is linked with easy in syntax so that the former undergoes head-movement to the latter in LF and so that the notion of s-head is effective in syntax. Then one can suggest that John (the embedded object) moves to receive Case assuming that the easy+please complex predicate does not assign Case to the object.

This approach faces some difficulties. First, since long-distance tough-movement is possible, we may fail to motivate the long-distance A-movement in (ii) and a Subjacency violation in (iii), even if we could motivate long-distance LF-head-movement.

(ii) The job is important enough for us to order them to insist that the committee should advertise t.

(iii) \*The job is important enough for us to insist on the principle that the committee should advertise t. ((115 d and e) in Chomsky (1977))

Second, in (i), the component please of the R-complex predicate easy+please must not assign Case since its object moves to the subject position (however, cf. RR effect 6b in 42). On the other hand, in (iv) the object sonatas receives Case, which contradicts the data in (i).

(iv) the violin is easy to play sonatas on. ((133b) in Chomsky (1977))

Thus it seems that the idea of LF-head-movement requires additional assumptions to explain tough-movement. Since there are also reasons to suppose a matrix subject to be base-generated (cf. Lasnik and Fiengo (1974)), we do not attempt to pursue the idea of LF-head movement. In fact, although we do not deny the possibility of LF-head-movement, we will suggest in Chapter 4 that head-movement, which is motivated by a certain morphological reason, applies either in syntax (whether or not RR is accompanied) or in the PF component (when RR is accompanied), unlike wh-movement (motivated by a scope reason).

<sup>47</sup> We do not have an example of an M/R-complex word V1-V2 in which V2 is ergative. Under our assumption, since V1 is the s-head of a V1-V2 M/R-complex word, whether V2 is ergative, V1-V2 is Case-transitive so that an embedded object does not move and an embedded subject (NP1) appears as the matrix subject, as in the raising construction:

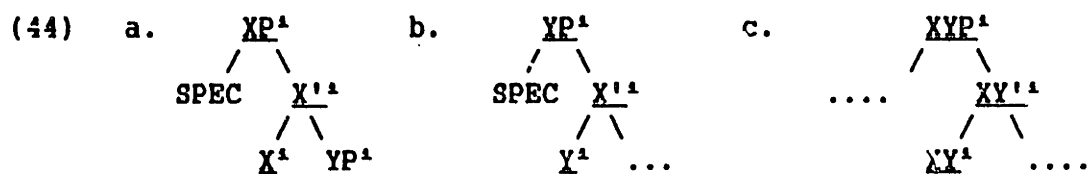
(1) [<sub>S1</sub> e [<sub>S2</sub> NP1 NP2 V1] V2] ---> [<sub>S1/2</sub> NP1 NP2 V1-V2]

Rizzi's data in (14-15) in Section 3.2. provide a good example of (1) without morphological amalgamation.

<sup>48</sup> One more datum that falls under our explanatory domain may be the so-called applicative construction, which Baker (1985/to appear) suggests

## 3.3.5. RR conventions

The next question we have to raise deals with the syntactic projections of M/R-complex words. What is the status of complex X-heads and what is the status of the SPECS and comps of X and Y when X-Y forms an M/R-complex X-head? Let us suggest, given the wide interpretation of the projection principle, that the following overlapping processes that do not violate the projection principle<sup>49</sup> apply among underlined categories when they undergo overt RR: The projection (44a) overlaps with the projection (44b), producing the projection (44c).



In (44c) coindexed elements overlap among the same bar-level categories and make a one-story complex X-head projection from a multi-story simple X-head projection (44a and b). Let us call X and Y that are not linked by RR simplex X-heads and X-heads linked by RR complex X-heads. Suppose further that the notions of simplex or complex X-heads<sup>50</sup> does not apply to the wide interpretation of the projection principle (on X-heads) because the

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derives from P-to-V head-movement. Here, as we noted before, we do not discuss V/P combinations in any detail and leave them for further research. Also it will be interesting to see whether complex verbs, called 'co-verbs' or 'serial verbs' in various languages, can be explained under our proposal. (Note also that the status of P in V-P combinations is controversial in various ways; for example, P is sometimes discussed or argued as V.) We also leave this for further research.

<sup>49</sup> Or overlapped elements are visible with respect to the projection principle.

<sup>50</sup> In Section 4.1., we will suggest that the notions of simplex and complex X-heads play a role with respect to the notion of government.

principle is formulated in terms of X-heads; therefore both X and Y in (44c) are visible with respect to the principle.

As for the status of A-bar SPECs under the domain of overt RR, we suggest RR convention (a):

(45) RR Convention (a):

Let the A-bar-SPEC A in a domain of RR,  $D_1$ , overlap with the A-bar-SPEC B if (i) and (ii): (i) B lies in the first maximal projection that dominates the domain  $D_1$ ; (ii) A and B are not distinct (apply from bottom to top).

def. = A-bar SPECs A and B are distinct if they have any different features

RR convention (a) does not invoke the Recoverability of Deletion since overlapping is mere juxtaposition of X-heads observed under certain conditions. Nevertheless, A-bar-SPECs that overlap should not contain any different syntactic or morphological features, given RR convention (a).<sup>51</sup>

In the case of A-SPECs, we expect three cases, which can be schematized as follows, to instantiate head-final languages.

- | (46) | D-structure                                                      |        | overt RR                                   |             | S-structure |  |
|------|------------------------------------------------------------------|--------|--------------------------------------------|-------------|-------------|--|
| a.   | [ <u>e</u> [ NP <u>Vi/t</u> .. ] Ve ]                            | -----> | [ <u>e/NP</u> ... <u>Vi/t-Ve</u> ]         | (cf. fn 47) |             |  |
| b.   | [ NP [ <u>e</u> NP <u>Ve</u> ] Vi ]                              | -----> | [ NP/NP <u>Ve-Vi</u> ]                     | (cf. 39a)   |             |  |
| c.   | [ NP <sub>1</sub> [ <u>PRO<sub>1</sub></u> <u>Vi/t</u> .. ] Vi ] | -----> | [ NP/PRO <sub>1</sub> ... <u>Vi/t-Vi</u> ] | (cf. 39b)   |             |  |

where Ve, and Vi/t are ergative, and (in)transitive verbs, respectively

To have structure (46a) after the application of overt RR above, we suggest that a non-theta position (e) and an embedded theta-position overlap to form an overlapped A-position, which contains one theta-role. Following the same logic, we suggest that in the case of (46c), a matrix theta-position and an embedded theta-position also overlap to form an overlapped A-position which contains two theta-roles. Overlapping implies the

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<sup>51</sup> When V takes an interrogative complement like wonder, the SPEC of CP, which we assume contains some information concerning wh-scope, fails to overlap with other SPECs, according to RR convention (a). We do not have any specific empirical data on M/R-complex verbals to support this assumption.

matching process of grammatical relations such as subject-to-subject matching; overlapping also implies that if A-SPECs that overlap are assigned theta-roles by both a member of W and a member of Z (where W and Z may be complex), an overlapped A-SPEC receives a combined theta-role (notice that each head has to assign theta-role to its A-SPEC). Assuming this notion of overlapping, we suggest the following RR convention (b).<sup>52</sup>

(47) RR convention (b):

Let the A-SPEC A in a domain of RR,  $D_1$ , overlap with the A-SPEC B if (i) and (ii): (i) B lies in the first maximal projection that dominates the domain  $D_1$ ; (ii) A and B are not distinct (apply from bottom to top).

def. = A-SPECs A and B are distinct if they bear different (referential) indexes.<sup>53</sup>

However, case (47b) apparently cannot be explained by RR convention (b) since an embedded NP is not in SPEC position. We therefore suggest the following derivation to subsume (46b) under RR convention (b).

(48) [ NP [ e NP Ve ] Vi ] --(i)--> [ NP [ NP<sub>1</sub> t<sub>1</sub> Ve ] Vi ] --(ii) ->  
[ NP<sub>1</sub> Ve-Vi ]

The process (ii) (overt RR) applies after A-movement (raising; the process (i)) applies, which means that Ve-to-Vi head-movement (Ve-Vi amalgamation) takes place in the PF component (or after syntax) although Vi-to-Ve RR applies at D-structure/in syntax. Note that in all the cases in (46) C-to-V RR, which triggers small clauses, takes place in an embedded clause first, and then V-to-CIV RR applies. After A-movement (raising) applies

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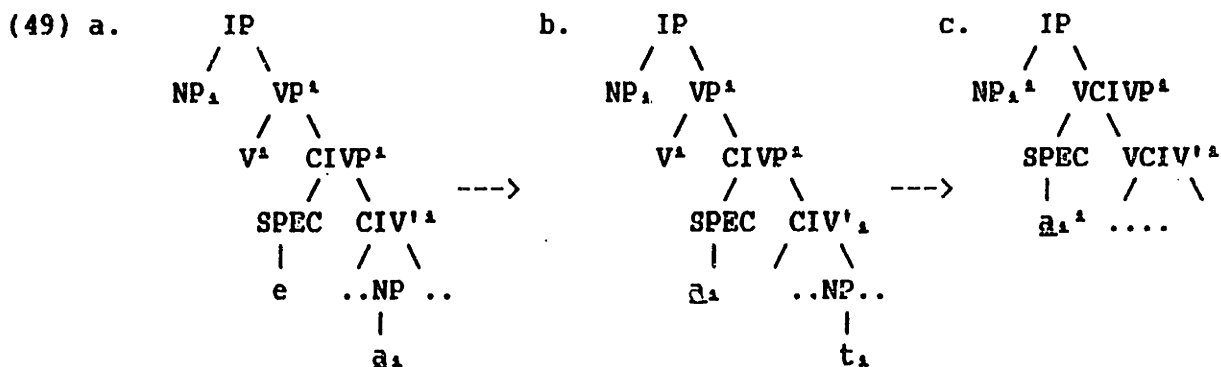
<sup>52</sup> If we assume the weak version of the projection principle (cf. Chomsky (1981:29)), then we may assume that deletion does not raise a problem with the projection principle; nonargument SPECs do not come under the scope of the projection principle but are licensed by X-bar theory. Assuming the weak version of the projection principle, Choe (to appear) suggests the following:

(i) Delete SPEC under [-CD]X'<sup>1</sup> if it is not an argument (or if it can be deleted).

RR convention (b) in Choe (to appear) is also modified, as shown in (47) to capture more empirical facts; (47) will be further modified in Section 3.4..

<sup>53</sup> We assume that coindexing between A-positions is lexically-governed.

(49b), VIC-to-V head-movement (move-category) applies in the PF component (49c), forming a VICV M/R-complex word at PF.



The derivation in (48) suggests that VI-to-Ve RR applies at D-structure, but Ve-to-VI head-movement, which gives rise to move-category, applies either in syntax or in the PF component. This amounts to suggesting that there are two types of overt RR (move-category): One is accompanied by head-movement in syntax (49a) and the other is accompanied by head-movement in the PF component (49c). Therefore, we suggest the following cases of RR, which are obtained by a different level of rule application.

| (50)                | head-movement | RR          | configurational structure |
|---------------------|---------------|-------------|---------------------------|
| a. RR               | --            | D-structure | syntax/LF                 |
| b. deep-overt RR    | syntax        | D-structure | ---                       |
| c. surface-overt RR | PF component  | D-structure | syntax/LF                 |

In Section 3.4., and Chapter 4, we will show that the two types of overt RR (50b and c) are, in fact, necessary in addition to covert RR (affect-category; 50a).

Suppose that a matrix NP and a derived embedded NP subject are not coindexed in (46b). Then there will be no overlapping, so that an embedded NP should be suppressed to receive Case by P (as in causative construction). As we will see in Chapter 4, the case in which an embedded NP and a

matrix NP are not coindexed is also a possibility and therefore (46b) presents a case of accidental overlapping.

Finally, as for the status of nonoverlapped A- or A-bar SPEC's, and as for that of comp's, let us suggest the following.

(51) RR convention (c):

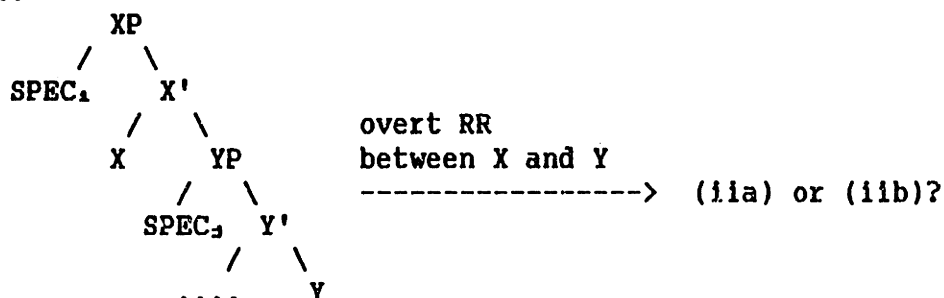
Attach all nonoverlapped elements in the domain of X-to-Y RR to the bar-node of  $XY^1$ , making them sister nodes of the complements of  $Y^1$  in such a way that the head parameter is preserved.

The RR convention (c) in (51) suggests that amalgamated projection preserves the peripheral nature of X-heads in the projections of M/R-complex X-heads when nonoverlapped arguments/elements are attached to the  $V^1$  node. If languages are head-initial/final, then complex projections of  $W^1$  are

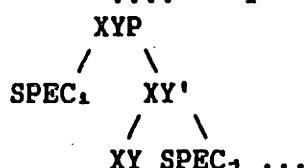
also head-initial/final.<sup>54</sup> Given (51), we would have the following structure.

<sup>54</sup> Given RR convention (c), one questions what happens when overt RR applies to the following structure in a language that employs a mixed head-parameter.

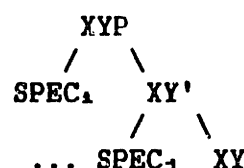
(1) a.



(11) a.



b.



Since Y is categorially more prominent or stronger than X, one might suggest that the projection of the XY category follows the head parameter of the [-CD] category (= Y).

However, there are empirical data that show that the projection of the XY category follows the head parameter of the [+CD] category: Koopman (1984;27) notes that in Vata and Gbadi (Kru languages), "the respective order of the main verb and its complements in tensed clauses depends on certain tense, aspect, and mood features of this clause" and illustrates the following data:

(iii) a. *h lé bĩ sáká* (SVO)

I eat now rice "I am eating rice right now."

b. *h ká ná gòlí mlí pùtú sà* (SIOV)

I FUT-A may mounds in grass remove

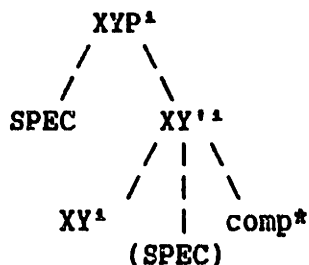
"I will clear the weed from my mounds." ((27a) and (28b) in

Koopman (1984;27-28))

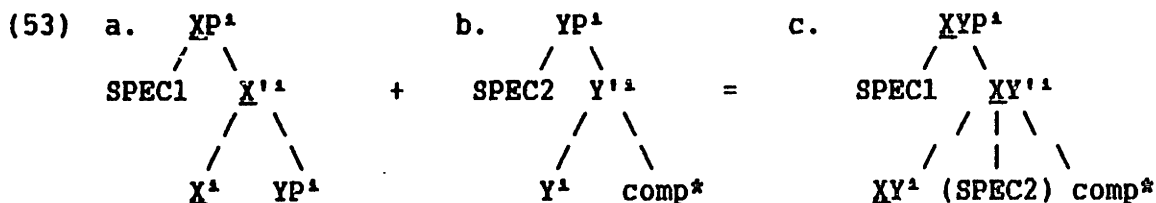
To put it more directly, when INFL elements independently appear, the complements of V appear on the left side of V (11ib) and when INFL elements do not overtly appear, they appear on the right side of V (11ia).

Given (11b), IP projections seem to be projected in the manner given in (1) with a mixed parameter. If I-to-V overt or covert RR applies universally (depending on whether INFL is filled), as we will argue in Section 4.1., then the data (11ia) can be interpreted in the following way from our point of view: since the verb *lé* (= eat) in (11ia) represents an IV M/R-complex word, the projection of the I-V category follows the head parameter of I (= [+CD]; cf. 11a) but not of V (= [-CD]; cf. 11b). If this interpretation of the data in (11) is right, then overt RR affects the head parameter of an RR target. Note also that RR in terms of coindexing applies top to bottom. So one may reason that the head-parameter of the top projection has priority over that of the bottom projection.

(52)



Given the wide interpretation of the projection principle, RR convention (c), however, is rather problematic since A-SPEC becomes a sister node of complements of Y, as in (52). Suppose that only [-CD] categories can license their SPECS and comps properly in the cases of M/R-complex X-head projections and that [+CD] categories lack such a licensing ability. Then, [+CD] categories should be parasitic to [-CD] categories. However, the SPECS of [-CD] X-heads suffer. They are either overlapped with the matrix SPEC (RR conventions (a) and (b)), or made sister nodes of comps of [-CD] categories (RR convention (c)): RR convention (c) gives rise to the following projections of M/R-complex X-heads (X-Y).



When YP contains an A-SPEC, which is not coindexed with the SPEC of XP, the A-SPEC become a sister node of XY¹ and comp\* as in (53c); we, however, suggest that the Y X-head licenses its SPEC through X (by analogy with the notion of government that if X governs YP, then X governs Y and the SPEC of YP; cf. Chapter 1) and that the SPEC of YP does not become a (grammatical) object of XY¹. This implies that the subjecthood remains intact under RR convention (c).

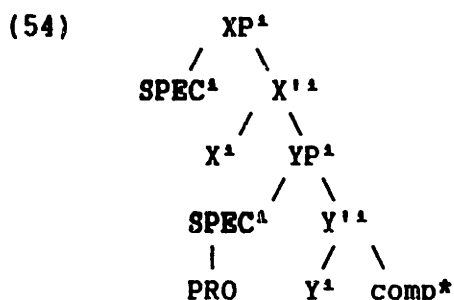
We have seen that both M/R- and R-complex X-heads contain s-heads



([-CD] X-head). Thus whether or not two X-heads are morphologically amalgamated, if RR applies to them, the semantics of complex X-heads are the same. In addition, the status of projections are also the same with respect to the notion of government (also cf. Section 4.1.): X-heads are categorially amalgamated into one complex X-head in the case of overt RR, and X-heads except for [-CD] X-head are categorially defective in the case of covert RR so that projections under the domain of RR (overt or covert) are not barriers. Thus let us suggest that overlapping (of X-heads and SPECs) also applies covertly and overtly; overt overlapping results in overt categorial amalgamation while covert overlapping results in abstract categorial amalgamation in terms of coindexing. Even in the case of covert RR, the effects of overlapping derived by the RR conventions, we suggest, are observed at LF because of (RR) coindexing; the semantics of overlapped elements are identical whether overlapping is covert or overt. On the other hand, configurational structure must differ: covert RR preserves configurational D-structure and overt RR triggers one story complex X-head projections from multi-story simplex X-head projections. In short, we suggest that the following projection is derived by covert RR in which SPEC's are coindexed subject to the RR conventions although SPECs are not categorially overlapped.<sup>55</sup>

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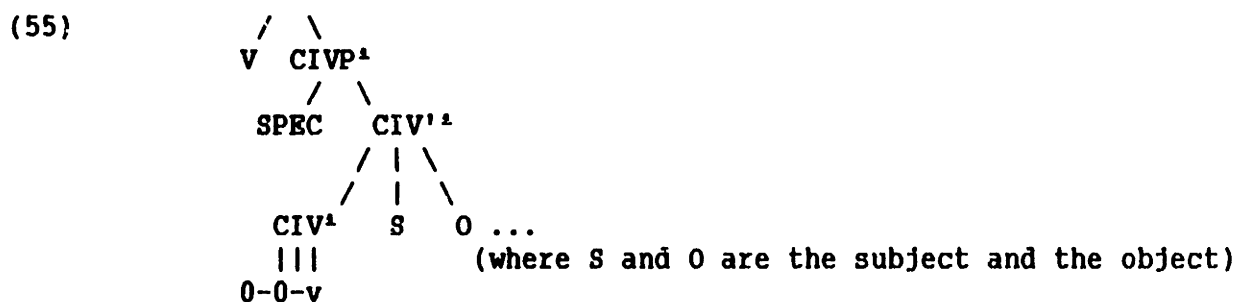
<sup>55</sup> It should be noted that the notion of overlapped theta-role and Zubizarreta's notion of adjunct/secondary theta-role differ: (Overt) overlapping applies between two syntactic positions that have two independent primary theta-roles and implies the coexistence of the two theta-roles under a complex X-head, while adjunct theta-roles are added to (argument) positions that are assigned primary theta-roles.



Note also that the present analysis suggests that the V-to-V RR construction is base-generated as the control construction in certain cases that we have discussed so far.<sup>28</sup> But because of the semantics or Lexical properties of Vx, the syntax and semantics of the 'restructuring' construction differ from that of the control construction: Overlapping and RR effects apply to the former but not to the latter.

### 3.3.6. The Romance causative construction

The notion of RR discussed above implies that RR may also be responsible for some phenomena other than the 'restructuring' phenomenon. Depending on the domains of RR, we would have different phenomena. In addition, the RR conventions would change the order of X-heads when RR convention (c) applies. Consider a possible case in which C, I, and V are overtly RRed in a head-initial language.



<sup>28</sup> However see Chapter 4, in which we show that the predicates that trigger V-to-V RR are not always 'subject' control verbs.

In (55), matrix Vs select CPs whose heads are phonetically null and null C's select IPs whose heads are also phonetically null. When C-to-V RR applies, the RR conventions derive some change in both dominance relation and string order. The internal structure of a CIV M/R-complex X-head projection consequently derives V+V (syntactically CIV<sup>1</sup>+V) order, as shown in (55).

This V+V order is actually found in Romance causative construction, as shown below.

(56) Italian:

- a. Maria ha fatto riparare la macchina da/a Giovanni  
       has made repair the car by/to  
       "Maria had the car repaired by Giovanni."
- b. Maria ha fatto riparare la macchina  
       has made repair the car  
       "Maria had the car repaired" ((1) in Burzio (1986;226))

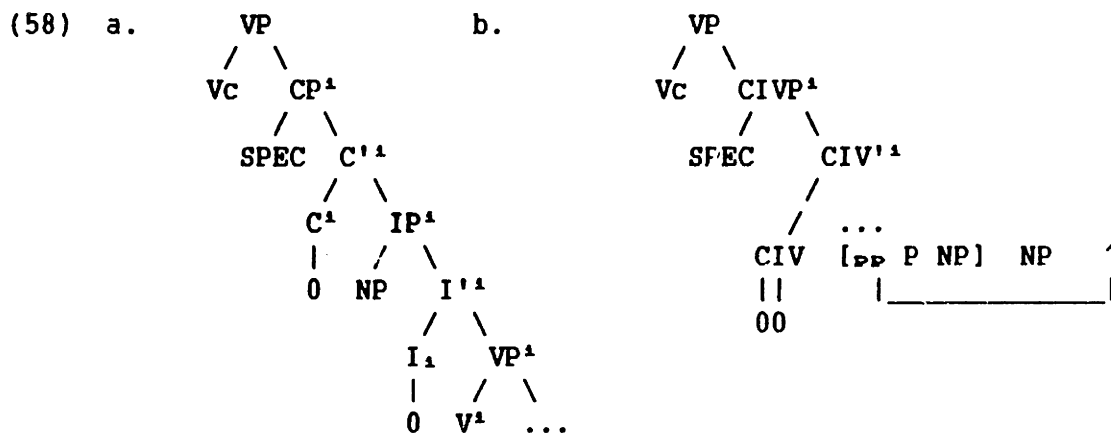
(57) French:

- a. Elle fera manger cette pomme par/à Jean.  
       she will make eat that apple by/to  
       "She will make that apple eaten by Jean."
- b. Il a fait partir son amie.  
       He made leave his friend  
       "He made his friend leave." (French data drawn from Kayne (1975))

We thus suggest that in Romance causative clauses, CIV amalgamation shown in (56-57) is derived by deep-overt RR (RR at D-structure and head-movement in syntax) and that CIV M/R-X-head projections instantiate small clauses since causative constructions select small clauses.

The actual word order in Italian and French, however, is Vi+S or Vt+O+S, in which Vi and Vt represent an intransitive and a transitive verb, respectively. Since INFL in an embedded clause is [-Tense] so that it does not bear the feature [+SC], no NOM is assigned (note that small clauses are always [-Tense]). A matrix verb cannot assign ACC to the embedded subject because of an embedded verb (CIV<sup>1</sup>) because the embedded verb (CIV<sup>1</sup>) would induce the MC. CIV<sup>1</sup> can assign ACC since V, which is

the s-head, has the Case feature [+SC] and ACC is assigned to the subject since no object is available in the embedded clause. On the other hand, CIVt<sup>1</sup> assigns ACC to the object, leaving the subject Case-marked by P (cf. b).<sup>57</sup> The subject should move in order for the object to be assigned ACC from CIVt<sup>1</sup>, as shown in (58b), because of the adjacency requirement of Case assignment (cf. Chomsky (1981); Stowell (1981)).



where Vc is any verb that takes a CP whose X-head is [+CD] and subcategorizes for a V[-CD] X-head (i.e., CIVP).<sup>58</sup>

This approach not only explains the well-known V+V order in the Romance causative construction,<sup>59</sup> but also shows an intermediate derivation of causative construction in polysynthetic languages such as Eskimo (head-final) and Chichewa (head-initial).

- (59) a. nutara-up arnaq ani-ti-taa Eskimo  
 child-ERG woman-ABS go out-cause-3sg./3sg.  
 The child made the woman go out."

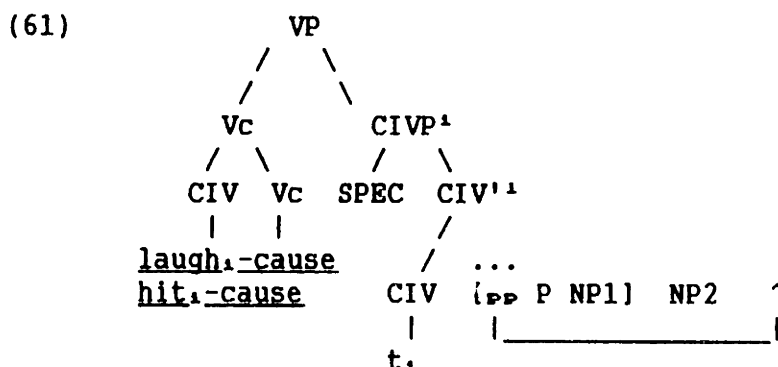
<sup>57</sup> We will suggest in Chapter 4 that both par/da and a/a are dummy Case markers.

<sup>58</sup> Vc may be either a perception verb or a causative verb. Or more generally, Vc is any verb selecting small clauses triggering C-to-V RR. But the way an embedded subject is assigned Case when an embedded V is transitive differs from language to language (cf. Chapter 4)

<sup>59</sup> In the literature, because of this rather unusual word order, many studies suggest that 'restructuring' and Romance causative constructions are derived by the same process (cf. fn. 10 in Section 3.2.).

- b. nutara-up arna-mut angut aktuq-ti-taa  
 child-ERG woman-ALL man-ABS touch-cause-3sg./3sg.  
 "The child made a woman touch the man."  
 ((4) in Jensen and Johns (in press); Inuktitut dialect)
- (60) a. Buluzi a-na-sek-ets-a ana Chichewa  
 lizard SP-past-laugh-cause children  
 "The lizard made the children laugh."
- b. Anyani a-na-meny-ets-a ana kwa buluzi  
 baboons SP-past-hit-cause-asp children to lizard  
 "The baboons made the lizard hit the children."  
 ((42a) and (44a) in Baker (to appear;ch. 4))

In both cases in (59) and (60), which contain causative verbs that do not usually belong to the class of auxiliary predicates (Vx's), the morpheme order in (59) and that in (60) are identical (V-Vc). Thus, we suggest that the V-Vc order is derived by head-movement from (58b) in the following way.



Since the complex category CIPV¹ is L-marked and is not a barrier, Vc can govern elements within the CIPV projection. The feature [+SC] of Vc of a CIV₁-Vc complex word (but not the feature [+SC] of CIV₁) is visible with respect to Case-assignment since Vc is the s-head. (Remember also that the Case feature [+SC] of the s-head determines the formal ergativity/transitivity of M-, M/R-, and R-complex words.) Thus when an embedded verb is transitive, an embedded object, which we suggested is primarily linked with the Case feature [+SC] of V, receives ACC assigned by CIV-Vc but an embedded subject does not (and therefore it receives Case assigned by P).

On the other hand, when an embedded verb is intransitive, an embedded subject receives ACC from CIV-Vc.<sup>60</sup>

In this way, the present analysis accounts for the similarity in argument structure between Romance and Chichewa/Eskimo causative constructions in terms of CIV<sup>1</sup> deep-overt RR. The two instantiations differ only in that the Chichewa/Eskimo causative constructions but not the Romance causative constructions employ CIV-to-Vc head-movement. The notion of government and the principles of Case-assignment then incidentally give rise to the similarity in argument structure between the two instantiations of causative construction.

The present analysis also explains some syntactic facts in the Romance causative constructions. It is a well-known fact that clitic climbing is also possible in causative construction in Romance languages, as in the 'restructuring' construction (cf. Kayne (1975); Burzio (1986); Zubizarreta (1982); Rouveret and Vergnaud (1980)), as in Italian, for example:

- (62) a. Maria lo fa [lavorare]. "Maria makes him work."  
 b. Maria la fa [riparare a Giovanni]. "Maria makes Giovanni repair it."  
 ((20) in Burzio (1986;238))

We suggest that clitic climbing is possible since CIVP<sup>1</sup> is not a barrier (CIVP is L-marked) so that clitics do not cross any barriers.

The present analysis also explains some well-known (but previously not well-explained) differences between causative and 'restructuring' constructions with respect to the nature of Vc and Vx especially in Italian (cf.

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<sup>60</sup> We assume without arguments the idea that traces may fail to assign Case; we also assume that a trace derived by head-movement does not trigger the MC; if it induces the MC, no Case would be assigned to embedded arguments since Case is assigned under government. The effects of this assumption are similar to the GTC effects; but see Chapter 5. Also note that these two assumptions are not unreasonable since the trace position of head-movement does not constitute a category but a segment because of the adjunction function  $\bar{X}$ .

Burzio (1986)): In the former, a matrix V is RRed with an embedded V ('restructuring') while in the latter, an embedded C is RRed with an embedded V (C-to-V RR  $\neq$  'restructuring'). Thus we predict that because RR does not apply between Vc and an embedded V, Vc is not an auxiliary predicate and therefore maintains its properties as a main verb; Vc and an embedded V are semantically and syntactically independent of each other in the causative construction (even if the two predicates are in the morphological dependency relationship). Thus, unlike the 'restructuring' construction, the causative construction, we expect, does not exhibit auxiliary change and the prediction is borne out, as shown in (63).

- (63) a. Mario {ha/\*e} fatto venire il medico.  
 b. Mario lo {ha/\*e} fatto venire.  
 "Mario has had {the doctor/him} come." ((113) in Rizzi (1982;28))

Whether a clitic climbs or not, the auxiliary essere, which is required by the embedded verb in (63), is not allowed to go with the matrix verb (Vc), which requires the auxiliary avere.

Second, the causative construction permits no auxiliary in an embedded clause, while the 'restructuring' construction allow an auxiliary in an embedded clause, as we see in the contrast between (64a) and (64b):

- (64) a. \*Gianni ha {fatto/visto} essere picchiato Piero da Mario.  
 "Gianni has {had/seen} Piero be beaten by Mario." ((115) in Rizzi (1982;28))  
 b. Piero gli strava per essere presentato.  
 "Piero to him was going to be introduced." ((114) in Rizzi (1982;28))

We suggest that the causative construction contains a small clause with a phonetically null form of INFL[-Tense,-Agr] (but cf. (31b and c) in Section 3.1. and fn. 61 below) while the 'restructuring' construction has an infinitival clause with a strong form of INFL[-Tense,-Agr] (INFL with [+A]). Another difference is that the embedded clause in the causative construction contains a CIV M/R-complex X-head projection while that in the

'restructuring' construction contains a C+I+V R-complex X-head projection. In fact, in English small clauses, this covert-overt C-to-V RR dichotomy is observed. INFL[-Tense,-Agr] in (65a) and that in (65b) differ with respect to the realization of auxiliary elements, which may indicate both the INFL distinction and the covert/overt C-to-V RR distinction.<sup>61</sup>

- (65) a. I consider him (\* be) happy. (overt C-to-V RR)  
 b. I consider him to be happy. (covert C-to-V RR\_

Third, although object cliticization is possible in an embedded clause of the 'restructuring' construction, it is not in the embedded clause of the causative construction in Romance languages (cf. Burzio (1986)) shown in (56).<sup>62</sup>

- (66) a. \*\*Maria fa [lavoralo].  
 "Maria makes him work."  
 b. ??Maria fa [riparala a Giovanni].  
 "Maria makes Giovanni repair it." ((21) in Burzio (1986;238))

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<sup>61</sup> As Richard Kayne (p.c.) has pointed to us, the following is possible:

(i) Let him (be) happy.

We suggest that the verb consider triggers C-to-V overt RR, like a causative verb, while the verb let triggers C-to-V covert RR (also cf. Section 3.1.). Also, in Romance languages, it seems that there are at least two different types of small clause: Small clauses selected by the verb let or a perceptual verb and those selected by causative verbs. The former allow either SV(O) or V(O)S word order in small clauses, while the latter allow only V(O)S order (cf. Zubizarreta (1985)). From our point of view, this difference is theoretically interesting because covert or overt C-to-V RR would trigger such difference in word order: when RR is overt, V(O)S order is obtained; when it is covert, SV(O) order is obtained. This reasoning becomes interesting if these two types of small clauses exhibit different scope facts since overt C-to-V RR destroy IP and VP so that QR in the embedded clause does not apply.

<sup>62</sup> The reflexive clitic si behave differently in Italian; it appears between Vc and an embedded V:

(i) a. \*Maria {si farà accusare/fara accusarsi} (a) Giovanni  
 "Maria will make Giovanni accuse himself."

b. Maria a fait g'accuser Pierre. ((15) and (17) in Burzio (1986; 404))

As for an analysis of reflexive cliticization that is obtained at D-structure in Italian, see Burzio (1986).



Suppose that cliticization should refer to a VP node (cf. Radford (1977)) or that a complex X-head projection destroys the environment of cliticization to the right side of V. Then the lack of cliticization in an embedded clause in the causative construction follows, since an embedded clause has no VP node in syntax because overt RR applies in syntax. In fact, no VP-movement out of a causative embedded clause is possible:

- (67) \*È proprio leggere il libro che gli faccio  
 "It is exactly read the book that I will make him." ((68b) in Burzio (1986;347))

The fourth difference between the two constructions is that (dative) cliticization across an embedded subject is not allowed in causative construction (68a) but is allowed in 'restructuring' construction (68b).

- (68) a. \*Mario gli farà scrivere Piero t<sub>i</sub>.  
 "Mario to him<sub>i</sub> will have Piero write t<sub>i</sub>."  
 b. Mario gli<sub>i</sub> vuole scrivere t<sub>i</sub>.  
 "Mario to him<sub>i</sub> wants to write t<sub>i</sub>." ((118) and (119c) in Rizzi (1982;29))

The ungrammaticality in (68a) is explained by RR convention (c) since the subject status remains intact under RR convention (c). Thus (68a) illustrates Specified Subject Condition (SSC) effects (cf. Kayne (1975); Quicoli (1976));<sup>63</sup> on the other hand, the lack of SSC effects in (68b) is explained if overlapped PRO under the domain of XP<sup>i</sup> projections is not visible with respect to SSC because PRO under the domain of XP<sup>i</sup> projections covertly

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<sup>63</sup> According to Burzio (1986; 370), (68a) is not \* but ??. Although SSC effects differ from idiolect to idiolect, idiolectal variations do not seem to affect our point. The contrast between the control and 'restructuring' constructions with respect to reflexive clitics also demonstrates this point.

- (i) a. \*Maria si è fatta accusare a Giovanni  
 "Maria had Giovanni accuse herself."  
 b. I ragazzi si andranno a parlare.  
 "The kids will go to talk to each other." ((97a) and (11b) in Burzio (1986; 273 and 401))

'overlaps' with the matrix subject in syntax through coindexing, as in (69b).

- (69) a.  $NP_1$   $V_c$  [  $NP_2$  ... ] (no SPEC-to-SPEC overlapping; SSC effects)  
 b.  $NP^1$   $V_x$  [  $PRO^1$  .. ] (SPEC-to-SPEC overlapping; no SSC effects)

Up to this point, we have proposed that overt CIV RR (in syntax) accounts for the Italian causative construction (small clause construction) while  $V_x+C+I+V_k$  covert RR (at D-structure) accounts for the 'restructuring' construction. We have also seen that RR and the notion of s-head explain the nature of 'restructuring' in terms of the nature of R-complex words. As formulated, RR predicts that whenever X-heads are [+CD] in the Lexicon, RR takes place because of categorial dependency. Our analysis explicitly suggests that RR does not necessarily link predicates and is not restricted to a certain class of predicates. This suggestion naturally led to a theoretically plausible explanation of Romance causativization in terms of RR. In fact, the RR effects are not restricted to  $V_x$  verbs but affect any lexical or nonlexical categories when they are [+CD], as in the Romance causative construction. In the case of C-to-V RR, as the RR effects illustrated in (15) and (42) predict, the formal ergativity/transitivity of CIV M/R-complex predicates, which is understood as the (non-)Case-transitivity, remains intact since V is the s-head. On the other hand, we correctly explain other RR effects (such as clitic climbing) in the causative construction.

### 3.3.7. Some theoretical implications

The transformational rule RR with the RR conventions in terms of move/affect-category on the one hand and the present interpretation of head-movement on the other hand suggest that both head-movement and RR are consistent with universal principles: As the licensing theory of transfo-

information implies, RR and head-movement are structure-preserving in that they apply X-heads to X-heads and heads to heads, respectively. This is because only (X-)head positions can offer licensing factors for (X-) heads: [+CD] X-heads are categorially dependent upon [-CD] X-heads and [+MD] heads are morphologically dependent upon [-MD] heads.

RR is also compatible with the wide interpretation of the projection principle shown in (70a) since RR triggers categorial overlapping but not node-deletion.

(70) The projection principle:

Representation at each syntactic level (i.e., LF and D- and S-structure) are projected from the Lexicon (through CSR(C)), in that they observe the s-selectional properties of Lexical items (I, C, [+/-N, +/-V]...).

A or A-bar positions are not deleted but overlapped in accordance with the projection principle. As for the path of X-head projections, X, X' and XP, we suggested that the projection principle on X-heads applies to X-heads, assuming that the complex X-heads derived by RR are not referred to with respect to the projection principle on X-heads (repeated from Chapter 2).

(71) The projection principle on X-heads: X-heads (i.e., [+N, +V], I, C, .. and F) 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.

X-heads but not complex X-heads (derived by RR) form trivial or nontrivial H-chains derived by head-movement and therefore complex X-heads contain more than one (trivial) H-chain. Thus, we also suggest that the theta-criterion on X-heads shown in (72) does not refer to the notion of complex X-heads.

(72) The theta-criterion on X-heads: An H-chain has one and only one visible theta-assigning position.

(73) An H-chain is visible for theta-assigning iff the morphological requirement of an H-chain is satisfied; the morphological requirement of an H-chain is satisfied if a head is in the position of the head of an H-chain

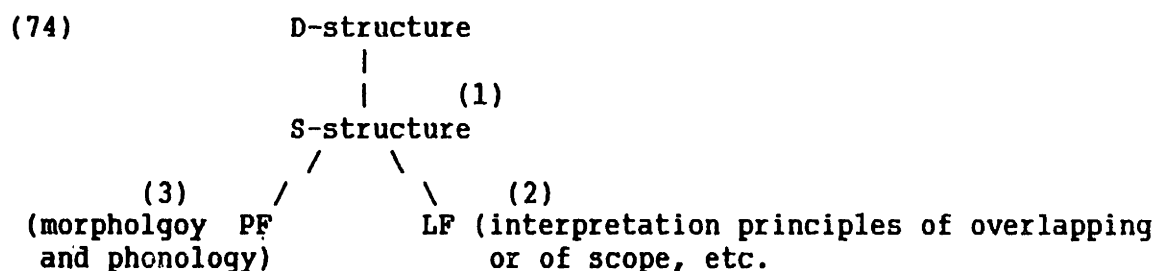
At every syntactic level, RR confirms the wide interpretation of the projection principle in a strict sense in that X-heads are also subject to the projection principle: A [+CD] X-head is preserved as dependent upon another X-head but not deleted.

The wide interpretation of the projection principle is theoretically desirable, especially from the point of view of UG, since it leads to a very restricted theoretical framework, allowing a strict interpretation of a principle of FI (cf. Chapter 1). Under a principle of FI, we suggest the following: The feature [+MD] indicates the morphological dependency of heads in syntax; heads with this feature are morphologically dependent or open so that they are not interpreted at PF unless they are morphologically closed by forming H-chains (i.e., through head-movement). On the other hand, the feature [+CD] indicates the categorial dependency of X-heads; X-heads with this feature are categorially dependent or weak so that they are not interpreted at LF as categories unless they are categorially linked with Lexically-designated X-heads through RR.

Finally, we suggest that RR and head-movement are well-motivated under the licensing theory of transformation. The features [+MD] and [+CD] have morphological requirements and LF requirements, respectively. At PF, [+MD] heads should form words with [-MD] heads to be licensed. At D-structure, [+CD] X-heads are linked with [-CD] X-heads by RR. (Covert overlapping at D-structure may be accompanied by head-movement in the PF component or in syntax.) Whether RR is accompanied by head-movement in syntax (deep-overt) or in the PF component (surface-overt), covert or overt 'overlapping,' which takes place at D-structure, is read off at LF.

The notions of RR and head-movement derive the following structure of

grammar in which the domain of move/affect-alpha and move/affect-category are indicated.



RR applies in domain (1) and its effects are read off at LF; head-movement applies in domain (1) (and also in domain (3) when it is accompanied by RR) and the effects of head-movement are read off at PF. Domains (1) and (3) allow move-category (joint application of head-movement and RR). Thus, the configurational effects of RR may appear in domains (1) and (3), while the overlapping effects of RR are read off at LF. The above structure of grammar implies that the PF component (or perhaps a subcomponent of the PF component) is a syntactic component, suggesting that the projection principle on X-heads extends to apply in (a sublevel of) PF (cf. Chapter 5 for an extended discussion on this point).

In the next Section, we discuss the Korean 'restructuring' phenomenon (or the Korean V-to-V effects) to understand the 'restructuring' phenomenon as a universal phenomenon; the Korean 'restructuring' phenomenon will illustrate either covert RR or surface-overt RR, but not deep-overt RR.

### 3.4. The V-to-V RR ('restructuring') in Korean

#### 3.4.0. Introduction

In this Section, we discuss 'restructuring' in Korean. As shown in Section 3.3., if languages are head-initial, morpheme order indicates whether complex predicates are M/R-complex or M-complex. However, in head-final languages, M/R-complex predicates and M-complex predicates exhibit the same morpheme order. Even though the morpheme order in Korean does not indicate whether complex predicates are derived by RR or by head-movement, we discuss below the idea that a certain class of complex predicates in Korean instantiate M/R- or R-complex words.

In Korean, there is a class of verbs listed in (1), which select infinitival clauses, as shown in (2).<sup>1</sup>

- (1) o- -- come; ka- -- go; tul- -- enter; ci- -- become  
na- -- happen; nay- -- muster; cwu- -- give (ben)  
tay- -- do all the way; po- -- attempt/try; pe-li- -- finish  
ssah- -- keep/continue; noh- -- keep/leave; twu- -- hold/store  
 (cf. Choi (1935) and Hyunmwunsa's Dictionary (1976))

- (2) Chelswu-ka thokki-lul cap-a po-ass-ta  
       -sub rabbit-obj hold-Inf attempt-past-em  
 "Chelswu attempted to hold a rabbit."

The V-e+V sequence in (2) may or may not be morphologically amalgamated.<sup>2,3</sup>

<sup>1</sup> In Choi (1935) -- one of the most influential traditional grammar books in Korea -- these verbs are called auxiliary or helping verbs. Choi (1935) does not classify the auxiliary ha- (do) as one of this class of verbs, which semantically and syntactically differ both from main verbs and from the auxiliary verbs ha-. It cooccurs with a V with the morpheme -e. (The morpheme -e is realized as [-e/a/0] according to its phonetic environment.) According to Martin (1974), the morpheme e is an infinitive marker in Korean, like the to in English but B.-S. Park (1974) classifies it as a complementizer. Whether it is an infinitive marker or a complementizer is not our immediate concern. For expository purposes, we assume here that it is an infinitive marker; we also assume that V-e (V-Inf) is actually V-e-0 (V-Inf-comp) (cf. the syntactic position we are assuming), and that any instantiations of INFL[-Tense] are (Inf)initive.

<sup>2</sup> The autographic conventions of Vk+Vx sequences seem to be in the middle

(Here, we separate V-e from V when the latter is a verb in (1) (but cf. fn.2).) Like Vx in Italian, the verbs in (1) can be characterized either as aspectual expressions or as motion expressions. As Rizzi notes for

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of change in Modern Korean. In Choi (1935), Vk+Vx sequences are morphologically separated, while a recent Korean Dictionary (Hyunmwunsa's Korean Language Dictionary (1976) indicates that they may fail to be separated; Even idiomatic sequences (i,ii,iiib) may be separated (iiib) while non-idiomatic sequences (i,ii,iiia) may fail to be separated (i,iiia).

- (i) a. mak-a-nay-0-ta  
close up/keep away-Inf-muster-pres-em "[0] keeps away [0]."
- b. mek-e-tay-0-ta  
eat-Inf-do all the way-pres-em "[0] slanders [0]."
- (ii) a. talli-e-ka-0-ta  
run-Inf-go-pres-em "[0] runs."
- b. talli-e-tul-0-ta  
run-Inf-enter-pres-em "[0] attacks [0]."
- (iii) a. chat-a nay-0-ta  
find-Inf do all the way-pres-em "[0] finds out [0]."
- b. chat-a ka-0-ta  
find-Inf go-pres-em "[0] visits [0]"

Some studies such as Sohn (1976)) consider any V-e complex verbals as morphologically-complex verbals.

Without exception, Vk+Vx sequences are, however, morphologically separated when some particles, such as man (only), to (also) or nun (as for) intervene in Vk+Vx sequence.

- (iv) a. mak-a-man                      nay-0-ta                      (cf. ia)  
close up-Inf-only do all the way-pres-em "[0] only closes up [0]"
- b. talli-e-nun      tul-0-ta      (cf. iib)  
run-Inf-CON enter-pres-em "[0] does attack [0]."

Thus it seems that complex predicates are changing from R-complex words to M/R-complex words in Modern Korean, given irregular morphological amalgamation. Our intuition on the data, for example, is not straightforward; in most cases of Vk+Vx sequences, both R-complex versions and M/R-complex versions are acceptable.

<sup>2</sup> Some complex verbs are lexicalized so that their meanings are not compositionally obtained.

- (i) il-e-na-0-ta  
ascend-Inf-happen-pres-em "[0] gets up."
  - (ii) chi-e-tul-e-ka-0-ta  
hit-Inf-enter-Inf-go-pres-em "[0] invades [0]."
  - (iii) na-a-ka-ta  
keep-Inf-go-pres-em "[0] makes progress." = Iit. keep going
- In addition, as Choi (1935) notices, some verbs do not appear independently of the verbs in (1):
- (iv) natha-0-na-ta      (\*natha-0-ta)  
--- -Inf-happen-pres-em "[0] comes out."

We suspect that those verbs disappear from the Lexicon as complex verbals with them become lexicalized.

Italian Vx's, these verbs are semantically weak; the verbs in (1) do not behave as main verbs but rather help the semantics of their embedded verbs. In addition, as in Italian 'restructuring' construction, the embedded subjects are referentially identical to the matrix subjects in the sentences with the verbs in (1).<sup>4</sup> The verbs in (1) semantically differ from the auxiliary ha-, which has no predicative meaning; they also differ from main verbs, since they express auxiliary or helping meaning (perhaps in addition to the predicative meaning). If the feature [+CD] is semantics-based, as we suggested, the semantics of these verbs would trigger V-to-V RR. Let us thus call the verbs in (1) Vx's and the (most) embedded verbs Vk's; we will show that the Vk + Vx sequence in Korean exhibits 'restructuring' (V-to-V RR) effects, like the Vk + Vx sequence in Italian.

Syntactically the verbs in (1) also differ from English type modals or from the auxiliary do, as some well-known syntactic tests indicate. First, Vx's can take the auxiliary -ha- (do), as in (3a), unlike modals.

- (3) a. cap-a      po-ki-nun      ha(-si)-ess-ta  
       hold-Inf   attempt-to-CON do(-H)-past-em  
       "[0] did attempt to hold [0] (but ...)."
- b. cap-a      po-a            tay-ess-ta  
       hold-Inf   attempt-Inf keep-past-em  
       "[0] kept attempting to hold [0]."
- c. \*cap-ki-nun   ha-ki-nun   ha-ess-ta  
       hold-to-CON do-to-CON do-pass-em  
       "[0] did do hold [0]."

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<sup>4</sup> This 'subject-control' property, we suspect, has to do with the property of Vx verbs discussed in Rizzi (1982) (auxiliary property). Even if V is Vx or triggers V-to-V RR, it may fail to be a subject control verb. In fact, as we will see in Chapter 4, whether V is a subject control verb does not play a crucial role in determining whether it triggers V-to-V RR. Here, we simply assume that the 'subject control' property of the verbs in (1) derives from their semantics (aspectual, motion, or modal meanings). As we will see, verbs triggering V-to-V RR (such as certain passive and causative predicates) do not necessarily have the semantics of the verbs in (1) and those in Italian discussed in Rizzi (1982).



Second, Vx's can be embedded with other Vx's (cf. 3b), unlike the ha- verb (cf. 3c). Third, subject-verb agreement is possible with Vx's (cf. 4a), unlike English type modals but like the auxiliary verb ha- (cf. 3a). Fourth, kure-(ha-) replacement (do so replacement) may apply to Vx's (cf. 4b), but not to the auxiliary verb do (cf. 4c).

- (4) a. cap-a po-si-ess-ta  
hold-Inf attempt-H-past-em "[0] attempted to hold [0]."  
b. Chelswu-ka kurim-man kuli-e tay-0-teni Yenghi-to  
-sub painting-only paint-Inf keep-past-and -also  
kuleha-e tay-ess-ta  
do-so-Inf keep-past-em  
"Chelswu kept painting and Yenghi also kept doing."  
c. \*Chelswu-ka cap-ki-nun ha-ess-ko Yenghi-to kule-ha-ki-nun ha-ess-ta  
-sub hold-to-CON do-past-and -also so-do-to-CON do-past-em  
"Chelswu did hold [0] and Yenghi also did do so."

### 3.4.1. The structure of the Vk+Vx sequence in Korean

In Korean, any combination of Vx's is allowed as long as the semantics are acceptable:<sup>5</sup>

- (5) a. mek-e tay-e cwu-e po-a peli-ess-ta  
eat-Inf keep-Inf give-Inf try-Inf finish-past-em  
"[0] finished trying to keep eating (for someone)."

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<sup>5</sup> Since all the verbs in (1) can also be used as main verbs ((in)transitive), Korean exhibits complex verbals formed by lexically-identical verbs (also cf. Sohn (1976;146, fn.2)):

- (i) a. ssa-a ssa-ass-ta  
pile up-Inf keep-past-em "[0] kept piling [0] up"  
b. noh-a noh-ass-ta  
put-Inf leave-past-em "[0] had finished putting [0]"  
c. peli-e peli-ess-ta  
throw-Inf finish-past-em "[0] threw [0] up."  
d. twu-e twu-ess-ta  
store-Inf keep-past-em "[0] have stored [0]."  
e. ellwuk-ka ci-e ci-ess-ta  
stain-sub washed off-Inf become-past-em  
"The stains became to come out."  
f. po-a po-ass-ta  
see-Inf attempt-past-em "[0] attempted to see [0]."

As we see (i), the semantics of the two morphologically-identical verbs clearly differ: Verbs used as Vx are aspectual expressions, while verbs used as Vk are not.

- b. mek-e peli-e po-a tay-ess-ta  
 eat-Inf finish-Inf try-Inf keep-past-em  
 "[0] keep trying to finish eating [0]." ....

Only the final verbal (V<sub>xn</sub>) is fully inflected; the structure of the V<sub>k</sub>+V<sub>x</sub> sequence is as follows:

- (6) a. [[[...[[ V<sub>k-e</sub> ]<sub>A1</sub> V<sub>x1-e</sub> ]<sub>A2</sub> V<sub>x2-e</sub> ...]<sub>A<sub>n-1</sub></sub> V<sub>xn-1-e</sub> ]<sub>A<sub>n</sub></sub> V<sub>xn</sub>]<sub>A<sub>n+1</sub></sub>  
 where n > 0

It seems that the category A in (6) is S since embedded subjects may overtly appear, as shown below:<sup>6</sup>

- (7) Chelswu<sub>1</sub>-ka [{ku<sub>1</sub>/caki<sub>1</sub>}-ka ttokki-lul cap-a] po-ass-ta  
 -sub he/self-sub rabbit-obj hold-Inf attempt-past-em  
 "Chelswu attempted to hold a rabbit."

Thus we predict that the embedded INFL must be [-Tense,+Agr] (cf. Section 3.1). This prediction is borne out as we see in (8) in which agreement is overtly realized.

- (8) a. apenim-kkeyse [(tangsin-ka) thokki-lul cap-usi-e] po-si-ess-ta  
father<sub>H</sub>-sub<sub>H</sub> (self<sub>H</sub>-sub) rabbit-obj hold-H-Inf attempt-H-past-em  
 "Father attempted to hold a rabbit."  
 b. Chelswu-wa Yenghi-ka (kutul-ka) ttokki-lul cap-a-tul po(-mye  
 -and -sub they-sub rabbit-obj hold-Inf-pl attempt(-and  
 co-a-tul h)a-ess-ta  
 fun-Inf-pl do)-past-em  
 "Chelswu and Yenghi attempted to hold a rabbit (and had fun together)."

V<sub>x</sub>'s are all nonergative<sup>7</sup> since they may assign Case (ACC) to their clausal complements.<sup>8</sup>

<sup>6</sup> Semantically, {ku/caki} in (7) have emphatic meanings. (7) means: Chelswu himself attempted to hold a rabbit. Repeated NP's in Korean are basically emphatic (cf. Section 3.1.).

<sup>7</sup> The Korean V<sub>x</sub> verbs in (1) differ from the Italian V<sub>x</sub> verbs in Rizzi (1982) in two aspects, as we will see: First, there is no clear evidence that 'restructuring' is optional in Korean (also cf. obligatory 'restructuring' in Chichewa; cf. fn. 24 in Section 3.3.). Second, there are no clear cases of raising (ergative) V<sub>x</sub>'s.

<sup>8</sup> Korean CP may take a case marker (-ka or -lul). (Korean employs a small number of ergative verbs.) When a matrix verb is ergative, a case marker is not allowed:

(i) [Chelswu-ka Yenghi-lul cohaha-nun-tus]\*{-ka/-lul} siph-0-ta  
 -sub -obj like-pres-comp(as if){-sub/-obj} seem-pres-em

- (9) Chelswu-nun [a ttokki-lul cap-a]-lul po-ass-ta  
 -TOP rabbit-obj hold-Inf-obj attempt-past-em  
 "Chelswu attempted to hold a rabbit."

The structure (6), however, does not trigger ECM environments since an embedded subject cannot be marked with the objective marker -lul (cf. 9).

- (10) \*Chelswu-nun [{ku/caki}-lul thokki-lul cap-a] po-ass-ta  
 -TOP he/self-obj rabbit-obj hold-Inf attempt-past-em

Thus it seems that Vx selects a CP but not an IP although no overt complementizer with Vx appears in the construction with Vx (but cf. fn.1). The sentences with these complex verbals must be multiclausal at a certain level of representation (i.e., D-structure), as shown below:<sup>9</sup>

- (11) [CP ... [CP ... [CP ... [CP ... Vk-e] Vx1-e] ... Vxn-1-e] Vxn]

Finally, the Vx's listed in (1) are not ergative since selectional restrictions are observed, as shown in (12). If Vx requires an animate subject (cf. 12a and 2), then when Vk is passivized, a derived subject must be animate (cf. 12b and c).<sup>10</sup>

- (12) a. \*i kot-eyse hongswu-ka na-0 po-ass-ta  
 this place-at flood-sub happen-Inf see-past-em  
 "Floods attempted to happen."  
 b. kay-ka koyangi-eykey mwul-i-e po-ass-ta  
dog-sub cat-by bite-pass-Inf attempt-past-em  
 "The dog attempted to be bitten by the cat."  
 c. \*pascwul-ka senwon-eyuyhayse tangki-e ci-e po-ass-ta  
rope-sub seaman-by pull-Inf pass-Inf attempt-past-em  
 "The rope attempted to be pulled on by the seaman."

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"It seems that Chelswu likes Yenghi."

<sup>9</sup> Some verbs in (1) are also considered to project full clauses in I.-S Yang (1972).

<sup>10</sup> In Section 4.3., we will suggest, for some theory-internal/external reasons, that the morpheme ci- in (12c), which is widely assumed to be a passive morpheme in the Korean literature, is not a passive morpheme but that it is Vx with an inchoative meaning (become), which is base-generated as a main verb.

On the other hand, raising verbs show no selectional restrictions on the matrix subject.<sup>11</sup>

- (13) a. kay-ka koyangi-eykey mwul-i-n-tus ha-0-ta  
 dog-sub cat-by bite-pass-past-comp(seem) do-pres-em  
 "The dog seems to be bitten by the cat."  
 b. pascwul-ka senwon-eyuyhayse tangki-e ci-n-tus ha-0-ta  
 rope-sub seaman-by pull-Inf pass-past-comp(seem) do-pres-em  
 "The rope seems to be pulled on by the seaman."  
 c. i kot-eyse hongswu-ka na-n-tus ha-0-ta  
 this place-at flood-sub happen-past-comp(seem) do-pres-em  
 "Here, floods seem to happen."

The properties discussed so far do not differ from those of ordinary nonVx verbs (nonaspectual or non-motion; especially usual control verbs), such as the verb decide, which also selects infinitival complements. For example, the verb decide may allow an overt embedded subject (14a); it is not an ECM predicate (14a); it assigns Case to a CP complement (when it is not ergative) 14(b);<sup>12</sup> and ha- support may apply to it (14c).

- (14) a. Chelswu-ka [{ku/caki}-{ka/\*lul}] ttokki-lul cap-ulye-ko  
 -sub he/self-sub/obj rabbit-obj hold-Inf-comp

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<sup>11</sup> Burzio (1986;329-330) notes that in the Italian 'restructuring' construction, selectional restrictions are observed when Vx is not a raising verb ((i) with vuole) but that when Vx is a raising verb ((i) with dovrebbe), no selectional restrictions are observed (also cf. Rizzi (1982)).

- (i) a. Il libro {dovrebbe/\*vuole} essere portato da Giovanni.  
 "The book {would have/wants} to be bought by Giovanni."  
 b. L'acqua {dovrebbe/\*vuole} scorrere.  
 "The water {would have/wants} to flow."  
 c. {Dovrebbe/\*Vuole} piovere.  
 "It {would have/wants} to rain."  
 d. {Dovrebbe/\*Vuole} risultare che Giovanni non c'era.  
 "It {would have/\*wants} to appear that Giovanni was not there."

((18) and (20) in Burzio (1986))

Picallo (1985;211) also observes some selectional restrictions in the Catalan 'restructuring' construction (iib).

- (ii) a. Els núvols semblaven prendre formes extranyes  
 "The clouds seemed to take on strange shapes."  
 b. \*Els núvols volien prendre formes extranyes  
 "The clouds wanted to take on strange shapes." ((49) in Picallo (1985))

<sup>12</sup> This sentence with the objective marker -lul is highly colloquial; according to idiolects, judgments are expected to differ.

- kyelsimha-ess-ta  
decide-past-em  
"Chelswu decided to hold a rabbit."
- b. Chelswu-ka [ ttokki-lul cap-ulye-kol-lul kyelsimha-ess-ta  
-sub rabbit-obj hold-Inf-comp-obj decide-past-em  
"Chelswu decided to hold a rabbit."
- c. cap-ulye-ko kyelsimha-ki-nun ha-ess-ta  
hold-Inf-comp decide-to-CON do-past-em  
"[0] did decide to hold [0] (but...)."

Selectional restrictions are also observed in clauses with nonergative nonVx verbs; the verb decide requires an animate subject, as shown in (15) (cf. 12).

- (15) a. \*hongswu-ka na-lye-ko kyelsimha-ess-ta  
flood-sub happen-Inf-comp decide-past-em  
\*"Floods decided to happen."
- b. kay-ka koyangi-eykey mwul-i-lyeko kyelsimha-ess-ta  
dog-sub cat-by bite-pass-Inf decide-past-em  
"The dog decided to be bitten by the cat."
- c. \*sakwa-ka Chelswu-eykey mek-hi-lyeko kyelsimha-ess-ta  
apple-sub -by eat-pass-Inf decide-past-em  
\*"The apple decided to be eaten by Chelswu."

### 3.4.2. 'Restructuring' in Korean

There is, however, a syntactic reason (in addition to the defective/weak semantics of the Vx's) to suggest that V-to-V RR or 'restructuring' applies to Vk+Vx sequences in Korean. First, Korean exhibits certain locality conditions with respect to the distribution of quantifiers and the scope markers construed with them. They are apparently violated in the Vk+Vx construction: In Korean (negative) quantifiers (such as amwu-to = nobody) and the scope marker an- construed with the quantifiers<sup>13</sup> should be

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<sup>13</sup> We assume that an- lies in INFL position since it cooccurs with INFL elements. an- may also appear with verbs (as in (17a) below for example). According to its position, a certain scope phenomenon is observed. Here, we do not attempt to discuss it. However, see Martin (1974) and I.-S. Yang (1972) for some relevant discussions on the semantics of an- in different positions. The position of an- will not affect our argument.

clause-mates (see Appendix II of this Chapter for the details), whether an embedded INFL is [+Tense] (16) or [-Tense] (17), as shown below.

- (16) a. Chelswu-nun [ [0] amwu-to cohaha-ci an-nun-ta-ko] sayngkakha-n-ta  
           -TOP       nobody like-to not-pres-em-comp think-pres-em  
           "Chelswu thinks that [0] neg likes nobody."  
           = Chelswu thinks that there is nobody such that [0] likes the person."
- b. \*Chelswu-ka [ [0] amwu-to cohaha-n-ta-ko] sayngkakha-ci an-nun-ta  
           -sub       nobody like-pres-em-comp think-to not-pres-em  
           "Chelswu neg thinks that [0] 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]."
- d. \*amwu-to [ Chelswu-ka [0] cohaha-ci an-nun-ta-ko] sayngkakha-n-ta  
      nobody               -sub like-to not-pres-em-comp think-pres-em  
      "Nobody thinks that Chelswu neg likes nobody."
- (17)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." (narrow scope)
- b. \*Chelswu-nun [amwu-to manna-lye-ko] kyelsimha-ci an-ass-ta  
           -TOP nobody-prt meet-Inf-comp decide-to not-past-em  
           "Chelswu neg decided to meet nobody."
- c. amwu-to [i kumtan-ey yelmay-lul mek-ullye-ko] kyelsimha-ci an-ass-ta  
      nobody this forbidden fruit-obj eat-Inf-comp decide-to not-past-em  
      "Nobody neg decided to eat this forbidden fruit." (wide scope)
- b. \*amwu-to [i kumtan-ey yelmay-lul ani-mek-ullye-ko] kyelsimha-ess-ta  
      nobody this forbidden fruit-obj not-eat-Inf-comp decide-past-em  
      "Nobody decided neg to eat this forbidden fruit."

In (16-17a and c), both amwu-to (nobody) and an- (neg; not) appear either in an embedded clause or in a matrix clause, while they do not in (16-17b and d). Because of the clause-mate requirement, the contrast between (16-17a and c) and (16-17b and d) follows. In (16-17a) the scope of amwu-to is the embedded clause; in (16-17c) the scope of amwu-to is the matrix clause. There is one more requirement that interacts with rightward inversion, which is a syntactic scope assigning process that is A-bar movement (see Appendix II). When amwu-to is rightward inverted, the scope marker should be on the matrix INFL, as amwu-to lies in the matrix clause, as shown in the contrast in (18) (cf. (17)).

- (18) 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."  
   c. [i kumtan-ey yelmay-lul mek-ullye-ko] kyelsimha-ci an-ass-ta, amwu-to  
           this forbidden fruit-obj eat-Inf-comp decide-to not-past-em nobody  
           "Nobody neg decided to eat this forbidden fruit."  
   d. \*[i kumtan-ey yelmay-lul ani-mek-ullye-ko] kyelsimha-ess-ta, amwu-to  
           this forbidden fruit-obj not-eat-Inf-comp decide-past-em nobody  
           "Nobody decided neg to eat this forbidden fruit."

In contrast to (17), only when an- lies in a matrix INFL, are inverted sentences grammatical with the wide scope reading. Thus while the requirement affects the grammaticality of the inverted versions of (17a and b) in which amwu-to is inverted from the embedded clauses, it does not affect the grammaticality of the inverted versions of (17c and d) in which amwu-to is inverted from the matrix clauses.

In the  $V_k+V_x$  construction, the clause-mate requirement on the distribution of a negative quantifier and its scope marker shown in (16-17) is apparently violated and the rightward inversion data in (18) become all grammatical. First, as shown in (19b and d), although a negative quantifier (amwu-to) and its scope marker (an) are not clause-mates, the sentences are grammatical, in contrast to (16-17b and d).<sup>14</sup>

- (19) 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."  
   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."

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<sup>14</sup> As Richard Kayne (p.c.) has pointed out, in French ne-personne sentences, (19b) is attested but (19d) is not in certain environments (cf. Pica (1985); fn. 12 in Appendix II). We may have this contrast between French and Korean because in French, but not in Korean, the subject-object asymmetry with respect to the ECP is observed or because the French ne differs from the Korean an- in requiring that it should c-command personne; we leave a specific answer open here.

- c. amwu-to [i kumtan-ey 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."  
d. amwu-to [i kumtan-ey yelmay-lul ani-mek-e] po-ess-ta  
nobody this forbidden fruit-obj not-eat-Inf attempt-past-em  
"Nobody attempted neg to eat this forbidden fruit."

In (19), the negative quantifier has only wide scope:

- (20) a. There is nothing such that Chelswu attempted to eat the thing.  
b. There is nobody such that the person attempted to eat this  
forbidden fruit.

No matter how many Vx's are intervened between amwu-to and an-, the sentences are grammatical only with wide scope readings.

- (21) a. .... [amwu-kes-to mek-e] po-a tay-e peli-e cwu-ci an-ass-ta  
.... eat-Inf attempt-Inf keep-Inf finish-Inf ben-Inf not-past-em  
"Chelswu neg finished to keep attempting to eat nothing for  
somebody." = There is nothing such that Chelswu finished to keep  
attempting to eat the thing for somebody  
b. 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."  
= There is nobody such that the person finished to keep attempting  
to eat this forbidden fruit for somebody

Second, even when amwu-to is rightward inverted in which an- is in an embedded INFL, as in (22a and d), the wide scope reading is observed, in contrast to what occurs in (18a and d).

- (22) 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."  
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."  
(22a/b) = There is nothing such that Chelswu attempted to eat the thing."  
c. [i kumtan-ey 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."  
d. [i kumtan-ey yelmay-lul ani-mek-e] po-ess-ta, amwu-to  
this forbidden fruit-obj not-eat-Inf attempt-past-em nobody  
"Nobody attempted neg to eat this forbidden fruit."  
(22c/d) = There is none such that the person attempted to eat this for-  
bidden fruit."

As we will discuss in Appendix II, the clause-mate requirement and the requirement that an- should be in the matrix INFL with the quantifier



construed with it inverted are, in fact, interpreted as the scope licensing condition that the scope marker an- should govern the quantifier construed with it to license the scope of the quantifier at LF. If inversion is derived by successive-cyclic null operator movement in syntax, as we will argue, then we have the following LF structures, in which either amwu-to is QRed to a matrix IP or in which the inversion operator (OP) moves to the matrix clause through SPEC-to-SPEC movement:

- (23) a. [<sub>IP</sub> .. [<sub>VP</sub><sup>1</sup> .. [<sub>P</sub><sup>1</sup> .. [<sub>VP</sub><sup>1</sup> t<sub>1</sub> an<sub>1</sub> V ]. ] . ] ] (OP<sub>1</sub>) amwu-to<sub>1</sub>  
 b. [<sub>IP</sub> .. [<sub>VP</sub><sup>1</sup> .. [<sub>P</sub><sup>1</sup> .. [<sub>VP</sub><sup>1</sup> t<sub>1</sub> V ]. ] . ] ] an<sub>1</sub> ] (OP<sub>1</sub>) amwu-to<sub>1</sub>  
 (cf. 18/22a and b)  
 c. [<sub>IP</sub> amwu-to<sub>1</sub> [<sub>IP</sub> t<sub>1</sub> [<sub>VP</sub><sup>1</sup> .. [<sub>IP</sub><sup>1</sup> .. [<sub>VP</sub><sup>1</sup> V.. ] ] .. ] an<sub>1</sub> . ] ]  
 d. [<sub>IP</sub> amwu-to<sub>1</sub> [<sub>IP</sub> t<sub>1</sub> [<sub>VP</sub><sup>1</sup> .. [<sub>IP</sub><sup>1</sup> .. [<sub>VP</sub><sup>1</sup> V ] an<sub>1</sub> ] .. ] .. ] ]  
 (cf. 17/19c and d)

Suppose that an- in a matrix clause can govern an IP-adjoined amwu-to and OP<sub>1</sub> in (23b and c) for certain reasons we will discuss in Appendix II in this Chapter. Then, in (23b and c), whether a matrix V is V<sub>x</sub> or nonV<sub>x</sub>, an- in a matrix INFL governs OP and an IP-adjoined amwu-to; (23b) satisfies the requirement that an- should be in the matrix INFL when amwu-to is inverted (cf. 18b) and (23c) satisfies the clause-mate requirement (cf. 17c). On the other hand, when a matrix V is nonV<sub>x</sub>, in (23a and d) an- does not govern amwu-to or OP<sub>1</sub>, triggering the ungrammaticality of (18a and 17d).

When matrix verbs are V<sub>x</sub>'s, the derivations in (23a and d) are grammatical. The an- in an embedded clause should govern amwu-to in (23a and d) since the sentences in (19 and 22) are grammatical under the wide scope reading. We suggest that an- in (23a and d) can govern amwu-to or OP since XP<sup>1</sup>'s (IP and VP) derived by RR are not barriers, and therefore an- can govern amwu-to or OP in (23a and d): In (23a and d) an- governs OP and amwu-to because VP<sup>1</sup> and IP<sup>1</sup> are not barriers and V<sup>1</sup> and I<sup>1</sup> do not induce the MC. To conclude, as in clitic climbing data in Romance languages, the

fact that some categories under RR are defective with respect to the notion of government (or Subjacency) is also observed in Korean.

### 3.4.3. Surface-overt RR and the semantic integrity of R-complex words

There are some pieces of evidence that in the Korean V<sub>k</sub>+V<sub>x</sub> sequence, V<sub>x</sub> and V<sub>k</sub> are closely linked with each other (as in the Kusaien noun-incorporation data derived by RR we discussed in Section 3.3.). First, V<sub>k</sub>+V<sub>x</sub> sequences cannot be separated by scrambling (24a) (cf. I.-S. Yang (1972)) or by rightward inversion (24b). In addition, V<sub>k</sub>+V<sub>x</sub> sequences may not be separated by adverbials (24c) or by maximal projections (24a).<sup>15</sup>

- (24) a. \*?thokki-lul cap-a Chelswu-nun po-ass-ta  
           rabbit-obj hold-Inf        -TOP/CON try-past-em  
           "Chelswu attempted to hold a rabbit."  
       b. \*?Chelswu-nun po-ass-ta thokki-lul cap-a  
           -TOP try-past-em rabbit-obj hold-Inf  
       c. \*?Chelswu-nun sakwa-lul mek-e ecey po-ass-ta  
           -TOP apple-obj eat-Inf yesterday try-past-em  
           "Chelswu attempted to eat an apple yesterday."

These properties are not observed in the sentences with nonV<sub>x</sub> verbs such as decide, as shown in (25).

- (25) a. pwumonim-lul mosi-lye-ko Chelswu-ka kyelsimha-ess-ta  
           parentH-obj serveH-Inf-comp    -sub decide-past-em  
           "Chelswu decided to serve his parents."  
       b. Chelswu-ka keysimha-ess-ta pwumonim-lul mosi-lye-ko  
           -sub decide-past-em parantH-obj serveH-Inf-com

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<sup>15</sup> However, nonmaximal projections such as case markers or particles may intervene between V<sub>x</sub> and V<sub>k</sub>.

- (i) sakwa-lul mek-e-{lul/man} po-ass-ta  
       apple-obj eat-Inf-{obj/only} attempt-past-em  
       "[0] (only) attempted to eat an apple."

Here, we do not consider (i) as a significant fact for our purposes since some denominal verbals such as N-ha- can also be separated by particles or case markers:

- (ii) a. posuthon-lul kwukyeng-ha-0-ta  
           Boston-obj sightseeing-do-pres-em    "[0] looks around Boston."  
       b. posuthon-lul kwukyeng-{lul/man} ha-0-ta  
           Boston-obj sightseeing-{obj/only} do-pres-em  
           "[0] only looks around Boston."

- c. Chelswu-nun pwumonim-lul mosi-lye-ko tutie kyelsimha-ess-ta  
 -TOP parentH-obj serveH-Inf-comp at last decide-past-em  
 "Chelswu at last decided to support (his) parents."

Given that the Italian 'restructuring' construction allows intervening elements between  $V_k$  and  $V_x$ , these properties might suggest that the V-to-V RR in Korean is actually accompanied by head-movement (morphological amalgamation) in syntax (i.e., overt RR instead of covert RR). However, there is evidence that 'restructuring' is covert in syntax in Korean, as in Italian, and that some morphologically-amalgamated cases (cf. fn. 2) are derived by head-movement in the PF component (forming M/R-complex words at PF; surface-overt V-to-V RR) in Modern Korean. First, in VP-topicalization, a VP-subconstituent of 'restructuring' domain can be topicalized.<sup>16</sup>

- (26) a. [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  
 $V_k$   $V_x$   
 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. [i san-lul oll-a ka-0 po-ki-nun] nay-ka hay-e  
this mountain-obj climb-Inf go-Inf attempt-to-TOP I-sub do-Inf  
 $V_k$   $V_x$   $V_x$   
 tay-e-se ...  
 keep-Inf-since ...  
 $V_x$   
 "As for attempting to go to climb this mountain, .... as I know it from keeping doing it."
- c. [i san-lul oll-a ka-ki-nun] Chelswu-ka ha-e  
this mountain climb-Inf go-to-TOP -sub do-Inf  
 $V_k$   $V_x$   
 po-a tay-ess-ta  
 attempt-Inf keep-past-em  
 $V_x$   $V_x$   
 "As for going to climbing this mountain, Chelswu kept attempting to do it."

As we see in the VP-topicalization data above, any  $V_k + \dots + V_x$  sequence can

<sup>16</sup> Note that in VP-topicalized sentences, as in VP-clefted sentences in (27) below, the position for  $V_k(+V_x)$  is filled by ha- (do), as we see in the ha-e+V\_x (do-Inf V\_x) sequence.

be preposed out of  $V_k+V_{x1}+...+V_{xn}$  sequences. In addition, VP-clefting is also possible from a 'restructuring' domain.

- (27) Chelswu-ka mayil ha-e tay-nun il-i-lan  
       -sub everyday do-Inf keep-comp thing-be-as for  
       i san-lul oll-a po-ki i-0-ta  
       this mountain-obj climb-Inf attempt-to be-pres-em  
       "What Chelswu keeps doing everyday is to attempt to climb this mountain."

These pieces of evidence that subconstituents of the  $V_k+V_x$  construction are syntactically active show that in syntax, Korean  $V_k+V_x$  sequences are R-complex words but are not M/R-complex words, although they may form M/R-complex words at PF. We conclude that in the Korean V-to-V RR construction,  $V_k$ -to- $V_x$  head-movement optionally apply in the PF component so that  $V_k+V_x$  R-complex words at S-structure can form M/R-complex words at PF; therefore, (optional or sporadic) morphological amalgamation of Korean  $V_k+V_x$  sequences does not affect syntax. This Korean fact confirms the idea that morphological amalgamation may take place in the PF component in certain cases (cf. Section 3.3.).<sup>27</sup>

However, in Italian, there are some cases in which 'restructured'  $V_k+V_x$  sequences cannot be separated by movement.

- (28) a. Le truppe {hanno cominciato/sono cominciate} ad arretrare (vistosamente).  
       "The troops {have/'are'} begun to draw back (considerably)."  
       b. E'ad arretrare (vistosamente) che la truppe {hanno cominciato/\*sone cominciate}.  
       "It is to draw back (considerably) that the troops {have/'is'} begun (Lit.)" (cf. (81) in Rizzi (1982;20))

When auxiliary change takes place, which means that RR has applied, no clefting of a subconstituent is possible (cf. (28b) with sone cominciate), unlike the case in which no auxiliary change takes place (cf. (28a) with

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<sup>27</sup> As we will see, head-movement in the PF component applies only when it is accompanied by RR (cf. Chapter 4). Given that RR is local and that the trigger and target of RR are related in terms of government, head-movement in the PF component is always legal.

hanno cominciato). The only difference between Italian (28b) and Korean (26-7) is that (26-7) contains the auxiliary verb ha-, which behaves as a place holder (cf. fn. 16), while in (28b) such a place holder does not appear to connect the RR link between V<sub>k</sub> and V<sub>x</sub>. Thus we suggest that V<sub>k</sub>..V<sub>x</sub> sequences cannot move unless there is a dummy place holder for them left behind, as in (26-7). However, since adverbials may intervene in Italian but not in Korean, we further suggest that Italian and Korean have some language-specific strong (Korean)<sup>18</sup> or weak (Italian) bond between V<sub>x</sub> and V<sub>k</sub> obtained through 'semantic integrity among RRed X-heads.'

#### 3.4.4. Modal expressions in Korean

One more difference between the V<sub>x</sub>'s in (1) and nonV<sub>x</sub>'s, such as control verbs, is that the V<sub>x</sub>'s in (1) take no overt complementizers but nonV<sub>x</sub>'s take overt complementizers (cf. 14). This might suggest that the non-existence of C (or the lack of the phonetic features of C) causes Korean V-to-V RR effects. However, this suggestion is not viable. There are some complex verbals with modal meanings that show V-to-V effects. However, they require semantically rich complementizers, and the embedded subjects can be overtly realized, as shown in (29) below.<sup>19, 20</sup>

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<sup>18</sup> See the Kusaien V-to-N RR data discussed in Section 3.3. See also Miyagawa (to appear) who shows that only when V<sub>x</sub> and V<sub>k</sub> are not interrupted by any other elements do certain 'restructuring' effects show up in the Japanese purpose clauses.

<sup>19</sup> Here, without justification, we assume that Korean verbs, such as iss- (be), ha- (do) and toy- (be made), subcategorize for appropriate complementizers (soo, ya, and to) to have relevant modal meanings (can, must/-should and may). In other words, some Korean verbs with modal meanings subcategorize for semantically rich complementizers, which in turn, subcategorize for appropriate INFL[-Tense]. Korean also employs many different realizations of INFL[-Tense] (cf. (14) and (29)), whose semantics/overt realizations are relatively rich compared with those of INFL[-Tense] in English.

- (29) a. Chelswu<sub>1</sub>-ka [{ku<sub>1</sub>/caki<sub>1</sub>}-ka pwumonim-lul mosi-l-swu] iss-0-ta  
           -sub he/self-sub parentH-obj serve-Inf-comp(can) is-pres-em  
           "Chelswu can support (his) parents."  
   b. Chelswu<sub>1</sub>-ka [{ku<sub>1</sub>/caki<sub>1</sub>}-ka pwumonim-lul mosi-e-ya]  
           -sub he/self parentH-obj serve-Inf-comp(should)  
           ha-n-ta  
           do-pres-em  
           "Chelswu should support (his) parents."  
   c. Chelswu<sub>1</sub>-ka [{ku<sub>1</sub>/caki<sub>1</sub>}-ka pwumonim-lul mosi-e-to]  
           -sub he/self-sub parentH-obj serve-Inf-comp(may)  
           toy-0-ta  
           be made-pres-em  
           "Chelswu may support (his) parents."

The sentences in (29) show some 'restructuring' effects. First, the clause-mate requirement that a (negative) quantifier and its scope marker should occur in the same clause apparently disappears, as shown in (30) (cf. 17b and d).<sup>21, 22</sup>

<sup>20</sup> These verbs with modal meanings behave differently from English modals such as can, must, or may. Korean can, must, and may are syntactically semi-auxiliary verbs such as be able to, have to, and be allowed to (also cf. Appendix III). First, they can be embedded within the scope of others of the same type.

- (i) Chelswu-nun cikum o-l-swu iss-e-ya ha-n-ta  
       -TOP now come-Inf-comp(can) be-Inf-comp(should) do-pres-em  
       "Chelswu has to be able to come now."

Second, do-support (ha--support) can apply to them:

- (ii) Chelswu-nun cikum o-l-swu iss-ki-nun ha-0-ta  
       -TOP now come-Inf-comp(can) be-to-CON do-pres-em  
       "Chelswu is able to come now."

Third, subject-verb agreement is possible with them:

- (iii) Sensaynim-kkeyse cikum o-si-l-swu iss-usi-ta  
       teacher-subH now come-H-Inf-comp(can) be-H-em  
       "The teacher is able to come now."

Fourth, kule-(ha-) replacement (do so replacement in English) may apply to them:

- (iv) Chelswu-nun nayil wa-0-ya ha-0-ko Yengi-to  
       -TOP tomorrow come-pres-should do-pres-and -also  
       kule-ha-e-ya ha-n-ta  
       so-do-Inf-comp(should) do-pres-em  
       "Chelswu has to come tomorrow and Yenghi does, too."

Thus, Korean semantically-modal verbs seem to be base-generated as main verbs with modal meanings.

<sup>21</sup> With embedded subjects realized, the sentences in (30) are a bit awkward, even though they are not totally ungrammatical.

- (i) ?Chelswu-nun [{ku/caki}-ka amwu-to mosi-l-swu] ep-ess-ta  
       -TOP ku/caki-sub nobody serve-Inf-comp(can) not-past-em  
       "Chelswu neq could serve nobody."

- (30) a. Chelswu-nun [amwu-to mosi-l-swu] ep-ess-ta  
 -TOP parentH nobody-prt serve-Inf-comp(can) not-past-em  
 "Chelswu neg could serve nobody."  
 b. amwu-to [ pwumonim-lul ani-mosi-l-swu] i-ss-ta  
 nobody parentsH-obj not-serve-Inf-comp(can) be-pres-em  
 "Nobody could neg served parents."

The inversion of amwu-to is grammatical even when an- is not in a matrix INFL, as shown in (31), like sentences with Vx's (cf. 18a and c).

- (31) a. Chelswu-nun ani-manna-0-ya ha-n-ta, amwu-to  
 -TOP not-meet-Inf-comp(should) do-pres-em, nobody  
 "Chelswu should neg meet nobody."  
 b. [ pwumonim-lul ani-mosi-e-ya] ha-n-ta, amwu-to  
 parentsH-obj not-serve-Inf-comp(should) do-pres-em nobody  
 "Nobody should neg serve parents."

The same awkwardness is also observed in (ii) with a Vx:

- (ii) ?Chelswu-nun [{ku/caki}-ka amwu-kes-to mek-e] po-ci an-ass-ta  
 -TOP he/self-sub nothing eat-Inf attempt-to not-past-em  
 "Chelswu neg attempted to eat nothing."

Since overt agreement is possible, as shown in (iii), which means that subjects are assigned NOM, we simply assume that some other factors make the sentences awkward.

- (iii) sensayngnim-kkeyse cikum [amwu-to manna-0 po-si-l-swu  
 teacherH-subH now nobody meet-Inf attempt-H-Inf-comp  
 ep-usi-0-ta  
 not-H-pres-em  
 "The teacher is neg able to attempt to meet nobody."

<sup>22</sup> In Korean, verbs with modal expressions do not tend to have the epistemic reading but easily have the root meaning.

- (i) Chelswu-nun cikwum o-l-swu iss-0-ta  
 -TOP now come-Inf-comp(can) be-pres-em  
 a. Chelswu is able to come now. (root reading)  
 b. \*?It is possible that Chelswu comes now. (epistemic reading)  
 However, in (ii), the can expression in Korean has the epistemic reading.  
 (ii) Chelswu-nun cikwum amwu-to manna-l-swu ep-0-ta  
 -TOP now nobody meet-Inf-comp(can) not-pres-em  
 a. Chelswu is neg able to meet nobody now. (root reading)  
 b. It is impossible that Chelswu meets anybody now. (epistemic reading)

In general, when a negative marker is involved, as in (ii), the epistemic reading is easily obtained. When the epistemic reading is stronger than the root reading, as in (iii), inversion is not acceptable (cf. iv).

- (iii) amwu-to pwumonim-lul ani-mosi-l-swu i-ss-ta  
 nobody parents-obj not-serve-Inf-comp(can) be-pres-em  
 a. ???Nobody is able neg to serve parents."  
 b. It is possible that nobody serves parents."  
 (iv) ???[ pwumonim-lul ani-mosi-l-swu] i-ss-ta, amwu-to  
 parentsH-obj not-serve-Inf-comp(can) be-pres-em nobody  
 "It is possible that nobody can neg serve parents."

We will not attempt to explain why this is so here.

Second, as in (32), the embedded clause fails to be scrambled or rightward inverted (cf. 24):

- (32) a. \*[pwumonim-lul mosi-e-ya] Chelswu-nun ha-n-ta  
           parentH-obj serveH-Inf-comp(should) -TOP do-pres-em  
       b. \*?Chelswu-nun ha-n-ta [pwumonim-lul mosi-e-ya]  
           -TOP do-pres-em parentH-obj serveH-Inf-comp(should)

Adverbs cannot intervene between Vx and Vk:

- (33) \*Chelswu-nun Yenghi-lul manna-l-swu ecey i-ss-ta  
           -TOP -obj meet-Inf-comp(can) yesterday be-past-em  
       "Chelswu could met Yenghi yesterday."

Thus, the strong bond between Vx and Vk obtained through 'semantic integrity' of R-complex words is also observed. As we expected, VP-topicalization is possible in the constructions with modal expressions:<sup>23</sup>

- (34) a. pwumonim-lul mosi-ki-nun Chelswu-ka ha-e-ya  
           parentsH-obj serveH-to-TOP -sub do-Inf-comp(should)  
           ha-n-ta  
           do-pres-em  
       "As for serving parents, Chelswu should do it."

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<sup>23</sup> Some aspectual expressions also take semantically-rich complementizers, like modal expressions shown in (29), even though the degree of V-to-V RR effects is different: (ia) is the highest and (ic) is the lowest.

- (i) a. Chelswu-nun pwumonim-lul mosi-lye-ko (nolyek)hayss-ta  
           -TOP parentH-sub serve-Inf-comp (try(N))do-past-em  
           "Chelswu tried to support (his) parents."  
       b. Chelswu-ka tutie pwumonim-lul mosi-0-key toy-ess-ta  
           -sub at last parentH-obj serve-Inf-comp become-past-em  
           "Chelswu came to support (his) parents at last."  
       c. Chelswu-ka pwumonim-lul mosi-nun-chey ha-ess-ta  
           -sub parentH-obj serve-Inf-comp(pretend) do-past-em  
           "Chelswu pretended to support (his) parents."

Thus, the effects of the clause-mate requirement between a negative quantifier and its scope marker disappears (iia); VP-topicalization is possible (iib), which means that the two verbs in (ii) (Vk and Vx) also form an R-complex word in syntax.

- (ii) a. (?) Chelswu-ka [ amwu-to mosi-0-key] toy-ci an-ass-ta  
           -sub nobody serveH-Inf-comp become-to not-past-em  
           "Chelswu neg became to serve nobody."  
       b. pwumonim-lul mosi-ki-nun Chelswu-ka ha-lye-ko (nolyek)ha-ess-ta  
           parentsH-obj serveH-to-TOP -sub do-Inf-comp (try(N))do-past-em  
       "As for serving parents, Chelswu tried to do it."



Up to this point, we have shown that in Korean, some V-to-V RR effects appear in the sentences with certain classes of verbals with modal meanings (29), and aspectual or motion meanings (1), as in Italian. The semantics and syntax of the sentences with those classes of verbs are predicted by the RR analysis of the sentences: First, the semantics of the verbs in (29) and (1) are weak and classified as 'helping verbs.' Second, a certain clause-mate requirement does not play a role in the sentences with those verbs. Finally, the strong link between predicates, which is observed with R-complex predicates in other languages, is observed between those verbs and their embedded verbs (cf. fn. 18).

#### 3.4.6. Revised RR convention (b) and the transitivity of selectional restrictions

In Korean, most Vx's select only CP complements at D-structure. However, a certain Vx may also select a dative complement. Consider the following data:

- (35) a. Yenghi-ka (\*Chelswu-eykey) ttek-lul mantul-ess-ta  
           -sub                  -to      rice cake-obj make-past-em  
           "Yenghi made rice cake."  
       b. Yenghi-ka (\*Chelswu-eykey) mwul-lul kkul-i-0-ta  
           -sub                  -to      water-obj boil(Vi)-caus-pres-em  
           "Yenghi boiled water."

In (35), verbs are transitive and do not select dative arguments (NP-eykey). When the clauses are embedded by the verb cwu- (Vx), they allow (overt) dative arguments, as shown in (36).

- (36) a. Yenghi-ka Chelswu-eykey ttek-lul mantul-e cwu-ess-ta  
           -sub          -to      rice cake-obj make-Inf ben-past-em  
           "Yenghi made rice cake for Chelswu." or  
           "Yenghi made rice cake and gave it to Chelswu."  
       b. Yenghi-ka Chelswu-eykey mwul-lul kkul-i-e                  cwu-ess-ta  
           -sub          -to      water-obj boil(vi)-caus-Inf ben-past-em  
           "Yenghi boiled water for Chelswu." or  
           "Yenghi boiled water and gave it to Chelswu."

Dative arguments are not in the embedded clauses; when an embedded VP is topicalized, dative arguments are not preposed.<sup>24</sup>

- (37) a. mwul-lul kkul-i-ki-nun Yenghi-ka Chelswu-eykey ha-e cwu-ess-ta  
 water-obj boil(vi)-caus-to-TOP -sub -to do-Inf ben-past-em  
 "As for boiling water, Yenghi did for Chelswu."  
 b.\*?Chelswu-eykey mwul-lul kkul-i-ki-nun Yenghi-ka ha-e cwu-ess-ta  
 -to water-obj boil(vi)-caus-to-TOP -sub do-Inf ben-past-em  
 "As for boiling water for Chelswu, Yenghi did."

Second, the dative agreement shown in (38) also indicates that dative arguments are in the matrix clause (i.e., in the cwu- clause).

- (38) a. Chelswu-ka sensayngnim-kkey chayk-lul tuli-ess-ta  
 -sub teacherH-datH book-obj benH-pass-em  
 "Chelswu gave a book to a teacher."  
 b. Chelswu-ka sensayngnim-kkey [mwul-lul kkul-i-e] tuli-ess-ta  
 -sub teacherH-datH water-obj boil-caus-Inf benH-past-em  
 "Chelswu boiled water and gave it to a teacher."

In fact, Korean has clause-bounded dative-agreement between dative argument and a verb, as shown in (39).

- (39) a. Chelswu-ka Yenghi-eykey [sensayngnim-kkey chayk-lul tuli-ki-rol]  
 -sub -to teacherH-datH book-obj benH-to-comp  
 yaksokha-e {cwu/\*tuli}-ess-ta  
 promise-Inf ben/benH-past-em  
 "Chelswu promised Yenghi to give a book to the teacher."  
 b. Chelswu-ka sensayngnim-kkey [Yenghi-eykey chayk-lul  
 -sub teacherH-datH -dat book-obj  
 {cwu/\*tuli}-ki-rol] yaksokha-e tuli-ess-ta  
ben/benH-to-comp promise-Inf benH-past-em  
 "Chelswu promised the teacher to give a book to Yenghi."

In (39a and b), the honoric form of the verb cwu- (tuli-) is unacceptable when a honorific dative and the verb are not clause-mates. Thus it seems that in (36), cwu- is base-generated as a matrix verb and selects both dative (beneficiary) and CP arguments.

On the other hand, when a verb also selects a dative argument (goal,

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<sup>24</sup> The sentence (37b) is ungrammatical with the topic meaning. However, with the contrastive meaning, it is grammatical. Subtle judgments are required for (37b).

for example), whether it is embedded by the verb cwu- (41) or not (40), a dative argument appears:

- (40) a. Chelswu-ka Yenghi-eykey kong-lul cha-ss-ta  
           -sub           -to       ball-obj kick-past-em  
           "Chelswu kicked a ball to Yenghi."  
       b. Chelswu-ka Yenghi-eykey phenci-lul ponay-ss-ta  
           -sub           -to       letter-obj send-past-em  
           "Chelswu sent a letter to Yenghi."  
 (41) a. Chelswu-ka Yenghi-eykey kong-lul cha-0   cwu-ess-ta  
           -sub           -to       ball-obj kick-Inf ben-past-em  
           "Chelswu kicked a ball to Yenghi."  
       b. Chelswu-ka Yenghi-eykey phenci-lul ponay-0 cwu-ss-ta  
           -sub           -to       letter-obj send-Inf ben-past-em  
           "Chelswu sent a letter to Yenghi."

The agreement fact in (42) and VP-topicalization in (43) shown below suggest that overt dative arguments are syntactically attached to matrix verbs:

- (42) Chelswu-ka sensayngnim-kkey [kong-lul cha-0] tuli-ess-ta  
           -sub teacherH-datH   ball-obj kick-Inf benH-past-em  
           "Chelswu kicked a ball and gave it to a teacher."  
 (43) a. ???sensayngnim-kkey kon-lul cha-ki-nun Chelswu-ka ha-e tuli-ess-ta  
           teacherH-datH   ball-obj kick-to-TOP   -sub do-Inf benH-past-em  
           "As for kicking a ball to a teacher, Chelswu did(ben) for him."  
       b. kong-lul cha-ki-nun Chelswu-ka sensaynim-kkey ha-e tuli-ess-ta  
           ball-obj kick-to-TOP           -sub teacherH-datH do-Inf benH-past-em  
           "As for kicking a ball, Chelswu did(benH) to a teacher."

Dative-verb agreement appears with the verb cwu- (Vx; 42) and the dative argument may not move with VP, as shown in (43) (cf. fn. 24 for the grammaticality of (43a)).

One interesting observation is that dative arguments appear obligatorily in (41)<sup>25</sup> and are understood as having two theta-roles (goal and beneficiary roles) or rather as having a theta-role combining agent and beneficiary, unlike (36) in which a dative argument has only one theta-role -- the beneficiary role. This double theta-role is not observed in sentences with nonVxs selecting dative arguments. When a matrix verb is a

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<sup>25</sup> Since Korean allows null arguments, dative arguments can be [0] in (41); by obligatory, we mean that there must be a syntactic position for a dative argument whether it is [0] or overtly realized.

nonVx and selects a dative argument, two dative arguments appear if an embedded verb also selects a dative argument.

(44) Chelswu-ka Yenghi<sub>1</sub>-eykey [{[0]{<sub>1</sub>,<sub>2</sub>}/Swuni-eykey} phenci-lul  
           -sub          -to                          -to          letter-obj

ssu-key-ta-ko]                  yaksokha-ess-ta  
 write-Inf(will)-em-comp  promise-past-em  
 "Chelswu promised Yenghi to write {[0]/Swuni}."

However, when a matrix verb is cwu-, double dative arguments are not possible, as shown in (45).

(45) \*Chelswu-ka Yenghi<sub>1</sub>-eykey [{[0]<sub>1</sub>/Swuni-eykey} ponay-0 cwu-ess-ta  
           -sub          -to                          -to          send-Inf ben-past-em  
 "Chelswu sent [0] to Swuni for Yenghi."

In (44), the two dative arguments may or may not be referentially different, while with cwu-, two dative arguments are not referentially different. We suggest that the difference between (44) and (45) arises because dative arguments are overlapped through RR in (41), while in (45) no such overlapping is available.

Given this Korean fact, we revise RR convention (b) in terms of grammatical relations (instead of the notion of SPEC), given that goal and beneficary theta roles are both syntactically realized (c-selected) as datives in Korean.

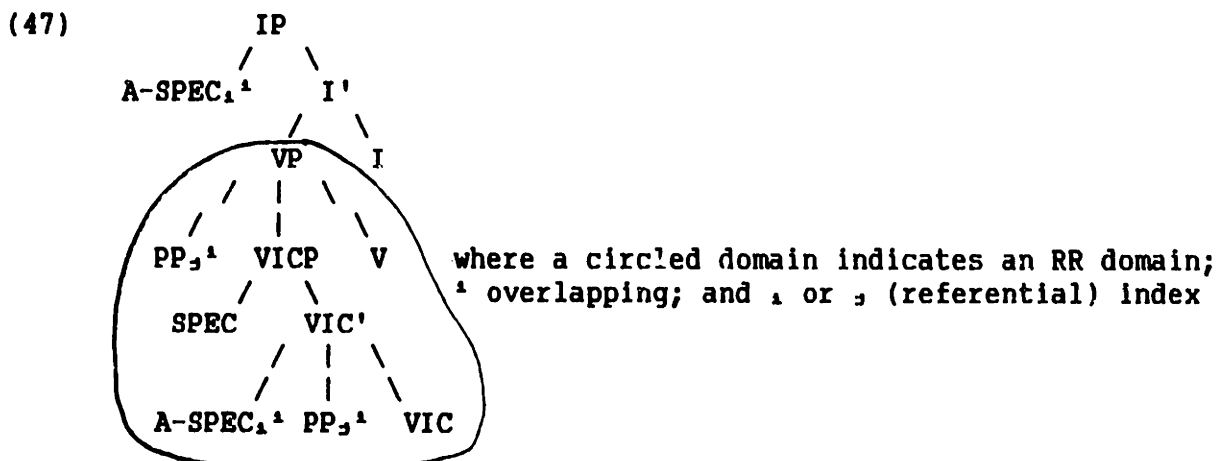
(46) Revised RR convention (b):

Let the A-position A in a domain of RR, D<sub>1</sub>, overlap with the A-position B with the same grammatical relations as A if (i) and (ii):  
 (i) B lies in the first maximal projection that dominates the domain D<sub>1</sub>; (ii) A and B are not distinct (apply from bottom to top).  
 def. = A-positions A and B are distinct if they bear different (referential) indexes.

Because of (46), the effects of cwu--to-V RR in (36) appear as follows:<sup>26</sup>

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<sup>26</sup> An embedded dative is not overtly realized, unlike a subject in RR domain (cf. 7 and 29). A strong version of 'avoid-pronoun strategy' may apply to datives in Korean for some reason that we will not answer here (cf. Chomsky (1981)).



Note that in (41b) for example, the overlapped subject (A-SPEC) also has two theta-roles: writer and benefactor roles, as predicted by the revised RR convention (b) in (46). Semantically speaking, at the level of LF, these two overlapped theta-roles are interpreted as a combined theta-role by some conventions on the interpretation of overlapping.

Another aspect of the V-to-V RR in Korean is derived from certain strong selectional properties of V<sub>x</sub> other than the requirement that the embedded subjects and the matrix subjects should be (in)animate and coindexed (cf. 12 and 15). Consider the following.

- (48) a. nal-ka palk-a {wa/\*ka}-ass-ta  
 day-sub dawn-Inf {come/go}-past-em  
 "Morning came to dawn."  
 b. pwulpis-ka meleci-e {ka/\*wa}-ss-ta  
 light-sub go away-Inf {go/come}-past-em  
 "Light went away."

In (48) some selectional restrictions between V<sub>x</sub> and V<sub>k</sub> are observed: When V<sub>k</sub> is meleci- (go away), ka- (go) but not wa- (come) can be used as V<sub>x</sub>; when V<sub>k</sub> is palk- (dawn), wa- (come) but not ka- (go) can be used as V<sub>x</sub>. In addition, not every cwu- can select a dative complement, as shown in (49):

- (49) a. ai-ka emeni-({??lulwihayse/\*eykey}) pap-lul  
 child-sub mother-for/dat cooked rice-obj  
 mek-e {cwu/\*tuli}-ess-ta  
 eat-Inf ben/benH-past-em  
 "The child ate cooked rice for the mother."



Given (50). a trigger ([+CD] X-head) indirectly selects a target ([-CD] X-head) through transitivity.<sup>27</sup> If this transitivity holds in every case of RR, then the selectional restrictions among predicates shown in (48-49) are explained. As we predict, this indirect selectional relation between Vx and Vk is not observed in the control construction (in Korean); this is so because no transitivity of selectional restriction is possible in the control construction in which V-to-V RR does not apply.

To summarize, in the preceding subsections we have shown that Vk+Vx sequences are not lexically-derived but that they syntactically project multi-clausal structures. Their properties we discussed are: An embedded subject can be lexically realized and the Vk+Vx sequences may be morphologically separated (especially in VP-topicalization and VP-clefting construction). Although Vk+Vx sequences allow no intervening maximal elements between Vk and Vx, VP-movement in the Korean V-to-V RR construction shows that the Vk-Vx sequences form R-complex words (but not M/R-complex words) in syntax; some instantiations of morphologically-complex Vk-Vx predicates are obtained in the PF component. In addition, although the Vk-Vx sequence

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<sup>27</sup> It is well known that small clauses have V-V (predicate-predicate) selectional restrictions, as observed by Stowell (1983;301):

- (i) a. \*I consider John off my ship.  
b. I expect that man off my ship.
- (ii) a. I consider John very stupid.  
b. \*I expect that man very stupid.
- (iii) a. We all feared John killed by the enemy.  
b. \*We all feared John unfriendly. (cf. (24-27 and 32) in Stowell (1983))

If all instantiations of small clauses are obtained by C-to-V RR, as we suggested in Section 3.3. (also cf. Chapter 4), then we suggest that the V-V selectional restrictions found in small clause constructions derive also from RR effects. For the sake of clarity, we add the following formulation of the transitivity of selectional restrictions as an RR effect to explain the V-V selectional restrictions observed in small clauses.

- (iv) If (a) YP is selected by X, (b) ZP is directly or indirectly selected by Y, and (c) YP and ZP are selected in the same domain of RR, then ZP is indirectly selected by X.

projects a multi-clausal structure, it syntactically behaves as if it projects a mono-clausal structure with respect to certain locality requirements in Korean. This seeming conflict is well-explained and in fact predicted under the present proposal; the proposal captures, moreover, some cross-linguistic 'restructuring' effects in terms of more general RR effects (i.e., in terms of V-to-V RR effects).

#### 3.4.6. Discussion

If the Korean V-to-V RR illustrates the same phenomenon as the Italian (Romance) V-to-V RR ('restructuring'), as seems clear from our discussions above, then the Korean V-to-V RR confirms the following: First, the Korean V-to-V RR effects confirm the notion that 'restructuring' is not restricted to Romance languages and may plausibly be seen as a universal phenomenon. In the preceding subsections, we have also seen that the V-to-V RR approach explains both Korean and Italian 'restructuring' on the one hand, and Eskimo and Chichewa 'restructuring' on the other hand. Languages seem to differ depending on whether they illustrate M/R- or R-complex predicates (Chichewa/Eskimo/Korean versus Italian/Korean) or on whether they employ surface-overt V-to-V RR (Korean) or by deep-overt V-to-V RR (Chichewa/-Eskimo). Second, the Korean data with  $V_x$ 's also confirm that the 'restructuring' phenomenon does not actually change syntactic structure, but results in the defectiveness of categories with respect to the notion of government. Unless complex words are M/R-complex in syntax, constituency remains intact since rules can refer to subconstituents of RR domains. This is true of both Korean and Italian. In Italian, cliticization applies within an RR domain (cf. Section 3.3.) and in Korean, subconstituents of an



RR domain may move as long as Vx and Vk words are properly linked (cf. 26-27).

Third, Korean V-to-V RR confirms the theory that certain notions of semantic and phonological 'richness' may also play a role in 'restructuring.' In general, matrix verbs fall under the certain class of verbs (with aspectual, modal, and motion expressions) that are semantically auxiliary but syntactically predicates. The semantics of Vx in Korean are sometimes extremely weak. In some cases of Vx, their semantics are totally dependent on the semantics of the X-heads of CP complements (C's), and especially so in the case of modal expressions (cf. 29; fn. 19). On the other hand, the semantic richness of verbs is not a sufficient factor for V-to-V RR. In (51), the matrix V is semantically weak (aspectual verb) but since the verb takes a CP complement with [+Tense], V-to-V RR does not seem to apply.

- (51) Chelswu-ka ku sakwa-lul {mek-0-nun-ka/mek-0-na}<sup>28</sup> po-0-ta  
       -sub the apple-obj eat-pres-Qem/eat-pres-Qem see-pres-em  
       "I guess/It seems that Chelswu is eating an apple."

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<sup>28</sup> The morpheme -nun-ka or -na is an interrogative marker, as shown below.

- (i) Chelsoo-ka hakkyo-ey {ka-t-nun-ka/ka-t-na}  
       -sub school-to go-past-(comp-Q)/go-past-Q  
       "Did Chelsoo go to school?"

However, these interrogative markers semantically differ from or are richer than the regular interrogative markers -kka or -ni: They also have some assertive meaning. Thus, while the verb po- in (51) does not select the indicative ending marker -ta (ii), other verbs, which select -nun-ka or -na complements may also select -ta (iii):

- (ii) noon-ka {o-0-nun-ka/\*o-n-ta} po-0-ta  
       snow-sub come-pres-(comp-Q)/come-pres-em see-pres-em  
       "I guess it snows."  
       (iii) noon-ka {o-0-nun-ka/o-n-ta} sip-0-ta  
       snow-sub come-pres-(comp-Q)/come-pres-em seem-pres-em  
       "It seems that it snows."

In addition, a verb like koonggoomha- (= wonder), which selects -nun-ci (=C-Q (whether)), may also select -nun-ka or -na:

- (iv) [noon-ka {o-0-nun-ka/o-0-na}] koonggoomha-0-ta  
       snow-sub come-pres-(comp-Q)/come-pres-Q wonder-pres-em  
       "(I) wonder whether it snows."

Thus, we assume that -nun-ka or -na, which we gloss as Qem, may appear either in an interrogative clause or in an indicative clause.

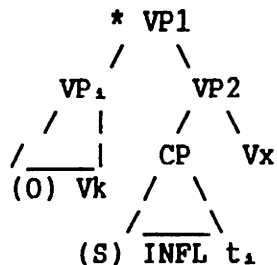
In (51), the clause-mate requirement between a negative quantifier and its scope marker is strictly observed:

- (52)\*Chelswu-ka amwu-kes-to {mek-0-nun-ka/mek-0-na} po-ci an-0-ta  
 -sub nothing-prt eat-pres-Qem/eat-pres-Qem see-to not-pres-em  
 "I guess/It seems that Chelswu is eating nothing."

The Korean V-to-V RR data, however, suggest that [+Agr] does not block V-to-V RR since an embedded INFL of the Korean V-to-V RR construction is always [-Tense,+Agr]. Thus it seems that the phonological richness of INFL may be universally derived from finiteness (i.e., from [+Tense] or probably also from a certain type of Tense elements) but not from [+Agr] in the case of Vx's listed in (1) (cf. Appendix III).

Fourth, the Korean V-to-V RR data further provide evidence against some approaches discussed in Section 3.2. and Rizzi's restructuring rule. First, the base-generation and Rizzi's approaches would not explain the fact that the embedded subject can be realized (cf. 7 and 29). Second, under the VP-movement approach, Korean V-to-V RR sentences would be obtained either by VP-adjunction to VP, as shown in (53a), or by VP-movement (as Burzio originally suggests), as shown in (53b):

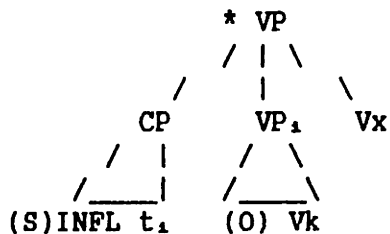
(53) a.



where S is the subject and  
 VP1 and VP2 are segments

\* (O) V<sub>k</sub> (S) INFL(-e) V<sub>x</sub>

b.



\* (S) INFL(-e) (O) V<sub>k</sub> V<sub>x</sub>  
 (cf. (S) (O) V<sub>k</sub>-e V<sub>x</sub>)

(53a) is theoretically well-motivated, as we discussed in Section 3.2., but it is not empirically plausible, as we see in the string order obtained in

(53a). On the other hand, (53b) has a problem with the position of -e. One might thus find a way to explain on the status of -e by assuming that -e is not an realization of INFL or C but an affixal element to V<sub>k</sub> (or not a realization of an X-head),<sup>29</sup> but we have seen that the VP-movement as seen in (53b) is theoretically problematic under the restricted theory with the projection principle.

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<sup>29</sup> However, see B.-S. Park (1974) who suggests that -e is a complementizer (cf. fn. 1).

# APPENDIX I: Compound verbs in Korean

It should be noted that not every (morphologically-)complex verbal in Korean is derived by (surface-overt) RR. Korean also has other types of complex verbals, shown in (1).<sup>1</sup> In (1), the first verbs modify the second verbs or the first verbs explain how the second verbs are eventualized.

- |        |                          |                             |
|--------|--------------------------|-----------------------------|
| (1) a. | kalki-e-ss(u)-ess-ta     | [Vt-Vt]                     |
|        | whip-Inf-write-past-em   | "[0] scribbled [0]."        |
| b.     | tull(u)-e-po-ass-ta      |                             |
|        | enclosed-Inf-see-past-em | "[0] looked around [0]."    |
| c.     | pha-0-mek-ess-ta         |                             |
|        | dig-Inf-eat-past-em      | "[0] digged and ate [0]."   |
| d.     | kkul-e-tangki-0-ta       |                             |
|        | draw-Inf-pull-pres-em    | "[0] draws [0]."            |
| e.     | tt(u)-e-olu-0-ta         | [Vi-Vi]                     |
|        | float-Inf-rise-pres-em   | "[0] rises to the surface." |
| f.     | hunukki-e-wul-0-ta       |                             |
|        | sob-Inf-cry-pres-em      | "[0] is choked with tears." |
| g.     | ki-e-ka-0-ta             |                             |
|        | crawl-Inf-go-pres-em     | "[0] crawls and goes."      |

These complex verbs, which we call Vs-Vs sequences are morphologically complex but differ from M- or M/R-complex words for the following reasons.

First, the semantics of these complex verbals differ from those derived by RR. The two verbals in (1) are equal semantically. Thus the complex verbs in (1) may not be derived by RR. Second, while the Vk+Vx sequence may consist of more than two verbs (cf. 5 in Section 3.4.), the Vs-Vs sequence is not formed by more than two verbs (cf. 2) (even if that were semantically plausible):

- (2) \*pha-0-kkul-e-mek-ess-ta  
 dig-Inf-draw-Inf-eat-past-em "[0] digged, drew and ate [0]"

The Vs-Vs sequence should agree in transitivity, as the contrast between (1) and (3) shows. On the other hand, R-complex predicates have no such

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<sup>1</sup> Sohn (1976), who discusses complex verbals in Korean, does not differentiate R-complex predicates from complex verbals in (1). However, a speculation that complex verbals in Korean are ambiguous is found in Suh (1978).

restrictions except that Vx's are intransitive in that they do not select NP's (cf. 4):

(3) Vs-Vs sequence:

- a. \*talli-e ssu-ess-ta  
run-Inf write-past-em [Vi + Vt]
- b. \*kkull-e olu-0-ta  
draw-Inf rise-pres-em [Vt + Vi]

(4) R-complex verb:

- a. palk-a wa-ss-ta  
clear-Inf come-past-em [Vi + Vi] "It became brightened."
- b. tul-e ka-ss-ta  
enter-Inf go-past-em [Vt + Vi] "[0] entered."

Third, syntactically the inflected second verbs in (1) differ from Vx's. While only the noninflected first verbs in R-complex verbs can be passivized (cf. 5),<sup>2</sup> only the inflected second verbs in Vs-Vs sequences can be passivized (cf. 6).<sup>3</sup>

- (5) a. koyangi-ka kay-lul mwul-e po-ass-ta  
cat-sub dog-obj bite-Inf attempt-past-em  
"The cat attempted to bite the dog."
- b. kay-ka koyangi-lul mwul-li-e po-ass-ta  
dog-sub cat-obj ~~bite-pass~~-Inf attempt-past-em  
"The dog attempted to be bitten by the cat."
- c. \*kay-ka koyangi-eygey mwul-e po-i-ess-ta  
dog-sub cat-by bite-Inf ~~see-pass~~-past-em  
"The dog attempted to be bitten by the cat."
- (6) a. senwon-ka patccul-lul kkul-e tangki-ess-ta  
seaman-sub rope-obj draw-Inf pull-past-em  
"The seaman pulled on the rope."
- b. \*patccul-ka senwon-eyuyhayse kkul-i-e tangki-ess-ta  
rope-sub seaman-by ~~draw-pass~~-Inf pull-past-em  
"The rope was pulled on by the seaman."

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<sup>2</sup> We will suggest that [+CD] predicates are not passivized in Section 4.2..

<sup>3</sup> When both verbs in the Vs-Vs sequence are passivized, the sentence make sense in some cases:

- (1) ai-ka kkul(-li)-e an-a ci-ess-ta  
child-sub draw-pass-Inf hold-Inf pass-past-em  
(1) "A child was hugged."
- (2) "A child was held after it was taken."

But with the passive morpheme on the first verb, as in (1), the sentence (1) means (2), rather than (1). We assume (1) is derived from the -se construction to be discussed in fn. 5.

- c. patccul-ka senwon-eyuyhayse kkul-e tangki-e ci-ess-ta  
 rope-sub seaman-by draw-Inf pull-Inf pass-past-em  
 "The rope was pulled on by the seaman."

This shows that the Vs-Vs sequences in (1) are not derived by RR.

The Vs-Vs sequences in (1) are not derived by head-movement either. Overt agreement cannot appear with V-e (7a)<sup>4</sup> and an embedded subject fails to appear (7b), which suggests that the sentences with the Vs-Vs sequences are not bi-clausal in syntax.

- (7) a. \*hunukki-si-e wulu-si-ess-ta  
 sob-h-Inf cry-h-past-em "[0] was choked with tears."  
 b. \*Chelswu<sub>i</sub>-nun ku<sub>i</sub>-ka hunukki-e wul-ess-ta  
 -TOP he-sub sob-Inf cry-past-em  
 "Chelswu was choked with tears."

In addition, unlike Vk-Vx sequences, Vs-Vs sequences are never separated by VP-topicalization.

- (8) a. \*ku pang-lul tullu-ki-nun Chelswu-ka ha-e po-ass-ta  
 the room-obj enclosed-to-TOP -sub do-Inf see-past-em  
 "As for being enclosed in the room, Chelswu did and saw."  
 b. \*hunukki-ki-nun Chelswu-ka ha-e wul-ess-ta  
 sob-to-TOP -sub do-Inf cry-past-em  
 "As for sobbing, Chelswu did and cried."

Thus, we conclude that Vs-Vs sequences are not syntactically derived but lexically derived, unlike Vk-Vx sequences. This conclusion is not surprising since Vs-Vs sequences always form words.<sup>5</sup> How the Vs-Vs sequences are derived in the Lexicon is beyond the scope of our study.

---

<sup>4</sup> Recall that V-e infinitival in Korean is [+Agr], unlike V-ki (to V) (cf. Section 3.1.).

<sup>5</sup> Apparently, the Vs-Vs sequence may be morphologically separated, which suggests that it may not be lexically derived. However, there is a construction in which two verbs are connected by -se (= and (then)), and the -se can be deleted:

(i) kalki-e(-se) ss(u)-ess-ta  
 whip-Inf(-and) write-past-em "[0] wrote scribbling."

Consequently, the Vs-Vs sequence is ambiguous: either lexically-derived or derived from the -se construction. Even though the judgments are very subtle since both represent almost the same meaning, we assume that some apparent nonlexical properties of these compound verbs are observed because of the existence of the se-clause as an adjunct clause.

## APPENDIX II: SUCCESSIVE CYCLIC RIGHTWARD MOVEMENT IN KOREAN:<sup>1</sup>

### A. 0. Introduction

Ever since Ross proposed classic conditions on movement, rightward movement rules have been assumed to be constrained by the Right Roof Condition (RRC; cf. Ross (1967;166)), which says that any rightward movement rule is clause-bounded or upward bounded.<sup>2</sup> All the rightward movement rules in English listed in (1) do not cross a CP boundary, confirming the condition. Some typical violations of the condition are illustrated in (2), in which a PP is extraposed across a CP.

- (1) The RRC: Any rightward movement rule is clause-bounded.
  - a. extraposition of relative clauses
  - b. extraposition of PP
  - c. extraposition of comparative clauses
  - d. Heavy NP shift
- (2) a. \*[That a review came out yesterday] is catastrophic of this article. (Ross (1967;166))
  - b. ?\*[Ann is going to see a picture as soon as she gets home] of chairman Mao. (cf. Ross (1967;165))

In this paper, we examine Korean rightward inversion or rightward displacement of arguments, which we will call KRI, for short (= KI in Choe (1987c)). Some examples of KRI are given in (3). (Inverted elements are underlined hereafter.)

- (3) a. wa-ss-ta,            Chelswu-ka  
       come-past-em                -sub                "Chelswu came."

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<sup>1</sup> This is a modified version of Choe (1987c). This paper discusses the requirement that (negative) quantifiers and their scope markers must be in the same clause and that the requirement that with quantifiers rightward-inverted, their scope markers should appear on the matrix INFL. Because the discussion of the Korean 'restructuring' phenomenon in Section 3.4. is based on these two requirements, we include it here for the reference of the readers.

<sup>2</sup> Ross's condition (Ross (1967;166)) states as this: Any rule whose structural index is of the form ... A Y, and whose structural change specifies that A is to [move] to the right of Y, is upward bounded.

- b. Chelswu-ka mek-ess-ta, sakwa-lul  
     -sub eat-past-em apple-obj      "Chelswu ate an apple."  
 c. Chelswu-ka sakwa-lul cwu-ess-ta, Yenghi-eykey  
     -sub apple-obj give-past-em      -to  
     "Chelswu gave an apple to Yenghi."

Based on KRI data, we will make the following suggestions: First, KRI differs from Italian or French (Romance) inversion and from scrambling as a PF phenomenon (cf. Section 4.4.). Second, KRI exhibits long-distance dependency, obeying Subjacency, and therefore the RRC (1) is not universal. Third, KRI is successive-cyclic and syntactically derived by A-bar movement (a scope assigning process). The third point focuses on an interaction between KRI and the scope of the negative quantifier amwu-to (nobody) in Korean. We will propose the scope licensing condition that the scope of a quantifier should be governed by the scope marker of the quantifier; the condition explains both the clause-mate requirement that quantifiers and their scope markers must be in the same clause and the requirement that a scope marker should be in the matrix INFL when the quantifier construed with it is inverted. Fourth, (long-distance) leftward dislocation of arguments, which is sometimes called 'long-distance scrambling,' is also derived by A-bar movement, like KRI. Fifth, in Korean, rightward and leftward displacement of arguments may contain null resumptive pronouns, giving rise to right- and left-dislocation constructions, respectively. Consequently, we will suggest that rightward or leftward dislocation of arguments in Korean are derived either by A-bar movement or by left/right-dislocation.

#### A.1. KRI as counterevidence to the RRC

Even though KRI is rarely used in normal speech, and the grammaticality judgments on KRI data are often delicate, KRI is systematically



productive. First, any arguments including an ECMed argument can be inverted, as shown in (3) above and (4) below.

- (4) na-nun [ ttokttokha-0-ta-ko] sayngkakha-n-ta, Chelswu-lul  
 I-TOP intelligent-Inf-em-comp think-pres-em -obj  
 "I think Chelswu to be intelligent."

Second, multiple inversion is possible and inverted arguments can be scrambled, as shown in (5). (By scrambling, we mean (clause-bounded) dislocation of arguments as a PF phenomenon, which does not affect binding; cf. Section 4.4.)

- (5) mek-ess-ta, {Chelswu-ka sakwa-lul/sakwa-lul Chelswu-ka}  
 eat-past-em -sub apple-obj apple-obj -sub  
 "Chelswu ate an apple."

In addition, any constituents such as adjuncts (6a), CP's (6b and c), comparative phrases (6d), part of VO idioms (7a), or 'floated' quantifiers (7b) can be inverted.

- (6) a. Chelswu-ka chwum-lul chwu-ess-ta, san-wieyse ecey  
 -sub dance-obj dance-past-em mountain-on yesterday  
 "Chelswu danced on a mountain yesterday."  
 b. Chelswu-ka chwuchukha-ess-ta, [Phikhaso-ka i kulim-lul  
 -sub conjecture-past-em -sub this picture-obj  
 kuli-ess-ta-ko]  
 paint-past-em-comp  
 "Chelswu conjectured [that Picasso painted this picture]."  
 c. Chelswu-ka konghang-ey tochakha-ess-ta, [Yenghi-ka ttena-ki-ceney]  
 -sub airport-at arrive-past-em -sub leave-to-before  
 "Chelswu arrived at the airport [before Yenghi left]."  
 d. Chelswu-ka khi-ka khu-0-ta, Yenghi-pota  
 -sub height-sub tall-pres-em -than  
 "Chelswu is taller than Yenghi."  
 (7) a. Chelswu-ka mek-ess-ta, miyekkwuk-lul  
 -sub eat-past-em seaweed soup-obj  
 "Chelswu failed." or "Chelswu ate seaweed soup."  
 b. Chelswu-ka kummaytal-lul tta-ss-ta, seyt-lul  
 -sub gold medal-obj win-past-em three-obj  
 "Chelswu won three gold medals."

Third, KRI also applies across-the-board, as in (8).

- (8) Chelswu-ka mek-ess-ko Yenghi-to mek-ess-ta, sakwa-lul  
 -sub eat-past-and -also eat-past-em apple-obj  
 "Chelswu ate an apple and Yenghi also ate an apple."

Finally, KRI data show long-distance dependency, as shown in (9).<sup>3</sup>

(9)

- a. Chelswu-nun [Phikhaso-ka kuli-ess-ta-ko] chwuchukha-ess-ta, i kulim-lul  
 -TOP -sub paint-past-em-comp conjecture-past-em this picture-obj  
 "Chelswu conjectured that Picasso painted this picture."  
 b. Chelswu-nun [i kulim-lul kuli-ess-ta-ko] chwuchukha-ess-ta, Phikhaso-ka  
 -TOP this picture-obj paint-past-em-comp conjecture-past-em -sub  
 "Chelswu conjectured that Picasso painted this picture."

At this point, one can reasonably ask what governs KRI. If all transformations obey a certain version of Ross's principle of across-the-board rule application (cf. Williams (1978)), the data (8) suggest that KRI is derived transformationally. One might, however, suggest that KRI is rightward scrambling (a mechanism governing leftward dislocation of arguments). KRI, however, differs from scrambling. First, it does not apply within an embedded clause (10a), while scrambling is free within an embedded clause (10b).

(10) a. inversion:

- \*Chelswu-ka [caki-lul cohaha-n-ta-ko], Yenghi-ka, sayngkakha-n-ta  
 -sub self-obj like-pres-em-comp -sub think-pres-em  
 "Chelswu thinks that Yenghi likes self."

b. scrambling:

- Chelswu-ka [caki-lul Yenghi-ka cohaha-n-ta-ko] sayngkakha-n-ta  
 -sub self-obj -sub like-pres-em-comp think-pres-em

Second, wh-phrases are not inverted but can be scrambled:<sup>4</sup>

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<sup>3</sup> According to Kuno (1978:64), long-distance inversion is also possible in Japanese:

- (1) Kimi [Taroo ga kekkonsita] koto sitte iru Hanako to  
 you married that knowing are with  
 "Do you know that Taroo married Hanako?"

<sup>4</sup> Inverted elements have a falling intonation. A rising intonation makes KRI data uninterpretable or ungrammatical when main clauses are not interrogative. When main clauses are interrogative, inverted non-wh-elements (cf. 11a) have a rising intonation (or a falling intonation).

- (i) hakkyo-ey ka-ss-ni, Chelswu-ka  
 school-to go-past-Q -sub  
 "Has Chelswu gone to school?"

Sentence (i) with a rising intonation makes sense with the following interpretation: Has somebody gone to school? And is the person Chelswu? (double question interpretation). With a falling intonation, the same interpretation may be possible, depending on idiolects.

(11) interrogative sentences:a. inversion:

\*Chelswu-ka po-ass-upnikka, mwuet-lul  
 -sub see-past-Q what-obj "What did Chelswu see?"

b. scrambling:<sup>5</sup>

mwuet-lul Chelswu-ka po-ass-upnikka  
 what-obj -sub see-past-Q

Third, even a wh-element within an inverted phrase makes a sentence ungrammatical unless its scope marker lies within an inverted phrase, as shown in the contrast in (12). However, the scrambled versions of (12) given in (13) do not show such a contrast.<sup>6</sup>

(12) inversion:

- a. Chelswu-ka kwungkwumhayha-n-ta, [nwukwu-ka i kulim-lul kuli-ess-nun-ci]  
 -sub wonder-pres-em who-sub this picture-obj paint-past-comp-Q  
 "Chelswu wondered [who t painted this picture]."

---

Kuno (1978;61-2) observes that the inverted elements in Japanese interrogative have a falling intonation with an interpretation of 'afterthought,' which is either discourse-predictable or supplementary so that they can be deleted. Thus he argues that inversion is generated not by a transformation, but by 'a process that adds afterthoughts to the end of a sentence.' We, however, disagree with Kuno since in Korean, inverted elements are emphasized with some stress. Consider (ii), which corresponds to Kuno's data.

- (ii) ne-nun ilk-ess-ni, i chayk-lul? (cf. Kuno (1978;60))  
 you-TOP read-past-Q this book-obj "Did you read this book?"

The appropriate reading of (ii) has a 'Focus' reading: "Did you read? - I mean, did you read this very book?" Sentence (ii) without the inverted object would mean: Did you read (it)? In addition, unlike Kuno's prediction, an inverted element can be emphasized:

- (iii) Chelswu-ka kummaytal-lul tta-ss-ta, seyt-ina  
 -sub gold medal-obj win-passt-em three-as many as  
 "Chelswu won as many as three gold medals."

<sup>5</sup> Note that (11b) in which a wh-element is dislocated shows that dislocation of arguments may fail to be derived (exclusively) by A-bar-movement.

<sup>6</sup> As we note in Section 3.1., Korean employs a morphological wh-scope marker {-pnikka/-ni} or -ci in C (cf. 12-13). The ungrammaticality of (12b) is explained if a wh-phrase and its scope marker are coindexed and the wh-phrase should move to the SPEC of C containing its scope marker (in LF) to be properly licensed by its scope marker (cf. fn. 19): LF-movement in (12b) would be lowering and therefore would violate a strong binding condition that a variable is strongly bound by its antecedent (quantifier) (cf. Chomsky (1986a)).

- b. \*Chelswu-ka sayngkakha-0-pnikka, [nwukwu-ka i kulim-lul kuli-ess-ta-ko]  
 -sub think-pres-Q who-sub this picture-obj paint-past-em-comp  
 "Who does Chelswu think [t painted this picture]?"
- (13) scrambling:
- a. [nwukwu-ka i kulim-lul kuli-ess-nun-ci] Chelswu-ka kwungkwumhayha-n-ta  
 who-sub this picture-obj paint-past-comp-Q -sub wonder-pres-em  
 "Chelswu wondered [who t painted this picture]."
- b. [nwukwu-ka i kulim-lul kuli-ess-ta-ko] Chelswu-ka sayngkakha-0-pnikka  
 who-sub this picture-obj paint-past-em-comp -sub think-pres-Q  
 "Who does Chelswu think [t painted this picture]?"

KRI also differs from Romance Inversion: First, in Romance languages, an inverted position can be a variable position, as Rizzi (1982;ch. 4) argues (for Italian inversion), and Romance inversion is derived by A-movement (move-NP to the right; cf. Kayne and Pollock (1978); Kayne (1979)). The inverted position in Korean is, however, neither a variable position nor an A-position, given the example in (11a). Second, virtually any constituent can be inverted (cf. 6-7) in Korean, while Romance inversion is restricted to subjects (in a restricted environment<sup>7</sup>). Third, KRI is not clause-bounded (cf. 9), while Romance inversion is (local), as shown in (14).<sup>8</sup>

- (14) La maison où habite cet homme est très jolie  
 the house where lives this man is very pretty  
 "The house where this man lives is very pretty." ((3a) in Kayne and Pollock (1978))

To conclude, KRI is derived neither by scrambling nor by A-movement. Since KRI exhibits long-distance dependency, we can reasonably ask if KRI is derived by SPEC-to-SPEC movement, obeying Subjacency. In fact, the instantiations of the subjacency violations given in (15) are all ungrammatical.<sup>9</sup>

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<sup>7</sup> For example, Kayne and Pollock (1978) argue that French inversion is essentially triggered with a certain 'wh-word' and with subjunctives.

<sup>8</sup> The landing site of inversion in Korean must be outside of a CP if -ipnikka is the scope marker of a wh-element within a CP. Thus KRI differs from Romance inversion in this regard since the latter is widely assumed to move to VP.

<sup>9</sup> Kuno (p.c.) has pointed out to us that the following, which is a Subjacency violation, is grammatical with the falling intonation on the inverted element in Japanese (cf. Kuno (1978;60)).

(15) a. CNPC:<sup>10</sup>

??Chelswu-ka [NP maul-ey nathana-ss-ta-nun (\*ku) somwun]-lul tul-ess-ta,  
 -sub village-at appear-past-em-comp (the) rumor-obj hear-past-em  
 horangi-ka  
 tiger-sub

"Chelswu heard {??a/\*the} rumor that a tiger appeared in the village."

## b. CED (Huang (1982)):

\*[o-ki-ceney] Chelswu-ka konghang-ey tochakha-ess-ta, Yenghi-ka  
 come-ing-before -sub airport-at arrive-past-em -sub

"Chelswu arrived at the airport before Yenghi came."

## c. the wh-islands condition:

\*[mwuet-lul sa-ss-nun-ci] Chelswu-ka molu-n-ta, Yenghi-ka  
 what-obj buy-past-comp-Q -sub not-know-pres-em -sub

"Chelswu does not know what Yenghi bought."

## d. the left branch condition:

\*Chelswu-ka kwaca-lul mek-ess-ta, Yenghi-uy  
 -sub cookie-obj eat-past-em -gen

"Chelswu ate Yenghi's cookie."

## e. the coordinate structure constraint:

\*nay-ka mek-ess-ko ne-ka kwaca-lul mek-ess-ta, sakwa-lul  
 I-sub eat-past-and you-sub cookie-obj eat-past-em apple-obj

"I ate an apple and you ate a cookie."

Long-distance dependency with Subjacency effects are typical of operator movement (cf. Chomsky (1977)). Thus we suggest that what governs KRI is syntactic operator movement, which is successive-cyclic. If so, then the RRC in (1), which intends to constrain rightward transformation, is not universal.<sup>11</sup> In the next section, in discussing some scope aspects in rightward

(i) Kimi wa [nani o tabeta ka] oboete iru ano restoran de  
 you what ate Q remember are that restaurant at

"Do you remember what we ate at that restaurant?"

The Korean sentence corresponding to (i) (with a rising intonation) has a double question interpretation (cf. fn. 4): Do you remember what we ate? I mean at that very restaurant? However, with main clauses interrogative, the data in (15) are not acceptable. We leave open the question of why (i) allows inversion, violating Subjacency, while the sentences in (15) do not allow inversion, obeying Subjacency.

<sup>10</sup> As in English, the definiteness of NP affects the degree of grammaticality in CNPC data.

<sup>11</sup> Kohrt (1975) also shows that the German rule of extraposition must be able to cross clause boundaries when clauses are infinitives. See Riemsdijk (1982) for an argument that rightward extraposition out of prepositional phrases in Dutch is successive-cyclic.

inversion data, we confirm the fact that KRI, which is transformational, is rightward SPEC-to-SPEC A-bar movement.

## A.2. KRI as XP-operator movement

If KRI is derived by operator movement, the next question is whether an inverted XP itself moves, as in (16a) or whether a null operator moves to the SPEC of a matrix CP in the structure (16b) in which XP is base-generated on the right side of a clause, as in a relative clause.

- (16) a. [ ...  $t_1$  .... ] [XP<sub>1</sub>]  
       b. [ ... OP<sub>1</sub> .... ] [XP<sub>1</sub>]

Based on the heterogeneous aspect of the sets of inverted XP's given in (6-7 and 12), we tentatively suggest, for the sake of the economy of D-structure, that the structure in (16a) is responsible for KRI (later we will choose a version of (16b) for another theory-internal reason). This suggestion is on a par with saying that an inverted XP is an operator-like element, which has its scope through movement. Then XP-inversion is analogous to Focused elements which move in LF in English (cf. Chomsky (1977)); it is an S-structure version of 'Focus' movement -- movement of a Focus-like element, which we will call inversion focus (IF) (cf. (iii) in fn. 4). Aside from the direction of movement, 'Focus' elements move syntactically in other languages; Horvath (1986), for example, shows that Hungarian employs syntactic SPEC-to-SPEC Focus movement, like wh-movement. In addition, some interaction between KRI and the scope of a negative quantifier provides evidence for XP-operator movement as a scope-assignment process. Before we discuss the interaction between KRI and the scope of a negative quantifier, we first divert our concern to some aspect of the negative quantifier amwu-to.

In Korean, there is a morpheme amwu, which means any in English. Depending on the particle it is taking, its syntax and semantics differ.

When it takes the particle -na, which means either-or, as shown in (17a), amwu-na preserves the meaning any whether or not amwu-na is accompanied by the negative marker an-, as in (17b and c).

- (17) a. {Chelswu-na Yenghi-na/amwu-na} wa-la  
                   -prt          -prt anybody-prt come-Imp  
           "{Either Chelswu or Yenghi/Anybody} come!"  
   b. amwu-na                  wa-ss-ta  
       anybody-prt          come-past-em          "\*Anybody came."  
   c. amwu-na          o-ci      an-ass-ta  
       anybody-prt come-to not-past-em  
       "It is not the case that anybody came."

amwu can also take the particle -to, having the meaning neither-nor when it is accompanied by the negative marker an-, as shown in (18a) below. amwu which takes -to always requires the negative morpheme an-, as we see in the contrast in (18b and c), and loses the meaning any but has the meaning nobody/nothing. (amwu-to in (18c) has wide scope.)

- (18) a. Chelswu-to Yenghi-to o-ci      an-ass-ta  
                   -prt          -prt come-to not-past-em  
           "Neither Chelswu nor Yenghi came."  
   b. \*amwu-to                  wa-ss-ta  
       anybody-neg.prt (= nobody) come-past-em  
       =/= "{Nobody/Anybody} came."  
   c. amwu-to      o-ci      an-ass-ta  
       nobody      come-to not-past-em          "Nobody came."  
       = There is nobody such that the person came.

The Korean amwu-to is similar to the French personne since the French personne also requires the negative morpheme ne, which Kayne (1981b) argues is a scope marker. Kayne notices that personne in (19a and c) clearly differs in interpretation depending on the position of the negative marker ne in certain environments in which ne and personne can be linked across CP:<sup>12</sup>

<sup>12</sup> As Richard Kayne (p.c.) has brought to our attention, in French, depending on the matrix verbs (sometimes regardless of the tense aspects of embedded INFLs), ne and personne should appear in the same clause, as we see in the contrast between (i) and (ii) drawn from Pica (1985).

- (i) a. Pierre ne veut voir personne  
       "Peter neg wants to see nobody."  
   b. N'a-t-il voulu que je voie personne  
       "neg has he believed that I see(SUBJ) nobody." (48a and 45a)

- (19) a. J'ai exigé qu'ils ne arrêtent personne.  
 "I have required that they neg arrest nobody."  
 b. J'ai exigé que personne ne soit arrêté.  
 "I have required that nobody neg be arrested."  
 c. Je n'ai exigé que ils arrêtent personne.  
 "I neg have required that they arrest nobody."  
 d. \*Je n'ai exigé que personne soit arrêté.  
 "I neg have required that nobody be arrested." (Kayne (1981b;318-320))

The quantifier-like negative element personne has wide scope in (19c), in which ne occurs in a matrix clause, but narrow scope in (19a), in which ne occurs in an embedded clause. Thus Kayne suggests that the scope of a negative quantifier is the S which immediately contains an occurrence of ne construed with the quantifier. Given the grammaticality of (19), the subject-object asymmetry with respect to the wide scope reading shown in (19c and d) below can be explained in terms of the ECP, if May's QR applies, as shown in (20).

- (20) a. J'ai exigé [ que personne [ ils ne arrêtent  $t_i$  ] ]  
 b. J'ai exigé [ que personne [  $t_i$  ne soit arrêté ] ]  
 c. [ personne, [ Je n'ai exigé [ que [ ils arrêtent  $t_i$  ] ] ] ]  
 d. \*[ personne, [ Je n'ai exigé [ que [  $t_i$  soit arrêté ] ] ] ]

- (ii) a. \*Pierre ne dit voir personne  
 "Peter neg says to see nobody."  
 b. \*Pierre n'a dit que je parle à personne  
 "Peter neg has said that I speak(IND) to nobody." (49a and 23)  
 Pica (1985) suggests that the ne-personne link should not cross certain tenses ((IND)icative tense) (iib) while it can cross other tenses such as (SUBJ)unctive tenses (ib). As Pica notes, some verbs, such as factive verbs, however, do not follow that way:  
 (iii) a. \*Pierre ne regrette que je voie personne  
 "Peter neg regrets that I see(SUBJ) nobody."  
 b. \*Pierre ne regrette avoir parlé à personne  
 "Peter neg regrets to have spoken with nobody." ((46 and 47a) in Pica (1985))

Also, some verbs such as croire (believe) can take either IND or SUBJ. The ne-personne link is obtained only across IND tense (Vivienne Deprez (p.c.)).

As the verb want in (i) is a 'restructuring' verb in (some) Romance languages, it may be that RR plays a role in making the link across a clause boundary possible. If RR is partially (if not entirely) responsible for this long-distance ne-personne dependency, then it must be that the lack of clitic climbing in the environment in (i) in Modern French (cf. Kayne (1980; 1987)) should be understood in a different way (see Chapter 5; also cf. Appendix III of this Chapter).



The traces of personne in (19a,b and c) are properly governed by their antecedents or by their lexical governors except for the trace in (20d) and only (19d) is ungrammatical.

This ECP account is naturally extended to the ECP in terms of Huang's (1982) argument-adjunct asymmetry; when personne occurs within an adjunct, the sentence is ungrammatical, as in (21a), which contrasts with (21b).

- (21) a. ?\*Marie n'a voulu que je parte avant personne.  
 "Mary neg has wanted that I leave before nobody."  
 b. (?) Marie n'a voulu que je parle à personne.  
 "Marie neg has wanted that I speak to nobody."  
 (The grammaticality judgements are by P. Pica (p.c.))

The contrast shown in (21) would be explained if QR is not pied-piped (cf. May (1977)) and if the head of an adjunct is not a proper governor of the trace of its object in Hornstein and Weinberg's (1981) or in Kayne's (1981c) sense.

In Korean, in certain environments (i.e., non-Vx environments; Section 4.3.), the negative marker an- always occurs in the same clause as the negative quantifier amwu-to (a clause-mate requirement), as we see in the contrast between (22) and (23) (cf. (19)).<sup>13</sup>

- (22) a. na-nun [ amwu-to o-ci an-ass-ta-kol sayngkakha-n-ta  
 I-TOP nobody come-to not-past-em-comp think-pres-em  
 "I think that nobody neg came."  
 = "I think that there is nobody such that the person came."

---

<sup>13</sup> In an ECM environment, the ECMed amwu-to can be construed with an- in the matrix INFL, as shown in (i).

- (i) Chelswu-nun amwu-to ttokttokha-0-ta-ko sayngkakha-ci an-nun-ta  
 -TOP nobody intelligent-Inf-em-comp think-to not-pres-em  
 "Chelswu neg thinks nobody to be intelligent (Lit.)."

Note that (23a) is at most marginal. The sentence (23a) is ungrammatical probably because ECM in (23a) is also unacceptable; in (23a), the embedded clause has [+Tense] (past tense) and INFL[+Tense] does not trigger ECM in Korean.

- (ii) ?\* na-nun Chelswu-lul wa-ss-ta-ko sayngkakha-n-ta  
 I-TOP -obj come-past-em-comp think-pres-em  
 "I think Chelswu to (have) come (Lit.)." (cf. 23a)

- b. na-nun [Chelswu-ka amwu-to cohaha-ci an-nun-ta-ko] sayngkakha-n-ta  
 I-TOP -sub nobody like-to not-pres-em-comp think-pres-em  
 "I think that Chelswu neg likes nobody." = "I think that there is  
 nobody such that Chelswu likes the person."  
 (23) a.?\*na-nun [ amwu-to wa-ass-ta-ko] sayngkakha-ci an-nun-ta  
 I-TOP nobody come-past-em-comp think-to not-pres-em  
 "I neg think that nobody came."  
 b. \*na-nun [Chelswu-ka amwu-to cohaha-n-ta-ko] sayngkakha-ci an-nun-ta  
 I-TOP -sub nobody like-pres-em-comp think-to not-pres-em  
 "I neg think that Chelswu likes nobody."

Like the French ne, the negative marker an- in Korean seems to play the role of an overt scope marker, since amwu-to in (22) never has wide scope with an- in an embedded clause. Also, like the French personne, amwu-to shows argument-adjunct asymmetry, aside from the fact that the subject in Korean is properly governed (no subject-object asymmetry with respect to the ECP in Korean). That is, amwu-to can occur in any argument position (22a and b) or within locative or temporal PP's (24a and b) but not within causal PP's (24c).<sup>14</sup>

- (24) a. Chelswu-nun amwu-ttay-to o-ci an-ass-ta  
 -TOP no-time-at come-to not-past-em  
 "Chelswu did not come."  
 =/= "It is not the case that Chelswu came anytime."  
 b. Chelswu-nun amwu-kos-ey-to poi-ci an-nun-ta  
 -TOP no-place-at be-seen-to not-pres-em  
 "Chelswu neg is seen nowhere."  
 =/= "It is not the case that Chelswu is seen anywhere."  
 c.??\*Chelswu-nun amwu-iyu-ro-to wul-ci an-nun-ta  
 -TOP no-reason-for cry-to not-pres-em  
 =/= (1) "Chelswu neg cries for no reason."  
 =/= (2) "It is not the case that Chelswu cries for any reason."

---

<sup>14</sup> Without the particle -to, the sentence is grammatical with the interpretation (2) in (24c). Richard Kayne (p.c.) has pointed out to us that modality may affect the degree of grammaticality of the sentences in which a causal PP is wh-moved.

(i) ?For no reason, John would ever study linguistics.

(ii) \*For no reason, John studied linguistics.

(There are some idiolectal variations: According to Howard Lasnik (p.c.), (i) is worse than (ii).) Also consider the contrast between English and Korean in (17b) and the contrast between (iii) and (iv), which was much discussed in the early 70's:

(iii) \*Anyone came.

(iv) Anyone would come.

In Korean, such contrasts in (i-ii) and (iii-iv) are hard to detect.

The grammaticality of (24) is explained if QR applies to amwu-to in LF and if causal PPs but not temporal or locative PP's are adjuncts in Korean. We suggest that ECP is responsible for the ungrammaticality of (24c) in the following reasons: The trace of amwu-to is not properly governed because adjunct PPs are barriers (they are not L-marked) and because adjunct PP's do not contain proper governors for their objects. The ungrammaticality of (24c) especially confirms that QR is not pied-piped. If an adjunct (PP) containing a quantifier were QRed, (24c) would be grammatical because an antecedent would be able to govern its trace.<sup>15</sup>

Now we are ready to discuss an interaction between KRI and the scope of amwu-to. We saw that amwu-to and an- should occur in the same clause and that amwu-to has wide scope, as in (18c and 24a and b). When amwu-to is inverted in a simple clause, as shown below, the interpretation of the sentence does not change (the same is true of (24a and b)):

(18c') o-ci an-ass-ta, amwu-to  
 come-to not-past-em nobody  
 "Nobody came." = "There is nobody such that the person came."

However, when amwu-to is inverted long-distance, the interpretation of amwu-to changes in an interesting way: The clause-mate requirement apparently disappears. In the inverted version of (22) (= 25), the trace of amwu-to is in the same clause with an-, but amwu-to is not construed with an-.

(25) a.?\*na-nun [o-ci an-ass-ta-ko] sayngkakha-n-ta, amwu-to (cf. 22)  
 -TOP come-to not-past-em-comp think-pres-em nobody

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<sup>15</sup> The situation of (24c) corresponds to that of the following English sentences:

(i) \*?What reason did you buy it for?  
 (cf. For what reason did you buy it?)

Thus the existence of non-proper governor P's in adjunct PP's creates the same result as in (ii) (cf. 22 in Chomsky (1986b;22)).

(ii) \*How did Bill wonder [ who want [ t' to [ fix the car t ] ]]  
 t' is not properly governed because how is too 'far' to be an antecedent-governor.

- "I think that nobody neg came."
- b.?\*na-nun [Chelswu-ka cohaha-ci an-nun-ta-ko] sayngkakha-n-ta, amwu-to  
 -TOP -sub like-to not-pres-em-comp think-pres-em nobody  
 "I think that Chelswu neg likes nobody."

On the other hand, in the inverted version of (23) (= 26 below), the trace of amwu-to is not in the same clause as an-, but amwu-to is construed with an-, having only the wide scope reading.

- (26) a. na-nun [ wa-ss-ta-ko] sayngkakha-ci an-nun-ta, amwu-to  
 I-TOP come-past-em-comp think-to not-pres-em nobody  
 "I neg think that nobody came."  
 = "There is nobody such that I think the person came."  
 b. na-nun [Chelswu-ka cohaha-n-ta-ko] sayngkakha-ci an-nun-ta, amwu-to  
 I-TOP -sub like-pres-em-comp think-to not-pres-em nobody  
 "I neg think that Chelswu likes nobody."  
 = "There is nobody such that I think Chelswu likes the person."

The wide scope reading of the negative quantifier amwu-to in inverted sentences confirms the hypothesis that inversion is a syntactic scope-assignment process, which can be called IF(inversion focus)-movement (cf. Hungarian Focus movement (cf. Horvath (1986)).<sup>16</sup> Thus given the proper appearance of the scope marker an-, just as amwu-to has clause-bounded scope through QR (being a quantifier; cf. 22), so it has wide scope through inversion (cf. 18c' and 26).

If Korean rightward inversion is A-bar movement, an inverted element must move to a base-generated A-bar position on the right side of the sentence, as in (16a), as we suggested. However, if the Inversion Focus position has to be licensed by X-bar theory, one may suggest that Korean employs an X-head that can assign Focus, say, IF (cf. Section 4.4.), and that the Inversion Focus position is the SPEC of an IF projection, as shown in (16a'), which instantiates the case of amwu-to inversion:

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<sup>16</sup> Thus an inversion position is not the scope position of a wh-element (cf. 11; also cf. 43).



To explain this local linking between an inverted amwu-to and its scope marker an-, we suggest that the scope marker an- has the same index as a quantifier construed with it, and that an- should govern the amwu-to in the scope position. In other words, we suggest that the index of the quantifier construed with an- be licensed through the government of an- in order for the quantifier to have wide scope through inversion. We suggest that an- can govern across IF and C categories because IFP and IP are RRed across the CP category for a reason that a Focus/scope assigner/marker should be lexical, as we will discuss in Sections 4.1. and 4.4. (Note that we are suggesting that Inversion Focus is assigned by IF that determines the semantics of inversion Focus in Korean.)

Given the RR between I and IF, we can attribute the ungrammaticality of (25) to the scope licensing condition that amwu-to receives scope at LF only if the scope of amwu-to in an A-bar position are licensed through the government of its scope marker an-. The scope licensing condition also explains the ungrammaticality of (29).

- (29) \*na-nun [wa-ss-ta-ko Chelswu-ka mit-ci an-nun-ta-ko]  
 I-TOP come-past-em-come -sub believe-to not-em-comp  
 sayngkakha-n-ta, amwu-to  
 think-pres-em nobody  
 "I think that Chelswu neg believes that nobody came."

In (29), when the matrix clause does not contain an-, the sentence is not grammatical even though the second embedded clause contains an-.

Now, given the scope licensing condition, the clause-mate requirement that negative quantifiers and their scope markers (cf. 22 vs. 23) should appear in the same clause is explained if the scope licensing condition applies at LF: Suppose that QR moves either to VP or to IP in LF:

- (30) a. subject/object: [<sub>IP</sub> amwu-to<sub>i</sub> [<sub>IP</sub>.. t<sub>i</sub> .... INFL(an-<sub>i</sub>) ]]  
 b. object: [<sub>IP</sub> [<sub>VP</sub> amwu-to<sub>i</sub> [<sub>VP</sub> ..t<sub>i</sub>... ]]] INFL(an-<sub>i</sub>) ]

INFL should govern elements adjoined to VP and to IP in order that the quantifier amwu-to in (30a and b) are properly licensed by an-. The scope licensing condition provides evidence in favor of the narrow formulation of the Minimality Condition in Chomsky (1986;42), which roughly says that the bar-level projection which contains a head or a governor is a barrier:

- (31) a. A (narrower) formulation of the Minimality Condition:  
           a does not govern b in the following configuration if r is a  
           immediate projection of a zero-level category q excluding a.  
           .... a ... [<sub>x</sub> ... q .. b ... ]

b.     (...) [<sub>XP</sub> amwu-to<sub>i</sub> [<sub>XP</sub> .X(..)]. ). an<sub>i</sub>

Given (31a), the adjoined XP to VP does not come under the government domain of V<sup>17</sup> and therefore is open to an outside governor, i.e., an- in INFL (cf. 31b and 22) in the case of QR to VP; in the case of QR to IP, INFL governs an IP-adjoined position without any difficulties. If amwu-to and an- are not in the same clause, then the scope of amwu-to would not be governed by an-. The derivations of (23) in (32) are ungrammatical because an- cannot govern amwu-to in its IP or VP adjoined position.

- (32) a. \*[<sub>CP</sub> .... [<sub>CP</sub> [<sub>IP</sub> amwu-to<sub>i</sub> [<sub>IP</sub> .... t<sub>i</sub> .]]] INFL(an<sub>-i</sub>)...]  
       b. \*[<sub>IP</sub> amwu-to<sub>i</sub> [<sub>IP</sub> ... [<sub>CP</sub> .... t<sub>i</sub> .INFL(an<sub>-i</sub>)...] ... ]]

To summarize, the scope licensing condition that the scope marker an- should govern the quantifier construed with it explains both the clause-mate requirement and the requirement that an- should be in a matrix INFL with an inverted quantifier if the condition should hold at LF.

Consider the following sentences.

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<sup>17</sup> XP adjoined to VP is not governed under Chomsky's notion of government:  
 (i) a governs b iff a m-commands b and there is no x, x a barrier  
       for b, such that x excludes a.  
 (ii) a excludes b if no segments of a dominate b.  
 (iii) a m-commands b iff a does not dominate b and every x that  
       dominates a dominates b. (cf. Chomsky (1986b;8-9))

- (33) a.\*nay-ka [<sub>NP</sub> nathana-ss-ta-nun somwun]-lul tut-ci an-ass-ta, amwu-to  
 I-sub appear-past-em-comp rumor-obj hear-to not-past-em nobody  
 "I neg heard a rumor that nobody appeared (at the meeting)."  
 b.\*[o-ki-ceney] Chelswu-ka konghang-ey tochakha-ci-an-ass-ta, amwu-to  
 come-ing-before -sub airport-at arrive-to not-past-em nobody  
 "Chelswu neg arrived at the airport before nobody came."  
 c.\*Chelswu-ka kwaca-lul mek-ci an-ass-ta, amwu-to-uy  
 -sub cookie-obj eat-to not-past-em nobody-gen  
 "Chelswu neg ate nobody's cookie."  
 d.\*nay-ka mek-ci an-ass-ko ne-ka sakwa-lul mek-ess-ta, amwu-kes-to  
 I-sub eat-to not-past-and you-sub apple-obj eat-past-em nothing  
 "I neg ate nothing and you ate an apple."

Although an- appears in the matrix sentence, inverted amwu-to is not interpretable. Thus it seems that the LF scope licensing condition does not rule out the sentences in (33). Consider also the contrast in (23) and (26). Although the clause-mate requirement is not satisfied between an- and a variable position left by amwu-to in (23a and b), the inverted versions of (23a and b) -- (26a and b) -- are grammatical. The difference between (26) and (28) is that Subjacency is satisfied in (26) but not in (28). The data in (28) thus confirm that rightward inversion in Korean is subject to Subjacency and that the inversion data in (28) are ungrammatical because they violate Subjacency, although they satisfy the requirement that an- should be in a matrix INFL when a quantifier construed with it is inverted.

Let us thus suggest that the scope licensing by an- consist of the transmission of the index an- to the quantifiers construed with it and of index checking, which matches two indices derived by movement and index transmission. The licensed index of the quantifier is transmitted through the members of A-bar chains (a<sub>1</sub>,...a<sub>n</sub>) when the linking between a<sub>i</sub> and a<sub>i+1</sub> observes Subjacency. Then the data in (33) are ruled out because the index of an- is not transmitted to every member of A-bar chains (Subjacency effects).<sup>18</sup> The index transmission seems to have some explanatory powers.

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<sup>18</sup> A quantifier-like particle pakkey (only) in Korean also has the clause-mate requirement that a negative marker (mos- or an-) should appear in the



Note that the sentence in (34), in which amwu-to crosses two an-'s, is ungrammatical, although one of the two an-'s governs the inverted amwu-to.

- (34) a. \*Chelswu-nun [o-ci an-ass-ta-ko] sayngkakha-ci an-nun-ta, amwu-to  
 -TOP come-to not-past-em-comp think-to not-pres-em nobody  
 "Chelswu neg think that nobody neg came."  
 b. \*Chelswu-nun ku-ka cohaha-ci an-nun-ta-ko sayngkakha-ci  
 -TOP he-sub like-to not-pres-em-comp think-to  
an-nun-ta, amwu-to  
 not-pres-em nobody  
 "Chelswu neg think that he neg likes nobody."  
 c. \*.. t1<sub>1</sub>/, .. an .. t2<sub>1</sub> .. an, amwu-to

To explain the ungrammaticality of (34), we suggest that whenever an- governs any members of A-bar chains, the index transmission applies. Then

same clause as the particle, as shown in (i-ii).

- (i) Chelswu-nun han mwuncey-pakkey phwul-ci an-ass-ta  
 -TOP one problem-only solve-to not-past-em  
 "Chelswu neg solved only one problem."  
 (ii) \*na-nun Chelswu-ka han mwuncey-pakkey phwul-ess-ta-ko  
 I-TOP -sub one problem-only solve-past-em-comp  
 sayngkakha-ci an-nun-ta  
 think-to not-pres-em  
 "I neg think Chelswu solved only one problem."  
 NP-pakkey differs from amwu-to since inversion makes the sentence ungrammatical, as shown in (iii) and inversion does not improve (ii), as shown in (iv).  
 (iii) \*?Chelswu-nun phwul-ci an-ass-ta, han mwuncey-pakkey  
 -TOP solve-to not-past-em one problem-only  
 "Chelswu neg solved only one problem."  
 (iv) \*na-nun Chelswu-ka phwul-ess-ta-ko  
 I-TOP -sub solve-past-em-comp  
 sayngkakha-ci an-nun-ta, han mwuncey-pakkey  
 think-to not-pres-em one problem-only  
 "I neg think Chelswu solved only one problem."

Suppose a negative marker should be linked only with -pakkey but not with NP-pakkey. Then when NP-pakkey is inverted, it cannot license the scope of -pakkey as it licenses that of amwu-to since the trace left by inversion is that of NP-pakkey but not that of -pakkey. The grammaticality of (i) suggests that -pakkey, not NP-pakkey, is QRed. (Note, however, that if a negative marker mos- is used instead of an-, sentence (iii) improves; we have no insightful explanation for this.)

Note also that like amwu-to, when a matrix verb is Vx, the clause-mate requirement is apparently violated, as in (va), (cf. Section 3.4.) but the inverted version is also ungrammatical

- (v) a. Chelswu-nun han mwuncey-pakkey phwul-e po-ci an-ass-ta  
 -TOP one problem-only solve-Inf attempt-to not-past-em  
 "Chelswu neg attempted to solve only one problem."  
 b. \*Chelswu-nun phwul-e po-ci an-ass-ta han mwuncey-pakkey  
 -TOP solve-Inf attempt-to not-past-em one problem-only

the data (30a and b) are excluded because the index of the scope marker an- is transmitted to t<sub>1</sub> and therefore the A-bar chain contains a heterogeneous so that the A-bar chain is not properly interpreted at LF.

In sum, we have suggested that KRI is a scope assigning process obeying certain scope licensing conditions, like QR. We proposed LF scope licensing conditions as follows: (A) The quantifiers should be governed by the scope marker (an-) at LF and (B) the linking of the members of A-bar chains derived by KRI should observe Subadjacency.<sup>19</sup> LF scope licensing condition (A) was suggested to explain both the clause-mate requirement that a quantifier and its scope marker be in the same clause (QR) and the requirement that with an inverted quantifier, its scope marker lies in the matrix INFL (KRI). On the other hand, condition (B) explains that KRI obeys Subadjacency and that the members of an A-bar chain are uniquely linked through an index.

### A.3. Left/right-ward Focus movement and left/right-dislocation

At this point, one may ask whether Korean employs leftward 'Focus' movement, parallel to rightward IF-movement from the point of view of a

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<sup>19</sup> The scope licensing condition explains the ungrammaticality of (i) in which a scope marker is in an embedded clause while a wh-element is in a matrix clause.

(i) \*nwukwu-nun [Chelwu-ka khu-n-ci] cwungkwumha-0-ta  
 who-TOP -sub tall-pres-Q wonder-pres-em  
 \*"Who wonder whether(Q) Chelswu is tall."

Wh-phrases (nwukwu) and their scope markers (-ipnikka or -ci) are not linked by the clause-mate requirement.

(i) ne-nun [nwukwu-ka khu-0-ta-ko] sayngkakh<sub>a</sub>-0-pnikka  
 you-TOP who-sub tall-pres-em-comp think-pres-Q  
 "Who do you think is tall."

We suggest that while wh-phrases need to be governed by their scope markers in LF in order to have scope (because of the scope licensing condition), the links between the members of A-bar chains derived by LF-wh-movement do not observe Subadjacency, unlike those derived by QR or by KRI. We have no insightful explanation for this contrast between LF-wh-movement and QR (and KRI).



However, when a rightward dislocated XP contains caki, as in (35b), the sentence is ambiguous. The leftward dislocated sentences corresponding to (35) exhibit exactly the same binding relations as (35), as given in (36).

(36) left-dislocation of arguments:

- a.  $caki\{i, j\}$ -lul Chelswu<sub>i</sub>-ka [Yenghi<sub>j</sub>-ka cohaha-n-ta-ko]  
 self-obj -sub -sub like-pres-em-comp  
 sayngkakha-ess-ta  
 think-past-em  
 "Chelswu<sub>i</sub> thinks that Yenghi<sub>j</sub> likes self $\{i, j\}$ ."
- b.  $caki\{i, j\}$ -uy tongsayng-lul Chelswu<sub>i</sub>-ka [Yenghi<sub>j</sub>-ka  
 self-gen brother-obj -sub -sub  
 cohaha-n-ta-ko] sayngkakha-et-ta  
 like-pres-em-comp think-past-em  
 "Chelswu<sub>i</sub> thinks that Yenghi<sub>j</sub> likes self $\{i, j\}$ 's brother."

The binding facts in (35-36) suggest that they are derived by an identical process even though the direction of left dislocation of arguments and that of right dislocation of arguments differ. The interpretation of (35-6a) is, however, not predicted under an A-bar movement analysis or (under reconstruction).<sup>21</sup> The binding facts given in (35-36) are in fact found in the left-dislocation construction in English. The left-dislocation in English shows the same binding interpretation as that of (35-36), as shown in (37).

- (37) a.  $Him\{i, j\}^*$ , John<sub>i</sub> knows the fact that Bill<sub>j</sub> likes him $\{i, j\}^*$ .  
 b. [Picture<sub>s</sub> of {himself $\{i, j\}$ /him $\{i, j\}$ }]<sub>k</sub>, John<sub>i</sub> thinks Tom<sub>j</sub> likes them<sub>k</sub>.

In (37), in which a pronoun is left-dislocated, the pronoun can be coindexed with John (the matrix subject) but not Bill (the embedded subject), consistent with binding condition B; on the other hand, in (35-36) in which

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<sup>21</sup> Binding is not, however, always changed in sentences with dislocation of arguments. When a dislocated XP contains caki, as in (1), the sentence is ambiguous, like its non-dislocated counterpart.

(1)  $caki\{i, j\}$ -uy tongsayng-lul Chelswu<sub>i</sub>-ka [Yenghi<sub>j</sub>-ka cohaha-n-ta-ko]  
 self-gen brother-obj -sub -sub like-pres-em-comp  
 sayngkakha-et-ta  
 think-past-em  
 "Chelswu<sub>i</sub> thinks that Yenghi<sub>j</sub> likes self's $\{i, j\}$  brother."

The lack of change in binding in (1) is predicted whether or not (1) is derived by a syntactic process.

caki is pre or postposed, it can be bound by either subject as it is a long-distance anaphor. Thus we suggest that a mechanism governing left-dislocation also governs Korean left- or right-dislocation of arguments.

Based on the binding facts that are shared by Korean dislocation of arguments and English left-dislocation, we suggest that Korean dislocated sentences contain null resumptive pronouns, as given in (38a):

- (38) a. ([XP<sub>1</sub>]) [ ... [+pronominal](= [0])<sub>1</sub> ....] ([XP<sub>1</sub>]) - Korean  
 b. [XP<sub>1</sub>] [ ... [+pronominal] ... ] - English

In fact, Korean employs a null pronominal, whose binding properties are, descriptively speaking, both anaphoric and pronominal (cf. 39) as demonstrated in (40).<sup>22, 23</sup>

- (39) [0] is bound (like anaphors) and [0] is not bound by a clause-mate (like pronominals).

- (40) a. \*Chelswu<sub>1</sub>-uy emeni-ka [0]<sub>1</sub> cohaha-n-ta  
           -gen mother-sub like-pres-me  
           "Chelswu<sub>1</sub>'s mother likes [0]<sub>1</sub>."  
 b. \*Chelswu<sub>1</sub>-ka [0]<sub>1</sub> cohaha-n-ta  
           -sub like-pres-em "Chelswu likes [0]."

One difference between left-dislocations in English and Korean is that the left-dislocation in Korean exhibits island effects. For example, CNPC and wh-islands condition violations are illustrated below (also cf. 15 for rightward dislocation of arguments).

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<sup>22</sup> Since Korean [0] also has the anaphoric property that it must be bound, caki cannot be coreferential with Yenghi in (i), in which Yenghi does not bind [0].

(i) caki<sub>1</sub>/\*<sub>3</sub>}-lul, Chelswu<sub>1</sub>-nun [Yenghi<sub>3</sub>-uy tongsayng-ka [0]  
       self-obj -TOP -gen brother-sub  
       cohaha-n-ta-ko sayngkakha-n-ta  
       like-pres-em-comp think-pres-em  
       "self<sub>1</sub>/\*<sub>3</sub>}, Chelswu<sub>1</sub> thinks that Yenghi's<sub>3</sub> brother likes [0]<sub>1</sub>/\*<sub>3</sub>}.  
 However, the English counterpart is ambiguous since pronouns need not be bound in English.  
 (ii) Him<sub>1</sub>/\*<sub>3</sub>}, John<sub>1</sub> knows the fact that Bill<sub>3</sub>'s brother likes him<sub>1</sub>/\*<sub>3</sub>}.

<sup>23</sup> As for the question of how the binding property in (40) fits into binding condition B, we leave it open for further research.

- (41) a. \*holangi-ka [ Chelswu-ka [ maul-ey nathana-ss-ta-nun  
           tiger-sug                   -sub village-at appear-pass-em-comp  
           somwun-lul]   tul-ess-ta]  
           rumor-obj       hear-past-me  
           "A tiger, Chelswu heard the rumor that it appeared in the village."  
   b. ?\*kukes-lul [nay-ka [Chelswu-ka coaha-0-nun-cil kwungkwumha-0-ta  
           that-obj       -sub       -sub like-pres-comp-whether wonder-pres-em  
           "That one, I wonder whether Chelswu likes it."

Left/right-dislocation constructions are not usually sensitive to island constraints (cf. English left-dislocation): The data given in (15) (which can also be thought of as having been derived by right-dislocation) and (41) suggest that left/right-dislocation in Korean is sensitive to island constraints. It is not a peculiar property that only Korean left-dislocation possesses. In fact, Cinque (1984) convincingly shows that (clitic) left-dislocation in Italian obeys Subjacency: the relation between the dislocated phrase and the resumptive element in clitic left-dislocation in Italian is sensitive to island constraints. We suggest that left-dislocation must be parameterized with respect to the immunity to Subjacency. In both cases, Italian clitic left-dislocation and Korean left/right-dislocation involve empty categories: Italian resumptive pronouns are cliticized, leaving traces in A-positions and Korean employs null resumptive pronouns. (It seems that when left-dislocation involves empty categories, Subjacency effects are observed. However, we simply acknowledge that Subjacency effects suggest that a sort of movement is involved when empty elements appear in A-positions linked with left-dislocated elements. We leave open the mechanism governing left/right-dislocation (in Korean).)

If Korean dislocation of arguments is also derived by (a mechanism governing) left-dislocation (in English), the data illustrated in (5-7) and (12) should be reconsidered as right-dislocation data, rather than as KRI data derived by A-bar movement. In fact, the Italian clitic left-dislocation (CLD) described by Cinque (1984) have the properties in (42) that are



#### 4. Conclusion: adjunction versus substitution

So far, we have seen that the RRC is not universal by showing that rightward movement KRI may be successive-cyclic IF-movement, like move-wh. If the condition is not universal, is it language-specific? Under the restricted theory of UG, language-specific conditions are problematic and we prefer to have principles linked with conditions. Fortunately, there is evidence that the effects of the RRC can be attributed to something else. Consider (43-44) ((43-44a) from Soames and Perlmutter (1979) with modification).

- (44) a. I sent to your Aunt Hattie last Thursday right before the post offic closed the book that discusses the history of linguistics in America.  
 b. ??I sent to your Aunt Hattie for some reason the book that discusses the history of linguistics in America.
- (45) a. The ambassador made the claim yesterday at 5 p.m. at this conference before all the assembled delegates that world population has already outstripped the food supply.  
 b. ??The ambassador made the claim for some reason that world population has already outstripped the food supply.

The sentences in which an extraposed element crosses a causal PP tend to be worse than those in which an extraposed element crosses a locative and/or temporal PP. The contrast between (43-44a) and (43-441b) is explained neither by the RRC nor by Subjacency; we suggest that the rules subject to the RRC may be instantiations of syntactic adjunction to VP, creating A-positions (cf. Chapter 2), as in French (cf. Kayne and Pollock (1978)). The RRC is apparently observed in (44-45) since syntactic adjunction (as A-movement) may fail to be successive cyclic, as the Romance inversion suggests. If this suggestion is on the right track, we have no language-specific RRC. Instead we have two independently-motivated operations that govern rightward inversion cross-linguistically: one is syntactic adjunction that creates A-positions (cf. Chapter 2), as in the Romance languages



and in English, and the other is (successive-cyclic) SPEC-to-SPEC A-bar movement, as in Korean.

### APPENDIX III: 'NEG-RAISING' in English AND RR:

In Sections 3.3. and 3.4., we have seen certain 'restructuring' effects (V-to-V RR effects) triggered by a certain class of verbs in Italian and in Korean. If RR is transformational, then we predict that some 'restructuring' effects may also be observed in English. As Noam Chomsky (p.c.) has brought to our attention, a phenomenon called 'neg-raising' shown in (1) is worth examining from our point of view.

- (1) a. I do not think it is raining.  
b. I think it is not raining.

Consider first some facts on 'neg-raising.' According to Horn (1971), 'neg-raising' can apply in a limited class of predicates in English;<sup>1,2</sup> we have the following contrast between (2-3) and (4).<sup>3</sup>

- (2) a. Chauncey wants to not die until he has touched fair Hermione's lips again.  
b. Chauncey doesn't want to die until he has touched fair Hermione's lips again.  
(3) a. I believe you haven't remembered to button your fly in years.  
b. I don't believe you have remembered to button your fly in years.  
(4) a. \*Chauncey doesn't demand to die until he has touched fair Hermione's lips again.  
b. \*I don't claim you have remembered to button your fly in years.  
((1-3) in Horn (1971))

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<sup>1</sup> as James Higginbotham (p.c.) has also pointed out to us.

<sup>2</sup> Horn (1971;120) notes that 'neg-raising' is a minor rule applying to some predicates of opinion and expectation (ia) (with an addition of suppose), of intention (ib), and of perceptual approximation (ic).

(i) a. believe, think, imagine, anticipate, be likely, [suppose]  
b. want, intend, choose, feel like  
c. seem, appear

(expect or hope Horn classifies as 'neg-raising' predicate, may not trigger 'neg-raising' depending on idiolects (cf. Seuren (1974); R. Lakoff (1974)).) Horn (1971;121) also points out that the semantics of the same verb are also crucial factors of 'neg-raising:'. When the verb listed in (i) has a divergent senses (i.e., imagine ('conjecture up') or believe ('accept the claim that')), 'neg-raising' is not possible.

<sup>3</sup> Other facts concerning 'neg-raising' do not come under the scope of this study. See also Seuren (1974) and R. Lakoff (1974) in Seuren (1974;ed.).

In (2-3b), until and in years go with not but not in (4). Note that some verbs do not allow 'neg-raising' are control verbs, as we see in (4a). In fact, any known control (object or subject) verbs do not allow 'neg-raising.' (5 and 6a) are not derived from (5 and 6b) (they are not synonymous).

- (5) a. I do not decide to visit my friends.
- b. John did not persuade Mary to consult a doctor.
- (6) a. I decide not to visit my friends.
- b. John persuades Mary not to consult a doctor.

Putting aside the data in (1 and 3) for the time being, suppose, given this clause-bounded 'neg-raising' in (4-6), that 'neg-raising' is a syntactic process subject to Subjacency. Then, 'neg-raising' should be possible when the domain of 'neg-raising' is RRed, given the RR effects discussed in Section 3.3. A Subjacency effect is actually observed. Kiparsky and Kiparsky (1968;162) have pointed out that 'neg-raising' never applies in the factive sentences: (7 and 8a) are not obtained from (7b and 8b).<sup>4</sup>

- (7) a. \*It doesn't bother me that he will lift a finger until it's too late.
- b. It bothers me that he won't lift a finger until it's too late.
- (8) a. \*I don't regret that he can help doing things like that.
- b. I regret that he can't help doing things like that.

Suppose, further, assuming that not lies in INFL that is RRed with V in that clause (cf. Section 4.1.), that 'neg-raising' is possible because of V-to-V RR ('restructuring') as the verb want in (3) is usually considered as a 'restructuring' verb in some Romance languages. Then we can suggest that V-to-V RR applies in (2) but not (4-6); we reason that a negative marker of the s-head predicate (an embedded predicate) may move under the domain of the s-head predicate without changing the link between a negative

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<sup>4</sup> The negation of a matrix clause does not affect the presupposition of the embedded clause in a factive sentence (cf. Kiparsky and Kiparsky (1968;-150)).

(i) John doesn't regret that the door is closed.

marker and the s-head predicate. V-to-V RR must be optional in certain environments in English, since 'neg-raising' is optional, as in (2). If this reasoning is right, then the verb want in (3) must be either a control verb or a 'restructuring' verb in English.

It is now interesting to see that 'neg-raising' is found in the sentences with a certain class of auxiliary types of verbs, which select an infinitival complement, and which semantically correspond to the auxiliary predicates (Vx's) in Italian and Korean. In English, semantically-weak verbs (auxiliary types of verbs in English) require obligatory 'neg-raising.'<sup>5</sup>

- (9) a. Mario did not get to consider running for the presidency.
- b. \*Mario got not to consider running for the presidency.
- (10) a. John is not going to go to the beach in the winter.
- b. \*John is going not to go to the beach in the winter.

We can thus reason that the auxiliary predicates in (9-10) in English obligatorily trigger 'restructuring' (V-to-V RR) so that 'neg-raising' is obligatory.

Consistent with the so-far-observed cross-linguistic fact that the causative verb make and ECM verbs are usually not considered to trigger V-to-V RR (but cf. Section 4.2.), English causative and ECM constructions allow no 'neg-raising,' as shown in (11 and 12).

- (11) a. John did not make his brother run.
- b. John made his brother not run.
- (12) a. John did not believe his brother to run.
- b. John believed his brother not to run.

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<sup>5</sup> When (b) versions are marginally accepted, as in (i-ii), the two versions are not synonymous (Howard Lasnik (p.c.)). We suggest that (i-ii b) sentences marginally involve V-to-V RR; they are more like control sentences.

- (i) a. John does not come to understand this strange logic.
- b. ??John comes not to understand this strange logic.
- (ii) a. John is not able to kill a mouse.
- b. ??John is able not to kill a mouse.

The truth conditions of (11-12a) and (11-12b) clearly differ. Thus it seems that what we need for 'neg-raising' is V-to-V RR (if our reasoning is right) and having a small clause or an ECM clause is not a sufficient condition.<sup>6</sup>

If 'neg-raising' is obtained by a certain instantiation of RR (i.e., V-to-V RR), which we suggest is triggered by a matrix verb, we face the following problems: First, V-to-V RR, which takes place based on the semantics or Lexical properties of predicates, can apply even when embedded INFL is [+Tense], as in (1 and 3). Thus one can reasonably ask whether an RR approach to 'neg-raising' is the right direction to go in trying to understand 'neg-raising' since the RR data discussed so far involve INFL[-Tense] but not INFL[+Tense]. Second, there are some mismatches between the domains of clitic climbing and 'neg-raising' cross-linguistically. As we see in (11), 'neg-raising' is not possible in an environment in which clitic climbing is possible. In addition, clitic climbing is not possible across a tensed clause, unlike 'neg-raising' (cf. 1 and 3).

We are not ready to resolve these two questions in any detailed way at this point. However, if the general effect of RR is providing environments in which 'neg-raising' and clitic climbing are possible, we suspect that

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<sup>6</sup> Note that as Postal (1974) notices, a quantifier in an ECM environment (and also in the embedded subject position in a small clause environment) has only wide scope:

(i) a. I believe someone to have insulted Arthur.

b. There is someone who I believe insulted Arthur. ((42 and 43b) in Postal (1974;222))

If (as we argued in Section 4.1.) ECM in English is obtained by C-to-I (deep-overt) RR and by syntactic adjunction to an ECM predicate, then the obligatory wide scope reading of someone is explained since at S-structure, someone is in the matrix clause.

Although QR and 'neg-raising' are scope phenomena, since 'neg-raising' and QR are different processes, satisfying different conditions, ECM environments do not allow 'neg-raising' while they trigger the wide scope reading.

the domain of clitic climbing application and that of 'neg-raising' application partially overlap within the domain of V-to-V RR application: Two questions arise: What blocks 'neg-raising' in environments of clitic climbing (cf. 11)? and what blocks clitic climbing in environments of 'neg-raising' (cf. 1 and 3). To answer the first question, we tentatively suggest that 'neg-raising' is sensitive to non-RRed categories in such a way that neg should be governed by the s-head of a complex predicate derived by V-to-V RR. In other words, 'neg-raising' obeys not only Subjacency but also a more restricted locality condition that it cannot cross no X-heads that induce the MC. To answer the second question, we also tentatively suggest that in addition to Subjacency, a certain version of Tensed S Condition is operating in the cases of clitic climbing but not in the case of 'neg-raising.' This suggestion is not totally unreasonable since the property of cliticization is mostly understood in terms of binding A, which subsumes Tensed S Condition (cf. Kayne (1980)).<sup>7</sup> We thus reason that effects of V-to-V RR have been much more visible when RR crosses INFL[-Tense] than when it crosses INFL[+Tense] as INFL[+Tense] blocks clitic climbing that is considered as a typical 'restructuring' effect. If these suggestions are on the right track, then the domain of V-to-V RR application is much larger than we thought before and whether V-to-V RR can

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<sup>7</sup> Note that in French, the ne-personne link may also cross INFL[+Tense], as shown in (ib).

- (i) a. Pierre ne veut voir personne  
       "Peter neg wants to see nobody."  
       b. N'a-t-il voulu que je voie personne  
       "neg has he wanted that I see(SUBJ) nobody." ((48a and 45a) in Pica (1985))

If the long-distance dependency between ne and personne is triggered by RR, then we have another mismatch in French: the lack of clitic climbing in the domain of ne-personne long-distance dependency (cf. 1a). See Chapter 5 for our discussion on this mismatch based on Kayne's (1987) proposal on the correlation between clitic climbing and null subjects.

cross INFL[+Tense] is determined by matrix predicates.

## CHAPTER 4: SOME EMPIRICAL INSTANTIATIONS OF COMPLEX WORDS/CATEGORIES

### 4.0. Introduction

In this Chapter, based on the notions of RR and head-movement proposed in the preceding Chapter, we discuss some linguistic phenomena related to complex words and those related to change in string order or to node deletion. Some of these phenomena<sup>1</sup> have been much studied in various frameworks without RR; others have been explained in terms of head-substitutions<sup>2</sup> or node deletion/tree pruning. This Chapter thus applies the notions of RR and head-movement ((X-)head-to-(X-)head transformations), providing new understanding of those linguistic phenomena. First, in Section 4.1., we will suggest that the amalgamation between functional and functional/lexical categories (which we call F-L/F-F amalgamation; e.g., INFL-V and C-INFL amalgamation) is derived by RR but not by head-movement. We show that F-L/F-to-F RR is, in fact, responsible for various phenomena including Aux-inversion, the AUX-to-COMP phenomenon (cf. Rizzi (1982)), V-second order in Germanic languages, the ACC-ing construction, and whiz-deletion. In Sections 4.2 and 4.3., we examine passive and causative constructions in various languages to show that they are instantiations of complex predicates: M-, M/R- or R-complex predicates. Finally, in Section 4.4., we will show that overt RR triggers a nonconfigurational phenomenon

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<sup>1</sup> Passive and causative constructions, ECM construction, inflectional morphology, psych-verb construction, etc..

<sup>2</sup> Aux-to-COMP phenomenon in Italian (cf. Rizzi (1982; ch. 3)) and V-2 phenomenon.



in Hale's (1983) sense -- scrambling --, giving rise to surface or deep configurationality depending on the levels of overt RR application.

The discussion of this Chapter will lead to a strong version of the 'autonomy thesis of syntax', which states that a syntactic component operates independently of semantics, long assumed in the transformational tradition (syntactically based model of grammar; cf. Chomsky (1965)). The discussion will also lead to another form of the autonomy thesis of syntax (which states that a syntactic component operates independently of morphology; cf. Chapter 5).

#### 4.1. F-L/F-F amalgamation

In this Section, we discuss inflectional morphology and various constructions with the amalgamation of functional categories (between functional elements and lexical elements (F-L) or between functional elements and functional elements (F-F)). These constructions have been previously discussed in terms of head-substitution or node-deletion. We suggest that all the possible instantiations of F-L or F-F amalgamation are derived by covert or overt RR, concluding that functional categories are not targets of head-movement. Therefore, complex words are derived by RR if they consist of one or less predicate (or lexical head) (cf. Section 4.4.), while they are derived by either RR or head-movement if they consist of more than one predicate (or lexical head) (cf. Sections 4.2. and 4.3.).

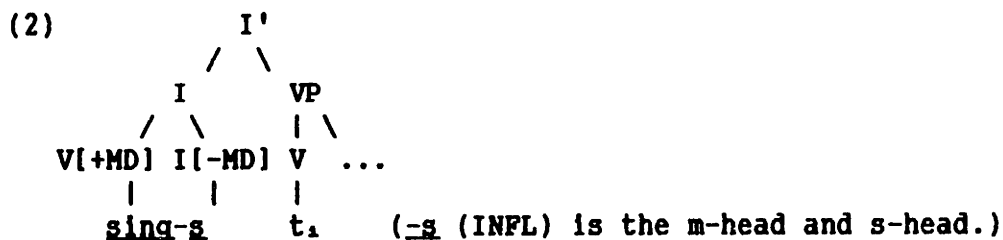
##### 4.1.1. V/I amalgamation: I-to-V RR

Most languages show some degree of morphological amalgamation of INFL and V (as shown in (1a)), unless INFL is filled with auxiliary elements

(1b) (such as modals<sup>3</sup> or be or have in English (cf. Chomsky (1957)), which we will call Vaux hereafter).<sup>4</sup>

- (1) a. John {sings/sang}.  
b. John {will sing/has sung/is singing/has been singing/...}.

Under the current theoretical framework,<sup>5</sup> two questions arise: When does V/I amalgamation take place and what process is responsible for that amalgamation? Suppose, based on morpheme order, that V-to-I head-movement derives V/I amalgamation, triggering V-I morpheme order.



Then, V[+MD] moves to INFL only when V is not filled by Vaux (or by modals) since sing-{will/is/has} is not acceptable.<sup>6</sup>

<sup>3</sup> Following Chomsky (1981;140, fn.28), we will assume that modals may be in INFL.

<sup>4</sup> Notice that we do not exclude the possibility that the (inflected) Vaux (and perhaps modals as well) in (1b) are auxiliary predicates ([+CD]) along the lines of Ross (1969), who argues that auxiliary elements are base-generated as main verbs. If Vaux is an auxiliary predicate, then has or is in (1b) also results from V/I amalgamation, like sings. For expository purposes, we will assume that Vaux are in the same state as the auxiliary verb do, appearing in INFL node. See also fn. 9 in Section 4.3..

<sup>5</sup> in which a version of the weak lexicalist position is adopted in that INFL is an X-head.

<sup>6</sup> Remember that the feature [+MD] triggers head-movement (V-to-I movement), while the feature [-MD] does not and that head-movement is subject to trace theory (no lowering) and to a version of the HMC (cf. Chapter 5). One may also suggest that V-to-I head-movement applies when I is [+affix] (as noted by Noam Chomsky (p.c.)). Under this approach, it can be said that caus-V amalgamation in languages such as Chichewa is triggered when a matrix V (caus) is affixal (as Alec Marantz has also pointed out). This approach is conceivable under the framework with the theory of 'move anything anywhere': any head can move anywhere but the target is [+affix] for some morphological reasons.

We, however, maintain the trigger-based approach with the feature [+MD] under the licensing theory of transformation: movement applies when

In fact, in Chomsky (1986b), V/I amalgamation is obtained in terms of V-to-I head movement. Let us consider the theoretical interpretation of V/I amalgamation in Chomsky (1986b). In the Barriers framework (cf. Chomsky (1986b)), VP is a barrier. Even though I theta-marks VP, because I is not lexical, I does not L-mark VP (cf. Chapter 1). Thus V-to-I head-movement would be blocked by a non-L-marked VP, given the Head Movement Constraint (the HMC).<sup>7</sup> However, in order to have V/I amalgamation in terms of head-movement, Chomsky (1986b) suggests that after V moves to I to form V<sub>I</sub>, INFL(V<sub>I</sub>) is no longer nonlexical so that it L-marks VP. For this reason, V-to-I head-movement satisfies the HMC. If the HMC (which is understood as a special case of the ECP) represents an LF principle (cf. Kayne (1981b) and Huang (1982)), then this logic is valid only if V/I amalgamation is not a PF phenomenon.

V/I amalgamation may, however, be a PF phenomenon in English. The VP-

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an element lacks a licensing property in its base-generated position. We suggest that when I is filled by a modal, which means that it does not take a morphological dependent (I is taken) and that the target of head-movement is not available, an of-insertion type of mechanism is employed to satisfy the morphological dependency of V: V, which is always [+MD], is supported by the null auxiliary do so that V is morphologically closed. Whenever heads are [+MD], either they move to target heads through head-movement or grammar employs morpheme insertion to support their morphological dependency. Note that A-movement is obtained for a Case reason but when A-movement is not possible, of-insertion is employed. (See also fn. 9 in Section 4.3 for some discussion on be-en, have-en and be-ing cases.)

Remember that the V of caus-V is actually a CIV R- or M/R-complex word (cf. the syntactic position in Section 3.1.). We can thus attribute the possibility of V-to-caus movement to whether C or I in certain languages can make V morphologically-closed (we are assuming that CIV, but not V alone, moves; cf. the Lexical Integrity Hypothesis; Lapointe (1981); Selkirk (1982)): When CIV is morphologically closed, CIV-to-caus movement is not motivated; when CIV is not, CIV-to-caus is motivated.

<sup>7</sup> See Travis (1984;131) and Chomsky (1986b;71). But also see Chapter 5 for our formulation of the HMC.

movement in (3) suggests that V/I amalgamation in English should apply after the application of VP-preposing.\*

- (3) a. [<sub>VP</sub> Go to New York] John [<sub>I</sub> did].  
 b. It is [<sub>VP</sub> sing and dance] that John always [<sub>I</sub> does].

And V and I can be separated in interrogative clauses, as in {Does/Did} John sing?. Thus, V/I amalgamation should apply after an interrogative process takes place, and V/I amalgamation in English is a PF phenomenon since INFL can appear independently of V in syntax, as in (3).<sup>9</sup>

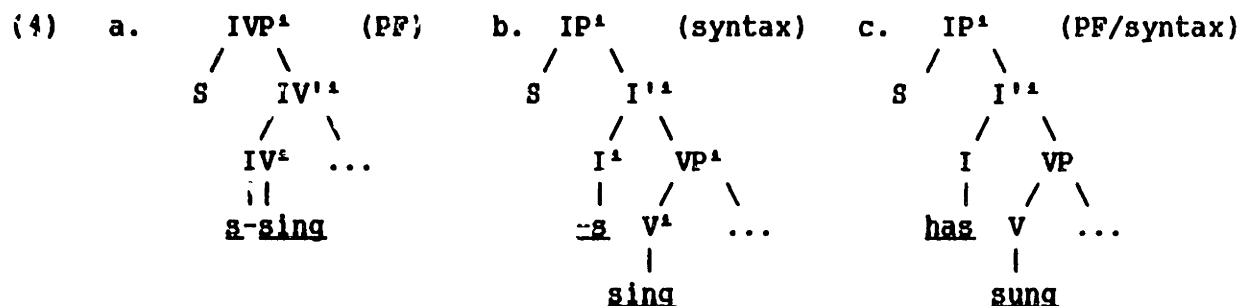
Even if V-to-I head-movement is descriptively adequate, it raises a conceptual problem in the present framework: If V-to-I head-movement applies, I, rather than V, becomes the (s-)head of V/I. However, V, rather than I, is more like the (s-)head, since V is semantically richer than I (cf. the semantics of V<sub>x</sub> and V<sub>k</sub> in Chapter 3). In fact, intuitively, it seems that I and V are not simply linked by morphological amalgamation. To avoid this problem, let us suggest that V/I amalgamation derives from overt RR. Then, INFL is [+CD] and [-MD] and categorially dependent on V, which is [+MD], triggering I-to-V RR (in syntax). Since I-to-V RR is independent of V-to-I head-movement, which is caused by the feature [+MD], the levels of rule application may differ in the following way: RR applies at D-structure/in syntax but morphological amalgamation takes place in the PF component. In other words, V[+MD] moves to I through head-movement in the PF component as long as I is not taken by Vaux or by a modal, while I-to-V RR

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\* If VP-preposing is a PF phenomenon as Noam Chomsky (p.c.; class lectures, 1987, Fall) notes, then VI amalgamation should also be a PF phenomenon.

\* Under a V-to-I head movement approach, this conclusion also suggests that do-support is also a surface phenomenon since do-support in syntax in the case of (1a) would block V/I amalgamation at the surface. Below, under an I-to-V RR approach with a certain assumption, we will suggest in subsection 4.1.3. that do-support applies in syntax.

takes place in syntax. Therefore, I-to-V RR may be either surface-overt (4a and b) or covert (4c), depending on the nature of INFL.



Thus in syntax the VP node is always available (cf. 4b and c) but in the PF component, based on morphological considerations, structure can differ (cf. 4a and c).

There is more evidence that I-to-V RR is surface-overt. If the output of overt RR in syntax preserves at LF as we assume, then no VP adjunction would be possible if RR is deep-overt. If adjunction to VP (QR) applies in the LF component, as May (1985) suggests (also, cf. Koopman and Sportiche (1982)), then I-to-V RR must be covert in syntax. Second, I-to-V RR should be covert in syntax in order for INFL to assign NOM. (Note that an IV<sup>1</sup> M/R-complex words would assign ACC but not NOM in syntax.) To conclude, I-to-V RR seems to be surface-overt in English. Remember also that in Section 3.1., we showed that IV amalgamation is a PF phenomenon in Korean (which means that I-to-V surface-overt RR applies in Korean also if I-to-V RR is universal, as we will in fact suggest below).

This RR approach causes no conceptual problem since V ([-CD]) is the s-head of an I-V complex word. There are also a number of advantages in having an I-V link in terms of RR. First, we can explain plausibly why a logical subject, which is selected by V, can be generated outside of VP. We suggest that the logical subject lies within the projection of a category (IP) that is categorially dependent upon V so that V is accessible

to elements within the IP projection. In fact, VP node without a logical subject is well-motivated both syntactically and semantically: logical subject theta roles are compositional (cf. Marantz (1984)) and transformations may refer to VP node. If INFL is a necessary element of a clause, as seems to be the case, and if logical subject theta-roles are compositional, then I-to-V RR is a natural way to extend the theta-domain of V.

Second, INFL, which is not lexical in Chomsky's (1981) sense, is widely assumed to have a lexical feature [+V]. We have assumed that in the case of morphological amalgamation, categorial features are percolated according to the categorial feature percolation conventions (= the CFPCs; cf. head-movement effects; Chapter 3). Suppose that RR, overt or covert, also triggers the percolation of categorial features (we will, in fact, suggest that in the case of covert RR, non-s-head behaves like the m-head with respect to the feature percolation conventions (cf. Appendix of Section 4.2)). Then INFL (the m-head) will obtain [+V] from V through the (categorial) feature percolation convention II, given below, (cf. Chapters 2 and 3 for the convention I) if nonlexical INFL does not have the feature [+V] in the Lexicon.

- (5) Categorial Feature Percolation Convention II (the CFPC II):  
When an m-head (affix) is unspecified for the value of some feature, that feature of the non-m-head percolates to become the value for the combination of non-m-head plus m-head. (cf. Lieber (1981); Marantz (1984))

Because of (5), if INFL has the feature [+1], then I-V R- or M/R-complex X-heads will be [+V,+1]. We assume that this obtained [+V] of INFL does not make INFL a lexical head since [+V] represents a formal property of INFL but not a deep property of INFL, as we suggested in Chapter 3.<sup>10</sup>

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<sup>10</sup> Whether INFL[+V] behaves like a lexical X-head is another question.

Third, we can eliminate the assumption that the HMC applies in the PF component (also cf. Chapter 5). V-to-I head-movement in the PF component need not be subject to the HMC because I-V is always accompanied by categorial amalgamation (RR); therefore the trace of V-head is not left behind since I projection becomes parasitic to V projection, forming an I-V complex X-head. In fact, empirically speaking, no head-movement applies in the PF component, without being accompanied by RR (cf. Chapter 3 and Section 4.4.).

There are also some theoretical advantages to the I-to-V RR analysis. In the Barriers framework, IP, which is non-L-marked, behaves differently from other non-L-marked categories with respect to the notion of barrier (cf. Chapter 1): IP is a defective category in that IP does not behave like an inherent barrier although it is not L-marked (and therefore could be a BC (an inherent barrier). Non-L-marked IP (potential inherent barrier) does not behave like an inherent barrier, as we see in the following data.

(6) [<sub>CP</sub> Who<sub>i</sub> [<sub>IP</sub> <sup>t<sub>i</sub></sup> [<sub>I</sub> (has) ] [<sub>VP</sub> <sup>left</sup> ]]]

In (6), the movement from t to the SPEC of CP is legitimate only if who antecedent-governs its trace because of the ECP (cf. Chomsky (1981; 1986b); Lasnik and Saito (1984)) since the subject position is not properly governed in English. The grammaticality of (6) thus suggests that who governs its trace across IP and that IP is not a barrier.

The Barriers framework stipulates that IP is not a BC (inherent barrier) although it is not L-marked. This stipulation is not necessary here since I, being [+CD], is categorially defective. In fact, in Chapter 3, we suggested, by examining the 'restructuring' construction in Italian and Korean, that the projection of a [+CD] X-head (trigger) is categorially linked with the projection of a [-CD] X-head (target) in such a way that

[+CD] X-heads are not barriers in the domain of RR. Thus the [+CD] X-heads are not visible with respect to clitic climbing in Romance languages and with respect to the dependency between a quantifier and the scope marker construed with it in Korean. In other words, the defectiveness of IP is naturally explained on more general grounds: IP (which is not L-marked) is not a barrier since it is the projection of a [+CD] category. In the Barriers framework, IP is defective in another respect: I does not induce the MC: I does not block outside government, as in (6) or in ECM environments.<sup>11</sup> I-to-V RR derives this defective nature of IP since as we have also seen in Chapter 3 (cf. Appendix II), and as we will see in the following Sections, [+CD] X-heads do not induce the MC.

At this point, let us clarify what we mean when we say that [+CD] X-heads are not barriers. In Chapter 2, we suggested that categorial dependency is obtained in terms of a trigger-target relation, determined by the categorial dependency subcategorizations of trigger X-heads. Thus we suggest that the notion of inherent barrier also refers to a trigger-target relation: When  $X_1$  is a trigger of RR and  $X_n$  a target of RR,  $X_1 \dots X_n$  forms a complex X-head (forming an R-complex word). When an R-complex word is composed of  $X_1^1, \dots, X_n^1$  in which X is any minimal category and  $0 < n$ ,  $X_1^1$  is neither a simplex nor complex X-head.<sup>12</sup> Let us further suggest that a projection of a complex X-head is L-marked when a projection of its s-head X-head is L-marked and that a projection of a complex X-head is not L-marked when the projection of its s-head X-head is not L-marked. In this

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<sup>11</sup> It is assumed that to be is not a governor, but nothing prevents to be (INFL) from inducing the MC under the present understanding of functional X-heads.

<sup>12</sup> Remember that a simplex X-head consists of one X-head and a complex X-head consists of more than one X-head, linked together by covert or overt RR.





thus revise the notion of barrier in Chomsky (1986b) in the following way,<sup>13</sup> leaving the notion of inheritance intact.

- (8) barrier:  $x$  is a barrier for  $y$  iff (a) or (b):
- a.  $x$  immediately dominates  $y$ ,  $y$  a BC for  $y$  (inheritance)
  - b.  $x$  is a BC for  $y$  (inherence)
- BC:  $x$  is a BC for  $y$  iff
- (i)  $x$  is not L-marked,
  - (ii)  $x$  is a simplex or complex X-head projection and
  - (iii)  $x$  r-dominates  $y$
- r-domination:  $x$  r-dominates  $y$  iff every  $[aCD]$  X-head projection (linked by an instantiation of RR) that dominates  $a$  dominates  $y$ ; a simplex X-head projection has only one instantiation of an X-head projection with the feature  $[-CD]$ , i.e., itself.

Under (8), since I is neither a simplex nor a complex X-head, it is not an inherent barrier in the configuration of (7). IP does not become an inherent barrier for an element within IP since IP is neither a complex nor a simplex X-head and therefore it is not an BC (because of (8ii)). For this reason, the movement in (6) is legitimate.

There is some evidence that IP, which is neither a simplex nor a complex X-head projection, becomes a barrier by inheritance. In fact, IP is not defective with respect to inheritance: In Chomsky (1986b), some CED effects (as Subjacency effects) are explained in terms of the inherited barrierhood of the IP category.<sup>14,15</sup>

- (9) a. \*Who did [<sub>IP</sub> they leave [<sub>CP</sub> before speaking to t ]]  
 b. \*Who [<sub>IP</sub> are [<sub>NP</sub> pictures of t ] on the table.] (cf. Chomsky (1986b;31))

<sup>13</sup> Compare (8) with the notion of barrier in Chomsky (1986b;14)

(i)  $x$  is a BC for  $y$  iff  $x$  is not L-marked and  $x$  dominates  $y$ .

(ii)  $x$  is a barrier for  $y$  iff (a) or (b):

a.  $x$  immediately dominates  $y$ ,  $y$  a BC for  $y$ ;

b.  $x$  is a BC for  $y$ ,  $x \neq IP$ .

<sup>14</sup> We will suggest in subsection 4.1.3. that the structure of (9a) is actually as follows:

(i) [<sub>CP</sub> Who [<sub>CP</sub> did they [<sub>VP</sub> leave ....]]]

<sup>15</sup> Thanks to Howard Lasnik (p.c.) for bringing our attention to this point.

In (9), who moves across IP and CP or NP and IP (if operators move to VP) and the sentences are considered as ungrammatical. CP and NP are inherent barriers because they are not L-marked but IP is not an inherent barrier because it is [+CD]. If IP is not a barrier in (9), (9) would not violate Subjacency because movement crosses only one barrier. It thus seems that the inherited barrierhood of IP causes the sentences in (9) to violate Subjacency. Note that although IP can be an inherited barrier through (8a), it cannot inherit barrierhood: There is evidence that IP cannot trigger barrierhood by inheritance. Consider the case of VP-movement. If VP-movement is an A-bar movement, given that long distance VP-movement is possible (Chomsky (1986b);20)), it should obey Subjacency.

(10) Fix the car, I wonder [<sub>CP</sub> whether [<sub>IP</sub> he {did/will}]]. (cf. Chomsky (1986b;20))

In (10), VP-preposing is allowed across CP and IP. CP (L-marked) would be a barrier by inheritance if IP were a BC; VP-preposing would then cross two barriers, violating Subjacency (and the ECP). However, the grammaticality of (10) suggests that IP fails to inherit barrierhood to CP so that CP fails to be an inherited barrier.

Thus (8a) explains (9) without further modifications under an assumption that IP does not induce inherited barrierhood (cf. 10). Note that the notion of inherited barrier as formulated in (8a) does not block IP ([+CD] category) from being a barrier by inheritance since an inherited barrier does not need to be a BC by definition. CP in (9a) is a BC, being an adjunct, and IP inherits a barrierhood from CP (through (8a)). NP in (9b) is a BC, being a subject, and IP inherits barrierhood from NP (through (8a)).<sup>16</sup> Consider also the following wh-island violations: In (11a), wh-

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<sup>16</sup> If N is not a proper governor (cf. Chomsky (1981)) or if antecedent government is a necessary condition (cf. Kayne (1981c); Chomsky (1986b)),

element what moves to the VP first, then it moves to a matrix VP across VP, but CP is not a BC so that it does not trigger barrierhood by inheritance. Thus the present approach suggests that the following sentences do not violate Subjacency.<sup>17</sup>

- (11) a. what do you wonder [<sub>CP</sub> who saw t ]  
       b. [to whom]<sub>i</sub> did you wonder [<sub>CP</sub> what<sub>j</sub> John [<sub>VP</sub> gave t<sub>j</sub> t<sub>i</sub> ]]  
 (12) a. which car did John tell you (how to fix t)  
       b. which car did he wonder [whether to fix] ((105), (84) and (79) in Chomsky (1986b))

At this point, note that I and V are linked in terms of categorial dependency, independently of morphological amalgamation. Head-movement is motivated by purely morphological reasons and does not affect categorial (in)dependency. We predict that the categorial dependency between I and V can be found even when I contains a modal. In fact, this prediction is borne out, as (6) and (10) demonstrate. In (6) and (10), modals or Vaux's do not block IP from being defective. Thus, it is clear that morphological amalgamation itself is not responsible for the IP category defectiveness with respect to the notion of inherent barrier. Whether or not INFL contains a modal or Vaux, IP is defective, suggesting that the I-V link is not basically motivated by a morphological reason but by the categorial dependency between I and V (I-to-V RR).

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(9b) is also an ECP violation (if who should move to the SPEC of CP directly).

<sup>17</sup> However, if there is no barrier between what and its trace in the configuration in (11a) for example, then the following ECP violations are not explained, since how can antecedent-govern its trace.

- (1) a. \*how do you wonder [<sub>CP</sub> who fixed the car t ]  
       b. \*how do you wonder [whether to fix the car t] ((107) and (111) in Chomsky (1986b))

However, we may assume, along the lines of Rizzi (1987), that who or whether induces the MC in the case of antecedent-government. It should be noted that some modifications may be necessary depending on the understanding of the data that violate the wh-island condition, including (11) and (12).

The notion of government also seems to refer to a trigger-target relation and to the notions of simplex and complex X-heads: As we see in (5), I, which is neither a simplex nor a complex X-head, does not induce the MC. Nevertheless, C induces the MC, as we see below:

(13) \*Who do you think [ t that [ t left]].

The C that induces the MC so that the trace in C does not antecedent-govern the trace within IP and therefore (13) violates the ECP.<sup>1\*</sup> Given this difference between C and I, we generalize that in the domain of an instantiation of RR, the [-CD] X-head governs any elements that [+CD] X-heads govern because [+CD] X-heads do not induce the MC and their projections are not barriers. In other words, the projection of any member of a complex X-head is ignored with respect to the governing domain of any member of a complex X-head.

We thus formulate the notions of government and m-command in terms of the notions of simplex and complex X-heads,<sup>1\*</sup> since, as we have seen in Chapter 3, a member of a complex X-head does not induce the MC:

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<sup>1\*</sup> This approach suggests that in the following case, C-to-I RR applies in English when C is null. We will open specific empirical implications here.  
(i) Who do you think [<sub>CP</sub> t [<sub>IP</sub> t left]].

<sup>1\*</sup> The notion of government (defined in terms of the notion of m-command) refers to both the maximalhood of a node and the categorial dependency of a node. The notion of c-command does not refer to the maximalhood of nodes. There is also no clear evidence to suggest that the notion of c-command refers to the categorial dependency of a node. Here, we suggest that the notion of c-command is purely structural in that it does not refer to defectiveness or maximalhood of a node as long as categorial dependency is not accompanied by morphological amalgamation in syntax. When we have CIVP projection, as below, S and O possess the same status with respect to the notion of c-command: they c-command each other (cf. Section 4.4.).

(i)

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      CIVP
     /  \
  SPEC  CIV'
     / | \
    CIV S  O
  
```

(14) government:  $a$  governs  $b$  if  $a$  m-commands  $b$  and (i) there is no barrier between  $a$  and  $b$  or (ii)  $b$  is not protected by a simplex or complex X-head.

m-command:  $a$  m-commands  $b$  if and only if  $a$  does not dominate  $b$  and every  $x$  that dominates  $a$  dominates  $b$ .

Given the above formulation of the notion of government, in the two domains of categorial dependency that are not coindexed by RR, the government domain of  $X_n^1$  below properly includes the projection of  $X_{i+1}^1$  but not that of  $X_{i-1}^1$  or of  $X_i^1$ . Even if  $X_i^1$  and  $X_{i+1}^1$  lie adjacent to each other,  $[+CD]_i$  does not play a role within the domain of  $[+/-CD]_j$

(15)  $X_1^1 \dots X_i^1, X_{i+1}^1, \dots X_n^1$   
 $\begin{array}{ccccccc} | & & | & & | & & | \\ [+CD]_i & [-CD]_i & [+CD]_j & & [-CD]_j & & \end{array}$  where  $X_i$  governs  $X_{i+1}$

Under (14), since  $I$  is neither a simplex nor a complex X-head,  $I$  does not induce the MC (14ii). The defectiveness of  $IP^{20}$  with respect to the notion of government (especially with respect to the MC) is thus explained on more general principled grounds.

In sum, I-to-V RR explains the defectiveness of the IP category on more general grounds (without stipulating it), and the fundamental link between  $I$  and  $V$  ( $I$  depends categorially upon  $V$  in order for  $IP$  to be the domain of the theta-structure of  $V$ ). Based on these theoretical and conceptual advantages, we suggest that  $I$  and  $V$  are linked by RR (which may

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<sup>20</sup> One more defect of  $IP$  in the Barriers framework is that  $IP$  is not a landing site of syntactic operator-adjunction, unlike  $VP$ , which is a landing site of syntactic operator-adjunction (cf. Chomsky (1986b;32)). We do not expect this defective aspect of  $IP$  since the structure of a  $[+CD]$  X-head projection remains intact as long as that  $[+CD]$  X-head does not form an M/R-complex X-head with another X-head in syntax. In fact, since LF-IP-adjunction (QR) is allowed, the idea that  $IP$  is not a landing site of adjunction in syntax is rather dubious. We suggest without argument that there is no syntactic operator-adjunction that creates A-bar positions but that  $VP$  contains a SPEC position that serves as an escape hatch of operator movement. This assumption necessarily leads to another assumption that the  $VP$  is not a barrier for an element in the SPEC of the  $VP$  or more generally that the  $XP$  is not a barrier for an element in the SPEC of the  $XP$ . If so, this defective aspect of  $IP$  would not arise.

be accompanied by head-movement in the PF component) in certain cases (cf. (4)).

The suggestion that I-V amalgamation is derived by surface-overt RR, however, contradicts the generalization that the morpheme order of M/R-complex words preserves string order (the string-preserving property of RR). There are two solutions to this dilemma. One suggests that some language-specific or universal morphological principles override the morpheme order imposed by RR when functional elements are involved. When I-to-V overt RR applies, I may lie on the right side of V, INFL being the m-head, (an effect of the RHR in English).

- (16)           IV<sup>1</sup>  
              |  
          [[sing]-s] (I is [+CD] and [-MD])

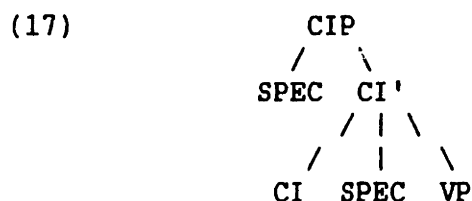
This assumption is not unreasonable since INFL is realized in various ways cross-linguistically. Agreement elements (or tense elements) may appear on both sides of V in languages such as Berber, Arabic languages, Navajo, or Winnebago, etc. (forming prefixes, affixes or even infixes); agreement elements may be ubiquitous or duplicative in languages such as Korean (cf. Chapter 3).

Another solution suggests that surface-overt RR, in which head-movement applies in the PF component, while RR applies at D-structure or in syntax, does not prevent morphological principles from determining morpheme order (the RHR overrides the string-preserving property of RR in the case of surface-overt RR). This suggestion can be easily discarded. As we will see in subsection 4.1.3., in languages with deep-overt I-to-V RR, INFL elements also appear on the right side of V. Thus we suggest that the morpheme order of M/R-complex words with functional X-heads does not overtly exhibit the string-preserving property of RR for some morphological

reasons related to functional heads. (Remember that all the data observing the string-preserving property of RR or the RHR (cf. Chapter 3) involve V/V or V/V amalgamation.) In other words, the string-preserving property of RR and the RHR of head-movement strictly hold only when head-to-head transformation applies between (CI)V and N categories, which we can call cyclic X-heads. After all, morpheme order is diagnostic in that it indicates whether complex words are derived by RR or by head-movement when N and V categories are involved in head-initial languages. When X-heads other than N or V are involved or when amalgamation takes place in head-final languages, morpheme order does not reflect syntactic derivations. However, given the RR and head-movement effects, the syntax, morphology, and semantics of complex words remain intact regardless of the variation of morpheme order and indicate whether the complex words are derived by RR or by head-movement.

#### 4.1.2. C-to-I RR and Aux-to-COMP movement (Rizzi (1982; ch.3))

As we saw, I-to-V (surface-overt) RR does not trigger any significant change in word order. However, when C-to-I overt RR applies, the change in order between INFL and the subject should be observed, as shown below.



Such change is, in fact, found in certain environments in Romance languages (cf. Aux-to-COMP in Italian and Portuguese but not in French), in matrix clauses in V-2 languages (such as Germanic and Scandinavian languages), and in the matrix question sentences in English (Aux-inversion).



The literature suggests that V-2 order and Aux-inversion may be derived by I/V-to-C head-substitution, partly because when C is filled by a phonetically overt element, I-to-C does not apply, as we discussed in Chapter 2. The notion of X-head in the present framework, however, does not allow head-substitution: X-heads dominate a bundle of features (heads) and do not have empty positions for other heads (cf. the projection principle on X-heads and the theta-criterion on X-heads in terms of H-chains). We suggest below that V-2 order and Aux-inversion are obtained by C-to-I overt RR, confirming that head-substitution is not empirically motivated. In fact, we show that an RR approach to those phenomena is not only empirically adequate but also theoretically/conceptually plausible.

#### 4.1.2.1. The peculiar ECM in Romance languages

In Italian, certain verbs, which select infinitival clauses, roughly correspond to ECM verbs in English.<sup>21</sup> Let us call them ECM verbs in Italian, as we will show that they are indeed ECM verbs (in a certain sense) as in English. Construction with ECM verbs in Italian shows some peculiar properties different from those of English ECM construction (cf. Rizzi (1982;ch3)). First, embedded subject positions do not allow either ECM or PRO (or pro).

(18) \*?Possiamo ritenere [{queste persone/PRO} avere sempre fatto il loro dovere.

"We can believe [{these persons/PRO} to have always done their duties." (cf. (3c) in Rizzi (1982;79))

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<sup>21</sup> According to Rizzi (1982; ch3), they are epistemic verbs (or verbs of saying) such as suppose, assert, believe, state in Italian, whose counterparts in English are all ECM verbs.

The impossibility of an overt NP subject in (18) indicates that no ECM takes place (a matrix verb cannot govern it) and that an embedded INFL does not assign NOM. Second, an embedded Vaux [-Tense, -Agr] (which is assumed to lie in INFL)<sup>22</sup> can assign NOM<sup>23</sup> if it is inverted with the subject, as in (19).

- (19) a. suppongo [non esser la situazione suscettibile di ulteriori miglioramenti]  
 "I suppose [not-to-be the situation susceptible of further improvements."  
 b. Questa commissione ritiene [aver loro sempre ottemperato agli obblighi previsti dalla legge]  
 "This commission believes [to-have they/them always fulfilled the legal duties." ((6a and b) in Rizzi (1982;79-80))

Third, when an embedded subject is extracted by operator-movement, the derived sentence is acceptable.<sup>24</sup>

- (20) a. Le persone<sub>i</sub> che suppongo [ t<sub>i</sub> non essere state messe al corrente delle vostre decisioni] sono molte.  
 "The persons that I suppose [ t<sub>i</sub> not to have been acquainted with your decisions] are many."  
 b. Quante di queste persone<sub>i</sub> possiamo ritenere [ t<sub>i</sub> aver sempre fatto il loro dovere]?  
 "How many of these persons<sub>i</sub> can we believe [ t<sub>i</sub> to have always done their duties]? ((2a and c) in Rizzi (1982;78))

Fourth, when an infinitive is introduced by a (prepositional) complementizer di (cf. Kayne (1981a); Rizzi (1982)), PRO is allowed, as shown in

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<sup>22</sup> According to Rizzi (1982), no main verbs are inverted, but aspectual auxiliaries that go with the past participle (have..en) or the copular verb essere followed by a predicative AP may be inverted. Passive essere marginally allows Aux-inversion while wh-extraction (cf. 20 below) is allowed in the ECM construction with an embedded passive verb (Andrea Calabrese (p.c.)).

<sup>23</sup> Rizzi (1982;87) notes that Case assigned to an embedded subject is NOM since only a nominative form is allowed when the subject is a first or second person singular pronoun.

<sup>24</sup> Rizzi (1982) also discusses gerundival or subjunctive clauses and nominal or adverbial infinitives. Either these cases lack wh-extractability or they do not obligatorily undergo Aux-inversion, for some independent reasons. We restrict our concern to infinitives selected by ECM verbs in Italian. See, however, subsection 4.1.3..

(21). (di in Italian is like that in English in that it is not a governor of the subject.) This confirms the idea that Vaux[-Tense, -Agr] is not a governor in-situ.

(21) {Suppongo/Ritengo} di PRO avere sempre fatto il mio dovere.  
 "I {suppose/believe} PRO to have always done my duty." ((7) in Rizzi (1982;80))

Interestingly, control verbs, which also select infinitival complements, show opposite aspects: Whether they take a (di) complementizer (22b) or not (22a), PRO appears in the embedded subject position; both Aux-to-COMP (23a and 24a) and extraction out of an embedded subject position (23b and 24b) are not allowed in the control construction (even though C is not filled) (cf. 18-20).

- (22) a. Preferirei [PRO aver sempre fatto il mio dovere].  
 "I would prefer [to have always done my duty]"  
 b. Cerco [di PRO essere messo al corrente]  
 "I try [to get acquainted]"
- (23) a. \*Preferirei [aver lui sempre fatto il suo dovere]  
 "I would prefer [to have he/him always done his duty]"  
 b. \*Le persone<sub>i</sub> che cerco [ t<sub>i</sub> esser messe al corrente ...]"  
 "The person that I would prefer to have always done their duties..."
- (24) a. \*Cerco [esser lui messo al corrente]  
 "I try [to be he/him acquainted]"  
 b. \*Le persone<sub>i</sub> che cerco [ t<sub>i</sub> esser messe al corrente ...]"  
 "The persons<sub>i</sub> that I try [ t<sub>i</sub> to get acquainted ...]"  
 ((8) and (9 and 10) in Rizzi (1982;80))

#### 4.1.2.2. Rizzi's Aux-to-COMP

To explain NOM assignment and Aux-inversion in certain restricted environments, Rizzi proposes two rules.

- (25) a. Aux-to-COMP rule: COMP NP Aux  
                                           |\_\_\_\_\_|  
 b. special NOM assignment: Assign NOM to NP in the context Aux \_\_\_\_  
 ((27) and (33) in Rizzi (1982;85 and 87))

Rizzi notes that the rule (25a) applies only to empty COMP, but not when COMP is filled: in (26), when si appears, no inversion is possible (cf. also 21 with di).

- (26) a. {Se/\*0} lui avesse capito al volo, tutto sarebbe andato bene.  
 "If he had understood immediately, everything would have gone smoothly."  
 b. {0/\*Se} avesse lui capito al volo, tutto sarebbe andato bene. ((23) in Rizzi (1982;84))

Three questions arise under these two rules. First, what blocks Aux-inversion in the control construction? Second, what makes Aux-inversion obligatory? This question arises because the possibility of PRO in (21-22) suggests that INFL[-Tense, -Agr] (with Aux) is not a governor and because the impossibility of PRO in (18) also suggests that the rule (25a) is obligatory in (19). Third, how do we explain wh-extractability in (20)? The question arises for this reason: If Aux-inversion is obligatory in the ECM construction, the wh-extraction in (20) would be unacceptable because wh-extraction would produce that-trace effects because of Vaux in COMP, violating the ECP.

Rizzi answers the first question by suggesting that the head of CP varies: In (26), COMP is filled with se while in (19), COMP is empty and triggers the rule. To explain the control sentence in (22a) in which C is empty but the rule (25a) does not apply, Rizzi suggests that a complement CP in the control construction is COMP-less so that the rule is blocked. As for the second question, Rizzi suggests that since Italian employs the special Case assignment rule in (25b), Case theory triggers the rule because the embedded NP requires Case. Rizzi's answer to the third question suggests that the apparent lack of that-trace effects goes back to the possibility of having post-verbal subjects in Italian.<sup>25</sup> However, for a reason which will be clear shortly, Rizzi suggests that the variables in

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<sup>25</sup> Thus Italian shows no that-trace effects:

- (1) a. Chi credi che verrà?  
 \*Who do you believe that will come?  
 b. Credo che verrà qualcuno.  
 \*I believe that will come somebody. ((84-5) in Rizzi (1982;147))

(20) do not obtain Case through Aux-inversion. Rizzi (1982;88-89) adapts Kayne's (1981a) proposal that Case can be assigned to COMP (by ECM verbs).<sup>26</sup> Thus, Rizzi suggests that Aux-inversion does not apply in (20) (and therefore no NOM assignment is made) and instead that a wh-phrase moves to COMP<sup>27</sup> and is assigned Case from a matrix V so that the sentence is rescued.

One advantage of accounting for wh-extraction under the notion of government is that the analysis also explains French ECM constructions: In French, in the same context as in the Italian data (19-20), Aux-inversion is not found, while wh-extraction makes the sentence grammatical (cf. Kayne (1981a) and Rizzi (1982) and references therein).

- (27) a. l'homme<sub>i</sub> que Jules croyait [ t<sub>i</sub> avoir épousé ma soeur] était Pierre.  
 "The man<sub>i</sub> that Jules believed [ t<sub>i</sub> to have married my sister] was Pierr."  
 b. \*Jules croyait [avoir lui épousé ma soeur.  
 "Jules believed [ to-have {he/him} married my sister." ((37) in Rizzi (1982;88-89))

Rizzi explains the lack of Aux-inversion in French in the following way: Although French employs no Aux-to-COMP rule when a wh-phrase moves to COMP, that wh-phrase can be assigned Case through the government of a matrix verb.<sup>28</sup>

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<sup>26</sup> Kayne suggests that a matrix verb can govern an NP in COMP but not an NP within IP since CP and IP block government while CP alone does not. Rizzi uses a different logic (cf. Belletti and Rizzi (1981)): When V governs CP, it also governs its head (COMP), which may contain a wh-element (or its trace) (cf. fn. 27).

<sup>27</sup> In the framework Rizzi assumes, COMP is the landing site of Aux-to-COMP and of operator-movement (cf. Chomsky (1981)).

<sup>28</sup> Chierchia (1984) points out that Rizzi's analysis does not predict the lack of construction in which Aux-inversion is possible but wh-extraction is not possible. Chierchia's criticism is invalid or at least unfair because Rizzi would predict the lack of such construction since Rizzi suggests that an option of Aux-inversion is language-specific based on the existence of the two rules in (25) but that wh-extractability is obtained

Rizzi's answers to these three questions raise problems even if we do not raise a question about the status of head-to-head substitution (Aux-to-COMP). First, the status of the COMP-less CP projection in control construction is very dubious, given X-bar theory. Postulating X-headless projections contradicts the basic assumption of X-bar theory, which is triggered by (properties of) X-heads. If no COMP exists, how is CP projected and what determines IP selection? At best, Rizzi has to assume that there are two kinds of null COMP (cf. Rizzi (1982; Chap 4; Appendices II and III)). Second, there is a gap in the logic explaining the obligatoriness of Aux-inversion. Attributing the obligatoriness of Aux-inversion to Case theory is not sufficient since a PRO option is also available (the embedded subject position can be a PRO position, as in (22a)). Rizzi thus requires a filter such as  $*[_{COMP} e]$ . Adopting filters would not be desirable from the current point of view of UG unless the filter could be shown as derivative from principles of UG.<sup>29</sup> Third, the assumption that a wh-operator in SPEC position is assigned Case from a matrix V creates some problems:

Theoretically, the notion of A-chain is challenged or weakened since a variable in the A-position, which forms a trivial A-chain, lacks Case, and therefore Case is obtained through an A-bar chain. The proposal also suffers from a conceptual problem: the English ECM construction and its

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through the notion of government. Rizzi, in fact, has a conceptual advantage: Rizzi (1982:88) notes that the acceptability of (19) and (20) differs; (20) is acceptable at a moderately formal level while (19) is found solely in highly formal or literary contexts. If wh-extractability is explained in terms of the notion of government and Aux-inversion in terms of language-specific rules, then we would correctly predict (20) to be more widely used than (19).

<sup>29</sup> In Chomsky (1981;1986a and b), filters proposed in Chomsky and Lasnik (1977) are reinterpreted as results of the interaction of subtheories of UG.

Romance counterpart are explained on different grounds although constructions in both languages are lexically governed by the same semantic class of verbs (also cf. Kayne (1981a) for French ECM verbs that have semantics similar to English ECM verbs). A recent standard assumption on the ECM construction is that the selectional restriction of ECM verbs (IP selection (cf. Chomsky (1986b)) or S-bar (CP) deletion is responsible for the English ECM construction. However, since Rizzi suggests that Aux-inversion is responsible for the Italian ECM construction, ECM constructions in English and Romance languages are understood as language-particular phenomena. Finally, Rizzi has an empirical problem: As he notices, we need another stipulation to prevent chi (who) from receiving Case from a matrix V in Italian.

(28) \*Non so [[ chi [ t venire ]]]

"I don't know [I<sub>NP</sub> [COMP who [ t to come]]]" ((i) in Rizzi (1982;114 fn. 18))

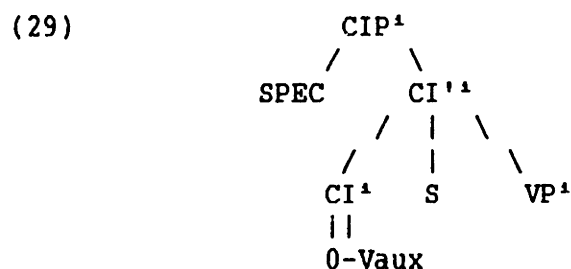
To conclude, Rizzi's analysis raises a number of problems under the present theoretical framework.

The current theory offers one more approach to the Aux-to-COMP phenomenon, i.e., Aux-to-COMP head-adjunction. However, the head-adjunction approach would also produce two problems: First, we would have to explain why Aux[-Tense,-Agr] is morphologically dependent only upon phonetically-null elements (but not overt elements). Second, as in the Aux-to-COMP analysis, the English ECM and the Romance ECM are viewed as different phenomena. Therefore this approach does not provide any insight into a possibly unified account of ECM constructions in Italian and English. If these problems with the Aux-to-COMP rule and with head-adjunction are real, we might as well try another solution. The present framework in fact provides a possible approach to the Aux-to-COMP phenome-

non, i.e., the RR approach. Below, we show that RR not only explains the ECM construction in Romance languages but also leads to a unified account of English and Romance ECM constructions under certain parameterizations. In addition, we will show that ECM effects universally derive from C-to-I RR and that certain peculiar properties of the Korean ECM, which are problematic under the IP selection or S-bar deletion solution, are well-explained in terms of C-to-I RR.

#### 4.1.2.3. An RR approach: the Aux-to-COMP phenomenon as ECM

Since the Aux+S order can be obtained by C-to-I overt RR, as shown in (29), let us suggest that ECM verbs<sup>30</sup> select CPs whose X-heads are categorially dependent upon I[-Tense], triggering C-to-I overt RR.<sup>31</sup> C-to-I overt RR automatically generates the Aux-inversion word order.



NonECM verbs, such as control verbs, which do not select CPs whose X-heads are [+CD], would never trigger Aux-inversion. Thus we explain word order, the obligatoriness of Aux-inversion in ECM construction (in Italian), and

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<sup>30</sup> Other Aux-inversion cases listed in fn. 24 are also explained in terms of C-to-I overt RR (also cf. subsection 4.1.3.). We do not discuss them here.

<sup>31</sup> We have suggested that I and V are linked to each other through surface-overt RR. Remember also that C-to-I dependency and I-to-V dependency are independent of each other unless there is a process to link these two dependencies. Thus, if C-to-I RR is covert, then IP would be a barrier for an element within VP. But if C-to-I RR is overt, CIP is not an inherent barrier for elements within CIP when CIP is L-marked; CIP is an inherited barrier for elements within VP (cf. (8) and the notion of government in (14)).



the impossibility of Aux-inversion in control construction all at the same time. The RR approach also plausibly explains the lack of Aux-inversion in the cases in which C is filled: RR, which is triggered by the semantics of matrix predicates, may refer to some notion of 'phonological' richness in a certain way. We suggest that when ECM verbs do not select CPs whose X-heads depend categorially upon INFL, Cs are filled by *di*. On the other hand, unlike ECM verbs, control verbs never select CIP's whether C is filled by *di* or not.<sup>22</sup> Thus it seems that the correlation between the overt realization of C and C-to-I RR is restricted to certain classes of verbs.

The RR approach also explains cross-linguistic variations of the ECM construction. For example, if a language allows overt C[+CD], then the existence of overt complementizers would not block ECM. In fact, such a language exists, as we see in the ECM construction in Korean. In Korean, even when C is overtly realized, ECM effects are obtained. In (30) where the overt complementizer *-ko* appears, the embedded logical subject takes an ACC (obj) marker instead of the NOM (sub) marker (also cf. Chapter 3).

- (30) Chelswu-ka Yenghi-lul ttokttokha-0-ta-ko mit-nun-ta  
       -sub       -obj intelligent-Inf-em-comp believe-pres-em  
       "Chelswu believe Yenghi to be intelligent."

This fact suggests that the Korean ECM is triggered neither by node deletion (*S*-bar deletion or IP selection) (cf. Chomsky (1981;1986b)), nor by null C, which triggers the Aux-to-COMP rule.

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<sup>22</sup> Categorical dependency is thus signaled by the appearance of a complementizer in the ECM construction but not in the control construction. Overt appearance of X-heads does not determine whether those X-heads undergo RR but is rather diagnostic, depending on constructions and on specific languages. For example, in Korean, overt complementizers appear both in ECM (cf. 30 below) and in control (i) constructions.

(i) Chelswu-ka [ PRO{<sub>i</sub>/<sub>j</sub>} ttena-lye-ko] keysimha-ess-ta  
       -sbu           leave-Inf-comp decide-past-em  
       "Chelswu decided to leave."

The present approach suggests that the core aspect of ECM derives from the fact that the lexical properties of certain semantically-same (class) verbs (i.e., ECM verbs) select CPs whose X-heads are categorially defective ([+CD]): Cross-linguistic variations found in English, Italian, and Korean are then attributed to language-specific parameterizations. Below, we discuss Case-assignment and wh-extractability in terms of parameterization.

#### 4.1.2.4. ECM and parameterization

The C-to-I RR alone does not explain Case-assignment. In  $CI^1$  in which I is the s-head of a CI M/R-complex word, I is [-Tense, -Agr] and therefore fails to assign NOM because of the lack of the Case feature. Nevertheless, NOM is assigned to an embedded subject in the Italian ECM construction. By analogy with Rizzi's rule in (25) and with Kayne's (1981c) suggestion, one might suggest that the direction of government (the canonical government of INFL in Kayne's (1981c) sense) triggers the Case-assignability of  $CI^1$ . Note however, that we are assuming that only X-heads with the Case feature [+SC] (cf. Chapter 3) can assign (structural) Case. Since INFL[-Tense, -Agr] lacks the Case feature,  $CI^1$  in Italian may fail to be a Case assigner. One might therefore suggest that Italian INFL[-Tense] in this construction possesses abstract [+Agr].<sup>22</sup>

However, in the Italian ECM construction, no pro is allowed in the embedded subject position. In other words, even if Aux-inversion applies, pro is not allowed in an embedded subject position in Aux-to-COMP environments. If pro requires formal licensing and interpretation obtained

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<sup>22</sup> as Raposo (1987) actually proposes. Raposo (1987) suggests that the Italian 'Aux-to-COMP' phenomenon, which occurs in noninflected infinitival complements, may be the same phenomenon as in Portuguese Aux-inversion construction where Aux-inversion is attested in inflected infinitival complements. But see the discussion below.

through the rich agreement specification, as Rizzi (1986a) suggests, *pro* would require the licensing by agreement elements ([+Agr]) to be interpreted. We then reason that Italian infinitives do not have abstract [+Agr] because it does not allow *pro* in the subject position. In other words, *pro* governed by INFL[-Tense, -Agr] is not allowed since *pro* is not interpreted because of the lack of [+Agr] even if *pro* can be formally licensed by INFL[-Tense, -Agr]. If this logic based on Rizzi (1986a) is right, Italian does not employ abstract AGR.

Since Aux-inversion is obligatory in the ECM construction, we might have to resort to the suggestion that special Case assignment is obtained because of the directionality of government. There are, however, some facts in another Romance language that suggest that the directionality of Case assignment does not play a role in explaining the Aux-to-COMP phenomenon. Raposo (1987) has suggested that in Portuguese, inverted inflected Aux (INFL[-Tense]) assigns NOM. Raposo (1987) indicates that in Portuguese, as in Italian, Aux-inversion is obligatory with a certain class of verbs, which we call ECM verbs in Portuguese,<sup>34</sup> when they select inflected infinitives, as shown in (31). The data (32) show that ECM verbs contrast with volitional verbs, which also allow inflected infinitival complements.<sup>35</sup>

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<sup>34</sup> Raposo reports that declarative verbs such as claim in Portuguese can also trigger Aux-inversion, like epistemic verbs such as believe, as shown in (31). From our point of view, that is not surprising since claim in English is either an ECM verb or a control verb, as Howard Lasnik has pointed out to us (cf. I claim this to be correct.). In fact, the Korean claim (cwucangha-/yokwuha-) is either a control verb or (marginally) an ECM verb. We suggest that the English claim and the Portuguese claim as ECM verbs share the same semantics as typical ECM verbs, triggering C-to-I RR.

<sup>35</sup> Raposo also discusses three more cases, adjunct clauses headed by prepositions (i), complements of raising verbs (ii; (33) below), and factive verbs (iii).

(i) A Maria entrou em casa [PP sem [IP os meninos ouvirem]].

- (31) a. \*Eu penso [os deputados terem trabalhado pouco].  
 "I think the deputies to-have-[+Agr] worked little."  
 b. Eu pense [terem {pro/os deputados} trabalhado pouco].  
 "I think to-have-[+Agr] {pro/the deputies} worked little."  
 (32) a. \*Eu desejava [os deputados terem trabalhado mais].  
 "I wished the deputies to-have-[+Agr] worked more."  
 b. \*Eu desejava [terem os deputados trabalhado mais].  
 "I wished to-have-[+Agr] the deputies worked more."  
 ((6), (8) and (36) in Raposo (1987))

The fact that (31a) with overt noninverted embedded subject is ungrammatical suggests that Aux-inversion is also obligatory in the Portuguese ECM construction; the contrast between (31) and (32) suggests that Aux-inversion is Lexically governed.<sup>36</sup>

"Maria entered the house without the children to-hear-[+Agr]." ((35) in Raposo (1987))

- (ii) [{Eles/pro} aprovarem a proposta] será difícil.  
 "{They/pro} to-approve-[+Agr] the proposal will be difficult."  
 (cf. (25) and (27a) in Raposo (1987))  
 (iii) a. Eulamento [os deputados terem trabalhado pouco].  
 "I regret the deputies to-have-[+Agr] worked little."  
 b. Eu lamento [terem os deputados trabalhado pouco].  
 ((7) in Raposo (1987))

In (i), (ii) and (iiia), Case is assigned in the environment in which no Aux-inversion is observed. Unlike Raposo (1987), we will suggest shortly that even when no C-to-I overt RR applies, INFL[-Tense,+Agr] assigns Case in Portuguese, as in Korean. As for (iiib), we suggest that some factive verbs may select CP complements whose X-heads are [+CD], like ECM verbs. Raposo in fact notes that factive verbs (cf. Kiparsky and Kiparsky (1970)) are ambiguous: they may select infinitival clauses, like ECM (epistemic) verbs, or NPs, like factive verbs. Note that some Korean factive verbs are also ambiguous: they can select -ket complements (factive versions) or -ko complements (finite; non-factive versions).

- (iv) a. Chelswu-nun kay-ka cwuk-ess-ta-ko hanthanha-ess-ta  
 -TOP dog-sub die-past-em-comp deplore-past-em  
 b. Chelswu-nun kay-ka cwuk-0-un-kes-lul hanthanha-ess-ta  
 -TOP dog-sub die-Inf-comp-thing-obj deplore-past-em  
 "Chelswu deplored that (his) dog died."

<sup>36</sup> The selectional properties of predicates also explain the following contrast: anxious is a control predicate with a complementizer, like try in Italian (cf. (22b)). The only difference between the Portuguese anxious and the Italian try is that the Italian try selects a [+Agr]-less infinitival.

(i) eles estão ansiosos \*(de/por) [pro votarem a proposta]. ((30-31) in Raposo (1987))

There is, however, a good reason to think that Aux-inversion in Portuguese does not trigger NOM-assignment. As we see in (33), infinitives may be either [+Agr] or [-Agr].<sup>37,38</sup>

- (33) a. *Será difícil* [ {pro/eles} *aprovar* a proposta ].  
 "It will be difficult {pro/they} to-approve-[+Agr] the proposal."  
 b. *Será difícil* [ {PRO/\*eles} *aprovar* a proposta ].  
 "It will be difficult to-approve the proposal."  
 ((2) and (25) in Raposo (1987))

When an embedded V is not inflected, as in (33b), an embedded subject position can be filled only by PRO (probably with the arbitrary reading). On the other hand, both pro and NP are allowed when V is inflected, as in (33a). This fact suggests that in Portuguese -- in contrast to Italian-- INFL[-Tense,+Agr] in-situ assigns Case and is 'rich' enough to license pro. Therefore whether Aux-inversion applies (31b) or not (33a) (also cf. (i, ii, iia) in fn. 35)), NOM is assigned and pro is licensed in Portuguese. In short, the obligatoriness of C-to-I RR in Portuguese (31a) suggests that Aux-inversion represents a different issue from NOM assignment in the ECM construction,<sup>39</sup> since a certain class of verbs triggers obligatory Aux-inversion, independently of Case-assignment. The impossibility of pro in Italian and the possibility of pro in Portuguese in the same Aux-inversion

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<sup>37</sup> Interestingly, Korean raising predicates such as difficult also allow either [-Tense,-Agr] or [-Tense,+Agr] (cf. Chapter 3).

<sup>38</sup> By analogy with Reuland's (1983) analysis of the ACC-ing construction in English and with Rizzi's Aux-to-COMP rule, Raposo (1987:100) suggests that INFL[+Agr] moves to C so that INFL[+Agr] is Case-marked by a matrix verb and that Case-marked AGR assigns NOM (cf. Reuland (1983)). However, Portuguese does not need such a process since INFL[-Tense,+Agr] can assign NOM in-situ, as shown in (33) (also cf. (i, ii, iia) in fn. 35).

<sup>39</sup> As in Italian, wh-extractability is also observed.

(i) *Que amigos é que o Manel pensa [ t<sub>i</sub> [ t<sub>i</sub> terem levado o livro ] ]?*

"Which friends does Manel think to-have-[+Agr] taken the book?"  
 ((36d) in Raposo (1987))

If Portuguese INFL[-Tense,+Agr] assign NOM, as in Korean, it is not surprising that (i) is grammatical since the trace in the SPEC of CP would properly govern t<sub>i</sub> in (i), as in the sentence Who do you think left?

environment also suggests that Aux-inversion and NOM assignability in Portuguese and Italian are separate issues. Thus we conclude that a certain class of verbs is triggering C-to-I RR independently of NOM assignment, in contrast to what Rizzi suggests. The conclusion, however, does not lead us to the solution to the problem that NOM is assigned in Italian Aux-inversion environments in which no Case feature is provided.

The last solution might suggest that a matrix verb assigns Case to the embedded subject when C-to-I RR applies (when Aux-inversion takes place) by assuming that the non-Case assigner  $CI^1$  does not induce the MC. This suggestion has two problems. First, a complex X-head CI would induce the MC by definition (cf. (14)). Assuming that the CI does not induce the MC amounts to allowing exceptions to the notion of government. Second, the matrix verb cannot be a governor for an embedded subject in Italian. The governor of an embedded NP subject should be within an embedded clause, given some anaphor binding facts in Italian, as shown below.

- (34) a. \*Gianni sostiene non esser se stesso in grado di dare un contributo  
       "Gianni<sub>i</sub> asserts [not-to-be himself<sub>i</sub> able to given a contribution]."  
       b. Gianni sostiene non esser lui in grado di dare un contributo  
       "Gianni<sub>i</sub> asserts [not-to-be he/him<sub>i</sub> able to give a contribution]."  
       ((83) in Rizzi (1982:105))

If a matrix verb were a governor, then the minimal binding domain of an embedded subject that contains a governor of the embedded subject would be a matrix clause so that the grammaticality of (34) is reversed. Thus, an embedded subject is not governed by a matrix verb.

If neither INFL nor a matrix V assigns NOM to the embedded subject in the Italian ECM construction, what assigns NOM? Given the Case theory in which structural Case is assigned by a governor with the Case feature, one can imagine that the Case feature of a matrix verb is transmitted to a potential governor of the embedded subject position in the embedded clause

in certain environments. Suppose that when overt or covert X-to-Y RR applies,  $XP^1$  or  $XYP^1$  is an open projection in that some features of the governor of  $XP^1$  can percolate into  $X^1$  or  $XY^1$ . Suppose further that I has the features  $[+I, +V]$  in which  $[+V]$  is obtained through I-to-V RR and that C has the feature  $[+C]$ . Then, in the case of C-I overt amalgamation, a C-I M/R-complex word would have the features  $[+C, +I, +V]$  because -- according to the categorial feature percolation conventions -- the feature  $[+V]$  is obtained from INFL with the features  $[+I, +V]$  (and therefore the feature  $[+V]$  is a formal feature of CI). Let us call a CP projection/argument an open projection/argument when it has the formal feature  $[+V]$  and a closed projection/argument when it does not (i.e., when C is not linked with an IV R-complex X-head through morphological and/or categorial dependency). ECM verbs then select open CP arguments.

By analogy with Kayne (1982),<sup>40</sup> let us suggest that the projections of  $[+V]$ 's, which we call open projections or open arguments, may lack certain properties of arguments, exhibiting the following properties. When a CP is an open argument, the Case feature of a matrix verb is optionally percolated down to INFL ( $CI^1$ ), when the latter lacks the Case feature (note that we are not suggesting case-spreading). Suppose further that the Case feature  $[+SC]$  can be percolated only from the governor of the projection of a recipient ( $CI^1$ ). Then, in Italian, INFL $[-Tense, -Agr]$  can assign NOM when the Case feature is obtained through Case feature percolation into an open projection. The optional Case feature percolation correctly expects Aux-inversion to trigger NOM-assignment in Italian but not in Portuguese: C-to-I overt RR, which triggers Aux-inversion, makes Case feature percolation possible so that INFL can assign Case to the subject. On the other hand,

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<sup>40</sup> Kayne (1982) suggests that no projection of  $[+V]$  can be an argument.

in Portuguese, whether or not C-to-I RR applies, NOM is assigned by INFL[*-Tense,+Agr*] and therefore Portuguese INFL[*-Tense*] does not require C-to-I RR to obtain Case feature since INFL[*-Tense*] is [+Agr], which we assume has the Case feature.

The next logical question is why French lacks Aux-inversion, even though French shows wh-extractability in the ECM construction. To explain the lack of Aux-inversion in French, as shown in (27b), we suggest that INFL[*-Tense,-Agr*] in French cannot assign NOM whether or not the Case feature is obtained since INFL[*-Tense*] is not strong enough to be a Case marker (by analogy with Kayne's (1987) suggestion that in pro-drop language, INFL[*-Tense*] is strong enough to L-mark VP) and therefore INFL[*-Tense,-Agr*] cannot assign NOM even if INFL[*-Tense,-Agr*] receives the Case feature through Case feature percolation.<sup>41</sup> Thus, C-to-I RR would not rescue the French ECM construction. Because CI induces the MC, government from a matrix verb would not be available. Therefore we predict that in French, PRO is allowed in the ECM construction and that prediction is borne out as shown below.

(35) Je crois/reconnais/affirme avoir fait une erreur  
 \*"I believe/acknowledge/affirm to have made a mistake." (cf. (68-69) in Kayne (1984; 112); Kayne (1981a))

The optional Case feature percolation in the ECM construction suggests that when inverted INFL (CI<sup>41</sup>) assigns NOM, a matrix verb cannot assign Case to its CP complement. We predict that in a language with an overt case marking system, an embedded clause with an ECMed subject cannot bear a case marker. The prediction is nicely borne out in Korean, as shown below.

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<sup>41</sup> These lines of reasoning suggest that the pro-drop parameter has to do with an intrinsic property of INFL (as a formal licenser of pro in Rizzi's (1986a) sense) in a certain language but not directly with the richness of AGR. Richness of AGR is probably triggered by a certain 'strong' instantiation of INFL.



- (36) a. na-nun Yenghi-lul khu-0-ta-ko(\*-lul)      sayngkakha-n-ta  
           1-TOP            -obj tall-pres-em-comp-obj      think-pres-em  
           "I think Yenghi to be tall."  
       b. na-nun Yenghi-ka khu-0-ta-ko(??-lul)      sayngkakha-n-ta  
           I-TOP            -sub tall-pres-em-comp-obj      think-pres-em  
           "I think that Yenghi is tall."

In Korean, a CP may take an overt case marker, as in (36b),<sup>42</sup> except when ECM takes place, which suggests that the Case feature of a matrix verb is used for an embedded subject (ACC).

If C-to-I overt RR is triggered in cross-linguistic ECM constructions, as we suggest, the next issue is how to account for S+to+V word order in English (or for the lack of Aux-inversion). In English, S appears on the left side of CI<sup>1</sup> and is assigned ACC; in French, no such order is observed (even though wh-extractability is observed). In English and French, CI<sup>1</sup> does not assign Case to the subject position even if the Case feature [+SC] is percolated down to CI<sup>1</sup> from a matrix verb since they are not pro-drop languages and therefore I[-Tense, -Agr] is not strong enough to be a Case-assigner even with the Case feature. Thus in English and in French, C-to-I RR and optional Case feature percolation do not rescue ECM constructions unless an embedded subject moves to a Case position.<sup>43</sup>

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<sup>42</sup> CPs that contain -ko complementizers can take -lul marginally. The severe ungrammaticality of (36a) with -lul, however, says that a matrix V cannot assign ACC to its CP complement. Note that in Korean, double -lul (obj marker) does not trigger ungrammaticality as long as -lul is obtained properly.

In some cases, more than one -lul appears with one verb.

(i) Chelswu-ka tall-lul kensel-lul ha-ess-ta.  
       -sub bridge-obj construction-obj do-pass-em

"Chelswu constructed a bridge."

(ii) swucey-lul cal-tul-lul ha-ess-ta  
       homework-obj well-pl-obj do-past-em "[0] did homework well."

In (i-ii), the N in an N-lul ha- phrase or an adverbial also takes the objective marker -lul but does not block ACC assignment to the object. We assume that -lul assigned to non-arguments should be considered as assigned in the PF component, unlike -lul assigned to arguments. If so, then the data in (i-ii) do not undermine the argument supported by (36).

<sup>43</sup> Note also that because of the MC inducement of CI, the matrix verbs do

Imagine a transformational process (A-movement) by which the embedded subject moves within the government domain of a matrix V so that the subject can be assigned Case by a matrix verb. More concretely, imagine that a version of raising in terms of syntactic adjunction as A-movement<sup>44</sup> applies so that an embedded subject can be assigned Case. In fact, as we discussed in Chapter 2, syntactic adjunction to VP (as A-movement) would be theoretically viable. Following Choe (1987b), let us thus suggest that the landing sites of syntactic adjunction are Case positions when Case-governors are available. Then, ACC is assigned to an adjoined NP by a matrix V through Case-government, and therefore, in English, an embedded subject is assigned ACC through adjunction (A-movement) to a matrix VP.<sup>45</sup>

Suppose further that in English, NP can adjoin to VP while in French (and in Italian) only operators can adjoin to VP or only operators can be assigned in positions created by syntactic adjunction for some reasons,

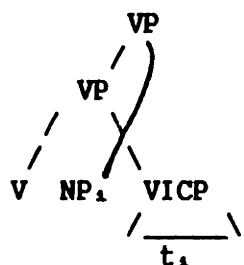
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not govern the embedded subject positions.

<sup>44</sup> Note that the adjunction function  $\lambda$  discussed in Chapter 2 guarantees such an instantiation of adjunction as A-movement. See Kayne and Pollock (1978) and Choe (1987b) for some empirical data for adjunction as A-movement. As for some detailed discussion on some empirical necessity of adjunction as A-movement in ECM environments, see Choe (in progress).

<sup>45</sup> The structure obtained by adjunction would have to be like (i) given the word order in the ECM construction.

(i)



See Higginbotham (1985a) for a theory of tree structure that allows the above structure and see Barss and Lasnik (1986) for some empirical advantages of this crossing structure in the double object construction. As for a full justification of such a structure under the adjunction function  $\lambda$ , see Choe (in progress).

which we will not pursue here. Then wh-extractability in Italian and French can be explained: In Italian, when S is a wh-element and when  $CI^1$  does not receive the Case feature from a matrix verb (cf. optional Case feature percolation), wh-operators move to VP to be assigned ACC and then move to the SPEC of CP. In French, wh-operators should adjoin to VP to be assigned ACC. In short, the adjunction to VP, which we assume triggers the  $S+to+V$  order, explains ECM in English and wh-extractability in Romance languages without weakening the notion of A-chain.

Up to now, we have suggested that the ECM construction is triggered by C-to-I overt RR (governed by ECM verbs) cross-linguistically. The various realizations of C-to-I RR, which trigger CP open arguments, are attributed to the following parameterizations (38) with two assumptions (37) to explain 5 different cross-linguistic variations of ECM construction.

- (37) a. the optional Case feature percolation to the X-head of an open projection (e.g., INFL[-Tense])
- b. syntactic adjunction to VP (A-movement) may rescue embedded subjects from Case theory
- (38) a. the lack of syntactic adjunction in French and Italian (cf. English)
- b. the lack of 'strong' INFL in French and English (cf. Italian and Portuguese)
- c. the lack of [+Agr] in INFL[-Tense] that licenses pro (Italian versus Portuguese)

Our argument here had three steps: First, we showed that Rizzi's Aux-to-COMP rule (head-substitution) is not viable or at most has many problems under the current framework. Second, we showed that the Aux-inversion in Romance languages is explained in terms of C-to-I RR, which is also responsible for English and Korean ECM constructions. Our analysis explains cross-linguistic facts in a conceptually plausible and theoretically viable way. Third, ECM may be derived not only by C-to-I RR but also by syntactic adjunction (as A-movement), which explains the ECM phenomenon in English (and Korean) on the one hand and the wh-extraction in Italian

and French on the other hand. The last step is partially discussed here since we did not justify the ideas that Italian and French indeed lack leftward syntactic adjunction of non-operators (A-movement) and that English and Korean ECM constructions indeed require A-movement (but see fns. 44 and 45).

Finally, note that the C-to-I RR approach to the ECM construction implies that C-to-I RR applies to the subject-to-subject raising construction in English, given that raising verbs are assumed to select IP projections for obvious reasons:

- (39) a. John seems to be happy.  
       b. John is likely to be killed.

In the case of the raising construction, ergative matrix verbs select open arguments, which are derived from C-to-I RR. However, unlike the ECM construction, optional Case feature percolation does not apply because the matrix verbs lack the Case feature. Thus an embedded subject should move to the matrix subject position to receive Case. Note that just as 'restructuring' verbs are either ergative or nonergative, so verbs taking open arguments are also either ergative or nonergative.

#### 4.1.3. V-2 phenomenon and Aux-inversion

Another well-known linguistic phenomenon that is widely assumed to be obtained by head-to-head (V-to-C) substitution is one called V-2 word order in Germanic and Scandinavian languages (Koster (1975); den Besten (1977/-83); Emonds (1980;1986); Haider and Prinzhorn (1986;eds)). Below, under the framework which does not allow head-to-head substitution, we will suggest that V-2 is, in fact, derived by I-to-V deep-overt RR and by C-to-I deep-overt RR. We will also suggest that Aux-inversion in non-V-2 languages and V-2 order in V-2 languages are obtained by the same mechanism and that the difference between the two phenomena derives from the parameterization of the levels of rule application.

##### 1.1.3.1. The V-2 phenomenon

There are three important aspects of the V-2 phenomenon: First, V-2 is found in finite matrix clauses. Second, inflected Vs (main or Vaux) lie in the first or second position in string order in certain environments. Some relevant facts are illustrated in Swedish examples from Plazack (1986b):<sup>46</sup> In declarative main clauses (with a Topicalized element) and in matrix interrogative sentences,<sup>47</sup> V-2 is strictly observed in Swedish, as shown below.<sup>48</sup>

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<sup>46</sup> Although German V-2 is most well-known (cf. Koster (1975); den Besten (1977/83)), by a random selection, we use Swedish data. Haider and Prinzhorn (1986;introduction) note that the basic facts about the V-2 phenomenon in German are found in Erdmann (1886)). Unless specified as language-specific, the properties illustrated below are assumed to be general among V-2 languages.

<sup>47</sup> In German, Adverb preposing, which is incompatible with wh-movement, also triggers V-2 (cf. Koster (1975); den Besten (1977/83)).

<sup>48</sup> There are additional phenomena accompanied by V-2. For example, Norwegian left-dislocation results in V-3 order (cf. Taraldsen (1986)); Swedish shows V-3, V-4 .. word order in some environments (cf. Placzack (1986b));

- (40) a. Erik hade verkligen köpt boken  
           "Erik had really bought the book."  
       b. Erik köpte verkligen boken  
           Erik bought really the book       "Erik really bought the book."  
       c. \*Erik verkligen köpte boken  
           Eric really bought the book  
       d. Den boken köpte Erik i London.  
           that book bought Erik in London  
           "That book, Erik bought it in London."
- (41) a. Vad hade Erik köpt i London?  
           "what had Erik bought in London?"  
       b. Vad köpte Erik i London?  
           What bought Erik in London        "What did Erik buy in London?"  
       c. Var köpte Erik den där boken?  
           where bought Erik that book        "Where did Erik buy that book?"  
       d. Vem har köpt den där boken?  
           "who has bought that book"       ((1-2) in Plazack (1986b))

Third, V-2 order is not observed when C overtly appears in main finite clauses. Holmberg (1986) reports that when a question morpheme in Swedish appears in a main clause, no V-2 is observed.<sup>49</sup>

- (42) Manne Tomas kan tala finska?  
       WH               can speak Finnish  
       "Can Tomas speak Finnish? ((27) in Holmberg (1986;94))

There are two main aspects which make V-2 languages different from non-V-2 languages such as English. First, in wh-sentences, V in the second

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and an object-preposing phenomenon in Icelandic, Swedish, German (cf. Holmberg (1986); Evers (1975)). Such phenomena do not fall under the scope of our study.

<sup>49</sup> See Holmberg (1986) for an argument that manne is a realization of C. Holmberg reports another case of a realization of C in a main clause in Arabic (a main clause complementizer or sentence introducer).

(i) 'Inna Kariiman qara'a alkitaaba

DECL Karim has-read the-book ((28) in Holmberg (1986;94))

Note also that we have seen that Korean has both a question and a declarative morpheme, which we call an interrogative scope marker and a sentence ending marker.

(ii) a. Chelswu-ka wa-ss-upnikka

-sub come-past-QH "Did Chelswu come?"

b. Chelswu-ka wa-ss-upnita

-sub come-past-emH "Chelswu came."

(Note that the positions of C are consistent with the head-parameter in (i) and (ii).) This sporadic realization of C in matrix clauses in other languages and the obligatory realization of C in Korean main clauses suggest that a main clause universally represents a CP projection (cf. the syntactic position we are assuming).

position is an inflected main or Vaux in V-2 languages, while V in the second position is inflected Vaux or the auxiliary verb do in English. In fact, this difference also emerges in other constructions: a finite verb takes the first position in yes-no question sentences in V-2 languages but only Vaux or do can appear in the first position in question sentences in English.<sup>50</sup>

- (43) a. Hade Erik verkligen köpt boken?  
           Had Eric really bought the book    "Had Eric really bought the book?"  
       b. Köpte Erik verkligen den boken?  
           bought Erik really that book        "Did Erik really buy that book?"  
 ((3) in Platzack (1986))

Second, declarative clauses with topics always show V-2 (cf. especially (40d)) in V-2 languages but not in English. Compare the English counterparts of examples (40).

#### 4.1.3.2. C-to-I and I-to-V RR and parameterization

In the previous analyses of the V-2 facts mentioned above, it has also been suggested within the transformational grammar tradition that V-2 is jointly obtained by V-movement and by A-bar movement, except for yes-no questions (cf. Koster (1975); den Besten (1977/83); Emonds (1986); Haider and Prinzhorn (1986;eds.); Holmberg (1986)). Even though there are many different approaches to V-movement and to A-bar movement under different

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<sup>50</sup> In imperative (i) or conditional clauses without a complementizer (om(if))(ii) (cf. (iib)), V-1 is also observed. (Platzack (1986b) notes that the imperative form is considered to be finite.)

- (i) a. Köp den där boken!  
           "Buy that book!"                    ((4) in Platzack (1986b))  
 (ii) a. Köper du den boken, så blir han glad.  
           "buy you that book then gets he glad."  
       b. Jag frågade om Erik verkligen hade skrivit boken.  
           "I asked if Erik really had written the book." ((5) and (6a) in Platzack (1986b))

It is interesting to note that the same construction as (ii) in Italian is explained in terms of the Aux-to-COMP rule. We will in fact suggest that C-to-I RR is also responsible for V-2 order.

assumptions, we can interpret a core of previous proposals as follows (cf. Emonds (1980); Baker (1985/to appear); Chomsky (1986b)).

- (44) a. [<sub>CP</sub> SEPC [<sub>COMP</sub> e ] [<sub>IP</sub> ... INFL(-V) ... XP ] (order irrelevant)  
 b. [<sub>CP</sub> XP<sub>j</sub> [<sub>COMP</sub> INFL(-V)<sub>i</sub> ] [<sub>IP</sub> .... t<sub>i</sub>... t<sub>j</sub> ... ]

Without focusing on how finite verbs are obtained, the studies on V-2 since Koster and den Besten have mostly tried to answer what motivates V-to-C movement.<sup>51</sup> Therefore, the approach given in (44) misses one question. Why is V/I amalgamation in English different from that of V-2 languages in certain matrix environments? Answering this would also resolve the question of whether V-movement to C is related to Aux-inversion in non-V-2 languages.

#### 4.1.3.2.1. I-to-V RR

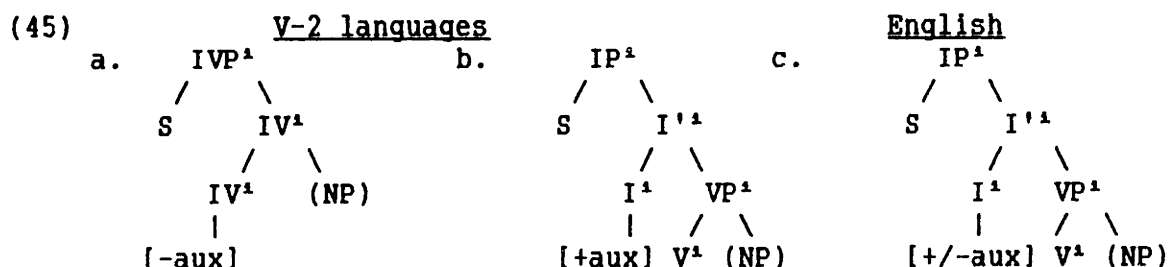
We suggested in subsection 4.1.1. that in English, I and V are linked by surface-overt RR. When INFL contains morphologically independent modals or Vaux, V is not amalgamated with I; when INFL does not contain such an element, V is amalgamated with I. On the other hand, in V-2 languages, V/I amalgamation (Vaux or V) is always obtained. I-V morphological amalgamation is not blocked in matrix interrogative environments and do-insertion is not (or need not be) employed. In V-2 languages, do-support is not observed even when INFL is not filled by Vaux or by a modal in an environment in which Aux-inversion is triggered in English. It seems that in V-2 languages, V is more dependent upon INFL than it is in English. Thus, suppose

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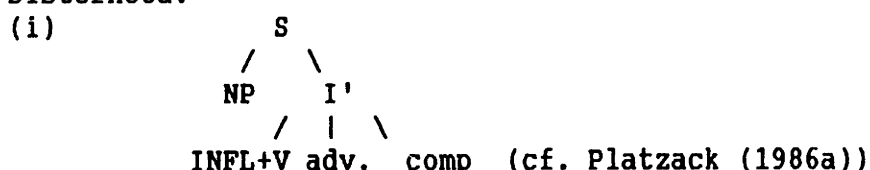
<sup>51</sup> There are various approaches to this question: an ECP account (cf. Travis (1984;135)); a Case account (Platzack (1986b); Koopman (1984); C-is-INFL account (cf. Haider (1986); also cf. den Besten (1977/83)); the head-of-S account (Holmberg (1986); Taraldsen (1986)), etc. See Haider and Prinzhorn (1986;eds., introduction) and Holmberg (1986) for some discussions of these approaches.



that in V-2 languages, I-V RR is deep-overt, in contrast to the situation in non-V-2 languages.<sup>52, 53</sup>



<sup>52</sup> Thrainsson (1986), Platzack (1986a), and Holmberg (1986) suggest that V-to-C is actually two-step movement in V-2 languages: movement to INFL and then to COMP. Platzack (1986a) also suggests that V-to-I head-movement results in tree pruning (VP node deletion) and that tree pruning explains the object shift in Swedish: an object NP can move to the left side of an adverbial. This suggestion assumes that change in word order implies sisterhood.



Incidentally, I-to-V overt RR also make adverbials and objects sister nodes without motivating tree pruning (see also Holmberg (1986) for an analysis of object shift.)

<sup>53</sup> In fact, this overt I-to-V RR is attested in Icelandic, as discussed in Holmberg (1986). Based on Platzack's (1986a) proposal of two-step head-movement, Holmberg (1986) suggests that there is an independently motivated V-to-I head-movement in Icelandic (a V-2 language), based on the following Icelandic embedded clauses in which V-2 is not observed.

- (i) a. að þeir {settu allir/\*allir settu} smjörið í ísskápinn  
       that they {put all all put} the butter in the fridge  
       "that they all put the butter in the fridge"
- b. Eg tel [Jón {sennilega vera/\*vera sennilega} sterkastan allra  
       I consider {probably be be probably} strongest of-all  
       "I consider Jon probably to be strongest of all." ((11c and 12a and b) in Holmberg (1986;86-7))

In an embedded clause, an adverbial element should immediately follow a finite verb, as shown in (ia). On the other hand, when a clause is infinitival, an adverbial element may lie between the subject and V. This aspect is predicted if Icelandic allows I-to-V deep-overt RR in finite embedded clauses. It does not, however, seem that every V-2 language allows I-to-V overt RR in embedded finite clauses. Holmberg shows that in Swedish, the reverse order is grammatical. We may assume that I-to-V deep-overt RR may not be an option for embedded finite clause in V-2 languages. In fact, in embedded clauses, word order varies among V-2 languages.

- (ii) a. German and Dutch --- Verb final  
       b. Scandinavian --- S X V...  
       c. Icelandic and African Kru --- S V ... (cf. Holmberg (1986;152))

In V-2 languages, when I is not filled by Vaux in syntax, (45a) is obtained and otherwise, (45b) is obtained. On the other hand, in English, only (45c) is obtained in syntax, whether or not I is filled with Vaux. Thus the I-to-V deep-overt RR in V-2 languages, as shown in (45a and b) explains why V and I are always amalgamated in an environment in which Aux-inversion applies in non-V-2 languages, unless I is filled by a modal or by Vaux.

The I-to-V deep-overt RR in V-2 languages predicts some properties of V-2 languages. First, V-2 languages would not (or need not) employ the dummy auxiliary verb do since I is always supported by V or by Vaux. Second, they would not exhibit rules governing VP when INFL is not filled with Vaux. In fact, these predictions seem to be borne out since V-2 languages in fact do not employ the auxiliary do or transformations referring to the VP node (when I is not filled by Vaux or a modal).<sup>54</sup>

At this point, we should ask what assigns NOM when IV<sup>1</sup> forms an M/R-complex word in syntax since an M/R-complex word can assign only one Case. IV<sup>1</sup> can assign only one Case (ACC, since V is the s-head) but cannot assign NOM. This dilemma can be solved if Case is assigned before deep-overt I-

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<sup>54</sup> As Harry Leder (p.c.) has informed us, in Standard German, VP preposing is possible only when a main verb is preceded by Vaux, as shown in (i); it is impossible when a main verb is not preceded by Vaux: (ii) is possible in Swiss German, which does not exhibit V-2, as shown in (iib), but the sentence in (iia) is not observed in Standard German.

(i) [<sub>VP</sub> die Maria geküsst] hat Hans nie (Standard German)  
the Mary kissed have John never

"John has never kissed Mary."

(ii) a. [<sub>VP</sub> d'Händ wasche ] tuet de Hans nie (Swiss German)  
the hands wash do the John never

"John never washes his hands."

b. d'Händ tuet de Hans nie wasche  
the hands do the John never wash

"His hands, John never washes."

This is precisely what we predict: because of I-to-V deep-overt RR, when I is not filled by Vx, a VP node is not available in syntax. Reuland (1987) also notes that German lacks do-support, tag questions, and VP deletion.

to-V RR applies in V-2 languages or, more generally, in languages which allow I-to-V deep-overt RR. There can be two versions of 'deep-Case assignment' mechanism. Deep-Case assignment can be achieved at theta-structure in terms of Case-theta-role association in the following way.<sup>55</sup>

$$(46) \quad \begin{array}{c} ( \dots Th_1, \dots Th_j, \dots ) \\ \quad | \quad \quad | \\ \quad C_1 \quad C_j \end{array} \text{ where Th = theta-role and C = Case}$$

Deep-Case assignment can also be achieved at the level of (configurational) lexical structure in Hale's (1986) sense in which theta-structure is realized (in certain languages). Adopting the first mechanism of deep-Case assignment without arguments, we suggest that (structural) Case<sup>56</sup> is assigned at theta-structure in V-2 languages in terms of neutral Case: logical subjects and logical objects are associated with neutral Case, which may be realized either as NOM or as ACC, depending on the syntactic governors of theta-roles or depending on the syntactic positions of theta-roles.<sup>57</sup> Remember that the subject status remains intact even under overt

<sup>55</sup> This is usually assumed in the literature to explain quirky Case which Lieber (1979) calls lexical Case (lexically-governed Case) (cf. Choe (1985a)) or to describe inherent Case (thematically-governed Case) (cf. Belletti and Rizzi (1986)).

<sup>56</sup> In English, structural Case is assumed to be assigned in syntax, referring to configurational structure. Thus structural Case in English is not obtained by a deep Case-assignment mechanism. Let us suggest that UG includes parameterization concerning the levels of the assignment of structural Case. In V-2 languages, both Case, structural or inherent, is assigned by a deep Case-assignment mechanism while in English, structural Case is assigned in syntax. If deep Case-assignment is an option of UG, then it may be that inherent Case is universally assigned by a deep Case-assignment mechanism. If that is so, all the instantiations of inherent Case in non-V-2 languages and in V-2 languages are associated with theta-roles at theta-structure while the levels of structural Case assignment may differ depending on whether a language employs V-to-I surface-overt RR or deep-overt RR.

<sup>57</sup> To explain expletive subjects assigned structural Case in V-2 languages, we suggest that expletive elements, which have no semantics enough to be assigned theta-roles, are assigned neutral Case in the Lexicon. Since neutral Case should be properly licensed in syntax, expletives should also

C-to-I RR (cf. RR conventions in Chapter 3). Thus neutral Case governed by INFL/V is realized as NOM/ACC; INFL licenses the neutral Case of the subject and V the neutral Case of the object. We reason that the Case feature of the non-s-head ([+SC]) can license Case in [NP,VP] or [NP,IP] positions even though it cannot assign Case. In short, we suggest the following: First, I-V deep-overt RR should be accompanied by the deep-Case assignment of structural Case.<sup>58</sup> Second, in V-2 languages, structural Case in terms of neutral Case is assigned at theta-structure and checked (or licensed) in the position governed by an appropriate governor with Case feature in syntax. Third, if a language employs a deep-overt I-to-V RR, it employs a deep (structural) Case assignment mechanism and a Case checking system.<sup>59</sup>

Let us further suggest that in languages in which (structural) Case is checked (rather than assigned) in syntax, quirky Case tends to be employed. In fact, V-2 languages, if rich case-marking systems are employed, exhibit quirky Case.<sup>60</sup> We suggest that quirky Case is assigned by a deep-Case assignment mechanism, but differs from neutral Case in that quirky Case is specifically determined at the level of assignment but not at the level of

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appear in Case positions in V-2 languages and they do.

<sup>58</sup> In Section 4.4., we show that Hungarian also employs I-to-V deep-overt RR. We predict that Hungarian also employs deep-Case assignment of structural Case. In fact, it has been suggested by Kiss that Hungarian Case is assigned in Lexical Structure in Hale's sense forming Case hierarchy associated with theta-roles.

<sup>59</sup> But we are not suggesting (1).

(1) If a language employs a deep structural Case assignment, then it employs I-to-V RR.

We leave open whether this is the case.

<sup>60</sup> Among V-2 languages, German (and Dutch), Old English and Icelandic show clear cases of quirky Case. The lack of a rich case-marking system in Norwegian, Swedish, and Danish (for example) fails to tell us whether these languages employ quirky Case.

licensing. Quirky Case is also like structural Case such as NOM and ACC in that it should be licensed by a governor that has the Case feature although the governor does not determine Case. Thus, an argument with quirky Case can move to a Case position through A-movement but quirky Case is preserved in passive or raising construction, as we see in the German example (also see Thrainsson (1979; 352-3 for example) for Icelandic facts).<sup>61</sup>

- (47) a. Ég hjálpa honum  
I help him-dat  
b. Honum er hjálpað  
He-dat is helped  
c. Ég tel honum hafa verið hjálpað  
I believe him-dat to-have been helped  
d. Honum er talið hafa verið hjálpað  
He-dat is believed to-have been helped ((4.21) in Marantz (1984;-134); originally from Levin (1981))

To conclude, it seems that the employment of quirky Case and the employment of V-to-I deep-overt RR go together.<sup>62</sup> In fact, there is diachronic evidence to support this conclusion.

During the Middle English period, quirky Case or case endings, which were employed in Old English, were lost (cf. Lightfoot (1979); Lieber (1979;687)). It is interesting from our point of view that Old English also shows V-2 order.<sup>63</sup> It seems that the loss of quirky Case and the loss

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<sup>61</sup> In languages with deep-Case assignment of structural Case, when Case associated with a theta-role is not licensed by a governor without Case feature, Case would have the properties of inherent Case (cf. fn. 56).

<sup>62</sup> We assume (ia) (which implies (iia) but not (ib) (which implies (iib)).  
(i) a. If a language employs quirky Case, then it employs I-to-V RR  
b. If a language employs I-to-V RR, then it employs quirky Case.  
(ii) a. If a language employs quirky Case, then it employs deep structural Case assignment.  
b. If a language employs deep structural Case assignment, then it employs quirky Case.  
It seems that whether (ib) (and (iib)) hold is an empirical question.

<sup>63</sup> Some examples are illustrated below.

(i) a. Mícele Ding abaedon Da maeran apostolas aet Dam halgan Faeder ...  
great things asked the great apostles at the holy Father ...  
"Great things the great apostles asked of the holy Father ...

of V-2 took place at the same time. According to Visser (1969;1523),<sup>64</sup> in Middle English,<sup>65</sup> when an object was preposed (topicalized), "the construction with periphrastic do + inversion was as usual as that with straight word-order with and without do: 'These books did he sell,' 'These books he sold,' 'These books he did sell.'" We suggest that I-to-V deep-overt RR became I-to-V surface-overt RR (as in present-day English) during the Middle English period and thereby Middle English began to employ do support. V-to-I amalgamation must have been optional during the early period of Middle English since even when I is not filled by a modal or by Vaux, 'These books he did sell' is also possible. We reason that when I-to-V surface-overt RR is employed (i.e., when the auxiliary do is employed), the parameterization concerning Case assignment is also employed, i.e., configurational structural Case assignment (instead of the deep structural Case assignment that triggers the employment of quirky Case) is employed. When structural Case is assigned configurationally, quirky Case (a type of structural Case) is not available.

#### 4.1.3.2.2. C-to-I RR

Now, given I-to-V deep-overt RR in V-2 languages and I-to-V surface-overt RR in non-V-2 languages, V-2 and Aux-inversion can be explained by C-to-I deep-overt RR, which triggers Aux-inversion. As we argued in subsec-

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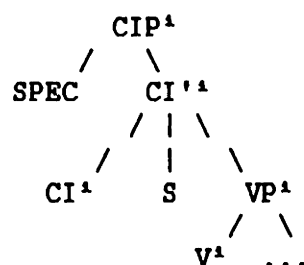
b. Hwele wite wene we Daet se felaspraecea scyle habban?  
 what punishment think we that the loquacious shall have  
 "What punishment do we think that the loquacious shall have?"  
 ( ((75) and (72) in Allen (1980); originally from Homilies of Aelfric  
 (Pope, ed.; VIII; 73) and from King Alfred's West-Saxon Version of Gregory's  
"Pastoral Care" (Sweet, ed.; 281))

<sup>64</sup> cited by Holmberg (1986;149).

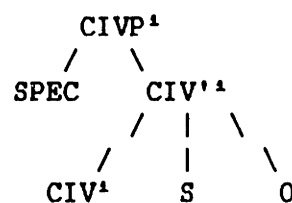
<sup>65</sup> and in the first three centuries of the Modern period (Visser (1969)).

tion 4.1.2., Aux-inversion in a certain environment in some Romance languages is obtained by deep-overt C-to-I RR. We thus suggest that both V-2 and Aux-inversion are obtained by C-to-I deep-overt RR deriving (48) from (45).

(48) a.



b.



In V-2 languages, CI-to-V covert RR applies, as shown in (48a), when I is filled by Vaux or by a modal. CI-to-V overt RR applies, as shown in (48b), when I is not filled by Vaux or by a modal. In English type languages, C-to-I deep-overt RR applies, as in (48a), whether or not I is filled by Vaux or by a modal. In English, CI is, therefore, realized either as do (by do-support) or by Vaux for certain reason that we will discuss below. Hence, V-2 and Aux-inversion in V-2 languages and English languages are obtained by C-to-I deep-overt RR thorough the parameterization of the levels of I-to-V RR application.

Remember that C-to-I RR makes features of I percolate up to C projections so that a CP is open: a verbal feature percolated from V is also percolated to C whether C, I, and V are morphologically amalgamated. When C is not RRed, C makes the I-V projection closed so that CP can be a proper argument of a predicate. Suppose the following principle:<sup>66</sup>

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<sup>66</sup> If NP is not a projection of N but a projection of a functional category that selects an NP (i.e., DP or KP; Abney (1987) and Hale (1987; class lectures)), then (49) is generalized as (ia); the definition of open argument may be given as in (ib) accordingly.

- (i) a. The maximal projection a is a closed argument iff it is not a projection of the lexical features ([+/-N, +/-V])  
 b. The maximal projection a is an open argument iff it is a projection of the lexical features ([+/-N, +/-V])

(49) Closed arguments are governed.

def. = the maximal projection a is a closed argument iff a is not a projection of [+V]

Then a matrix C would always be linked with I by RR since a matrix C projection is not governed by an X-head.<sup>67</sup> The notions of open and closed arguments suggest that C-to-I RR should apply in matrix clauses since matrix CPs are never governed. Although a matrix clause always triggers C-to-I RR to be open, the principle given in (49) does not explain the overt version of C-to-I RR.

As for a possible motivating factor for C-to-I deep-overt RR, we suggest that the property of C is motivating C-to-I RR. When the SPEC of CP is an operator scope position, C is categorially dependent upon INFL[+Tense] and I is morphologically dependent upon C, so that C-to-I deep-overt RR is motivated and therefore subject-INFL inversion is obtained. In short, we suggest that when the SPEC of CP is an operator scope position (or when a matrix clause is yes-no interrogative), C, which we call  $C_{wh}$ , is categorially dependent upon I[+Tense] overtly and I[+Tense] is morphologically dependent upon  $C_{wh}$ . The present analysis of the V-2 phenomenon implies or suggests that the degree of phonological or semantic 'richness' of categorical dependency relations differs depending on triggers and targets (also cf. Appendix III of Chapter 3):  $C_{wh}$  is categorially dependent upon finite INFL while null C may not be dependent upon INFL[-Tense] (as in control construction). Thus, we obtain V-2 order and Aux inversion

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<sup>67</sup> Kayne (1982) suggests that infinitives in general do not need complementizers since they take INFL that is not [+V]. Unlike Kayne's (1982) original suggestion, our argument refers rather to some intrinsic characteristics of all types of complements. Whether an argument is a projection of [+V] or that of [-V] is an obtained property. Note that V is always projected up to CP and I-to-V RR is obligatory in every clause. C, null or overt, may make infinitive complements closed unless C-to-I applies (cf. control verbs versus raising verbs).



in the following way. In English (48a), auxiliary verbs appear in  $CI^1$  position, and a main verb lies in  $V^1$ .  $C_{wh}$  will trigger A-bar movement of some element into the SPEC of CP. In V-2 languages, either V (48b) or Vaux (48a) appears on the left side of the subject and A-bar movement of some element into the SPEC of CP applies unless sentences are yes-no interrogative.

One question we can raise is that of why C-to-I RR should be overt. We suggest, by analogy with the locality principle of Focus assignment in Hungarian (cf. Horvath (1986); also cf. Section 4.4.), that operators (the head of an A-bar chain) should be licensed by their scope markers and that the scope markers must contain a verbal (lexical) element. We reason that C alone is not strong enough to be a scope marker.<sup>68</sup> If that is so, C-to-I RR must be deep-overt, if the scope of operators is to be licensed in syntax. The proposal explains why V-to- $CI^1$  is blocked in English at the surface:<sup>69</sup> In syntax  $CI^1$  should be supported by a verbal/lexical element to be a proper scope licenser or assigner and therefore do is inserted in syntax.<sup>70</sup> Then, in the PF component, V-to- $CI^1$  is automatically blocked as it is in the cases in which  $CI^1$  is filled by a modal or by Vaux.

If a deep-overt version of C-to-I RR in certain environments is triggered by the locality principle of Scope licensing,<sup>71</sup> the second difference

<sup>68</sup> C-to-I RR would suffice to make C verbal since I, through I-to-V RR, possesses the formal feature [+V] that is also transmitted to C.

<sup>69</sup> Notice that do-insertion after C-to-I overt RR applies is not blocked by any specific mechanism.

<sup>70</sup> Note that since V-to-I RR is surface-overt or V-to-I head-movement applies in the PF component) in English, V-movement is not an option to make I a proper scope licenser.

<sup>71</sup> By locality, we mean hierarchical locality but not string locality. In the Kru languages that employ the head-final parameter for the CP category, as Koopman (1984;93) argues, a wh-element (who in (i)) appears in the first

between English and V-2 languages with respect to Topicalization (cf. (40)) can now be explained in the following way: a Topic element in V-2 languages should be licensed by an (overt) verbal/lexical C, while a topic element in English can be licensed by a non-overt verbal or lexical C for reasons probably related to the different properties of topic elements in different languages.

So far, we have discussed V-2 and Aux-inversion in terms of RR. The core aspect of the V-2 phenomenon and Aux-inversion is nicely explained in terms of overt/covert C-to-I and I-to-V RR in matrix clauses. One advantage of the present analysis is that V-2 is no longer derived by a rule specific to V-2 languages, but is derived from the parameterization on the levels of rule application of the same rule that non-V-2 languages also employ.<sup>72</sup>

#### 4.1.4. The ACC-ing construction

Given the syntactic position and the notion of RR, the construction called ACC-ing construction in English is worth examining because it shows some aspect of open arguments. Assuming that the ACC-ing phrase is senten-

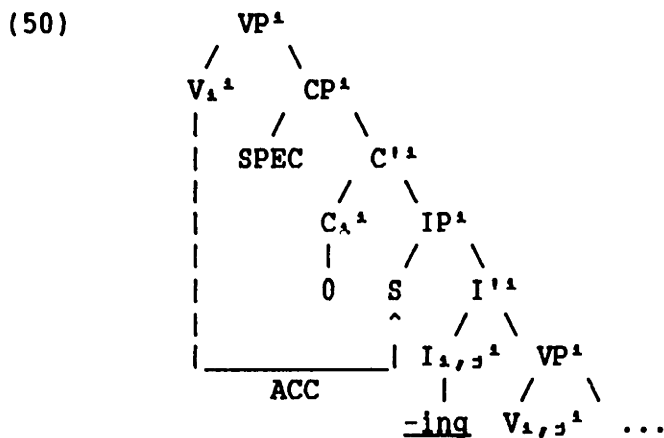
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position of the sentence and a C element (WH in (i)) whether it is CI or C) appears in the final position of the sentence.

- (i) a. ǎlɔ́, Kɔ́fí yé' [el, yé' lá  
           who Kofi saw PART WH "Who did Kofi see?"  
       b. ǎlɔ́, ñ gūgū nā Kɔ́fí yé' [0], yé' lá  
           who you think NA Kofi see PART WH  
           "Who do you think Kofi saw." ((45-46a) in Koopman (1984;35))

<sup>72</sup> In head-final languages, neither V-2 or Aux-inversion is observed since whether overt C-to-I RR applies, S and V-I never change their string order. In languages with a mixed head-parameter for CP and IP categories, word order would differ, depending on whether C-to-I RR is overt or covert and depending on how the head-parameter in CIP RRed projections which instantiate a mixed head-parameter is determined (cf. fn. 54 in Section 3.3.).

tial,<sup>72</sup> we suggest that ACC-ing construction is derived by V-to-V covert RR (1), which cooccurs with I(-ing)-to-V RR (3).



Consider one example of typical ACC-ing data.

(51) John hates [{the boy/him} studying in the library].

The first aspect of an NP-ing phrase is that the semantics and syntax of the NP-ing phrase differ depending on its matrix verbs (cf. Chomsky (1957)). Compare the following with (51).

(52) a. John knows the boy studying in the library.  
       b. John found the boy studying in the library. ((103) in Chomsky (1957))

The verb know selects an NP complement; NP-ing forms an NP with the V-ing modifier (relative clause) in (52a). The verb found can select a small clause (as well as an NP complement); NP in the NP-ing phrase is an ECMed

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<sup>72</sup> Here we will not discuss (POSS)essive-ing construction, which is nominal-like. See Wasow and Roeper (1972); Horn (1975); Williams (1975); Reuland (1983) for the sentential and nominal aspects of ACC-ing and POSS-ing constructions; see also Akmajian (1977) for arguments against the clause-nature of ACC/NP-ing clauses and Ruland (1983) for an argument against Akmajian. Some clear pieces of evidence for the sentential aspects of the ACC-ing construction are: It may contain sentential adverbials (cf. Williams (1975) and it may contain quasi-argument like weather-it or expletive there (cf. Reuland (1983)).

(i) John probably being a spy, Bill thought it wise to avoid him.

(ii) a. You may count on there being a lot of trouble tonight.

      b. I wouldn't count on it raining tomorrow. ((15, 18-9) in Reuland (1983))

For some other recent analyses of the ACC-ing construction, see Reuland (1983) and Abney (1987).

NP (small clause). The verb hate triggers the ACC-ing construction (or an NP), which differs both from (52a) and from (52b). Putting aside the case of NP-ing as an NP category for the time being, let us discuss (51) and (52b).

The ACC-ing construction has some similar properties to the ECM construction: Binding and wh-movement in (53-54b) behave in the same way as in (53-54a), in which the NP-ing instantiates the small clause ECM construction.<sup>74</sup>

- (53) a. Who did John find studying in the library?  
       b. Who does John hate studying in the library?  
 (54) a. John found himself studying in the library.  
       b. John hates himself studying in the library.

We have shown that C-to-I RR applies in the ECM construction. One might thus suggest that in the ACC-ing construction, C-to-I RR also applies. In fact, INFL has no Case feature, being [-Tense, -Agr], and therefore Case (ACC) should be assigned by a matrix V (through NP-adjunction), as in the ECM construction. (Note also that Case feature percolation does not make -ing a Case-assigner since INFL in English is not as strong as INFL in Italian.) There are, however, some differences between ACC-ing and ECM constructions. The differences between these two NP-ing phrases are syntactically confirmed with respect to passivization, scope, and the notion of government (cf. Chomsky (1957;103); Reuland (1983;112)).

- (55) a. The boy was found studying in the library (by John).  
       b. \*The boy was hated studying in the library (by John).  
 (56) a. John found everybody studying in the library. (wide)  
       b. John hates everybody studying in the library. (narrow)

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<sup>74</sup> (53-54b) are our versions of Reuland's (1983) data:

- (i) a. the only one who we'd favor t studying linguistics is John  
       b. the architects favored [each other being placed upon the investigations committee] ((30b) and (29) in Reuland (1983;112))

Judgments on the data in (53-54b) may differ depending on idiolects.

- (57) a. \*John found PRO studying in the library.  
 b. John hates PRO studying in the library.

In the ECM construction, since a matrix V is a (Case-)governor of an embedded NP by ECM, A-movement (passive) is possible; scope is also explained because the landing site of a quantifier is a matrix IP (if the domain of QR is an IP which contains a quantifier (cf. May (1977;1985))).<sup>75</sup> Since a matrix verb is available as a governor, PRO is excluded. However, the ACC-ing construction shows opposite properties in these three respects. The scope fact in (56) suggests that NP must lie within an embedded IP while the binding fact in (55) suggests that NP must have a governor outside of an embedded clause (probably a matrix V since NP is assigned ACC), given the notion of a minimal binding domain for an NP containing a governor of that NP. The possibility of PRO and the impossibility of A-movement (57 and 55) show that a government link between a matrix V and the NP may be weak.

If a 'restructuring' verb resists passivization, as we will suggest in Section 4.2 that the matrix V in the ACC-ing construction must be a V-to-V RR ('restructuring') verb, because passive does not apply in the ACC-ing construction. Thus we first suggest that V-to-V covert RR takes place and therefore that a matrix V can assign Case across C, which is [+CD]. V-to-V RR must be covert, given the word order V NP V-ing. Although V-to-V RR is covert, V-ing amalgamation seems to be derived by I-to-V deep-overt RR, since VP-movement is not attested (although some is marginally acceptable).

- (58) a. \*Study linguistics, we'd favor him doing.  
 b. \*What we'd favor him doing is study linguistics. (VP-movement version of Kayne's examples)

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<sup>75</sup> Note that we are assuming that ECMed NPs in English are derived by NP-adjunction to a matrix VP (cf. subsection 4.1.2.).

We suggest that the domain of V-to-V RR and the domain of -ing-to-V head-movement overlap. If IV (which is realized as V-ing) forms an M/R-complex word in syntax, IV<sup>1</sup> would also be available as a Case-assigner to an embedded subject (when V is intransitive) since I would not induce the MC (cf. Romance causative construction), given the V-to-V RR.

There is, however, some evidence that the V-to-V RR dependency and the I(-ing)-to-V RR dependency are independent of each other: I-to-V RR triggers the I(-ing), dependency relation and V-to-V RR the V<sub>1</sub>-dependency relation. Consider configuration (50). In (50), V can assign ACC under its government domain. Since the embedded subject comes under the government domain of V, the subject can be assigned ACC from V. If so, then we cannot explain the binding fact in (54): Since the governor of an embedded subject is within an embedded clause, we predict that a pronoun coreferential with a matrix subject will appear in the embedded subject position but this prediction is not borne out: \*John<sub>i</sub> hates him<sub>i</sub> studying in the library. It seems that V-ing<sup>1</sup> is not available as a potential governor of an embedded subject.

We suggest that the I-V<sub>1</sub> RR dependency derived by properties of -ing, (and accompanied by head-movement, forming an M/R-complex word in syntax) is obtained independently of the V-V<sub>1</sub> dependency derived by the Lexical properties of a matrix verb<sub>1</sub>. IVP<sub>1</sub><sup>1</sup> can then form a barrier for an embedded subject so that an embedded subject of the ACC-ing construction is strictly governed by a matrix verb.<sup>76</sup> If this is right, the ACC-ing construction suggests that the domains of the two RR dependencies may overlap and that a short dependency may cut the government domain of a long

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<sup>76</sup> In the ECM construction, CI<sup>1</sup> would induce the MC so that a matrix V could not govern an embedded S in-situ. In the ACC-ing construction, since V and C/I are RRed, C or I would not induce the MC.

dependency. Thus while V-to-V RR makes the ACC assignment from a matrix verb possible, -ing-to-V RR blocks government from an embedded V.<sup>77</sup>

Since the V-to-V RR in the ACC-ing construction is covert in syntax, we expect wh-movement to be possible since the SPEC of C is available as an escape hatch (cf. 53); we also expect only the narrow scope to be available since the IP node is projected (cf. 56). If a minimal binding domain for an NP is the matrix clause, an anaphor coindexed with a matrix subject is

<sup>77</sup> This situation can be found in other constructions: the ACC-ing phrase and a small clause with the overt subject in subject positions are obtained if I-to-C RR is possible as represented in (ia) and (ib).

(i) a. [<sub>CP</sub> C<sup>1</sup> [<sub>IP</sub> Them trying to sing a song]] [<sub>I</sub><sup>1</sup> was] just too horrible. ((1d) in Reuland (1983;101))

b. [<sub>CP</sub> C<sup>1</sup> [<sub>IP</sub> [John sick] [<sub>is</sub>]<sup>1</sup> an unpleasant sight ]]. (cf. Safir (1983); Chomsky (1987;class lectures))

We suggest that certain verbs such as be trigger I-to-C RR so that was can assign Case to them. (But notice that we leave open why the subject-to-subject raising of a small clause is possible (cf. Safir (1983)).)

Consider the following data.

(ii) John kept walking slowly, while {PRO/\*the rain} drenching the road (with insecticides). ((60c and d) in Reuland (1983))

Suppose that certain prepositional complementizers (while) have the Case feature [+SC]. Then while can assign Case. However, even if while has the Case feature [+SC], it cannot assign Case to NP because of the -ing-V<sup>1</sup> (that induces the MC). Suppose that adverbial clauses can be headed by a functionally weak prepositional C so that the C is phonetically null and categorially dependent upon I. Then C-to-I RR allows Case assignment from C since I induces the MC.

(iii) John kept walking slowly, [<sub>CP</sub><sup>1</sup> 0[+SC] [<sub>IP</sub><sup>1</sup> the rain drenching the road]]. (cf. (60) in Reuland (1983))

The analysis of (iii) has an apparent problem. Since the governor of the rain lies outside of the IP, the matrix CP would be a minimal domain for an embedded NP, as we see in the case of (iv); for, an element outside of IP, is a governor of an embedded subject so that the matrix clause is a minimal domain.

(iv) They<sub>i</sub> would prefer for {each other<sub>i</sub>/\*them<sub>i</sub>} to win.

However, as Reuland notices, in (v), a matrix subject can be coreferential with an embedded pronoun and an embedded anaphor cannot be bound by a matrix subject, unlike (iv).

(v) a. Roddy<sub>i</sub> tried to avoid Elaine, [he<sub>i</sub>/, being a confirmed bachelor].

b. \*The boys<sub>i</sub> kept looking for Elaine and Nancy, each other<sub>i</sub> following at a distance. ((57-58) in Reuland (1983))

We may, however, assume that the contrast between (iv) and (v) is triggered for a reason given in (vi), given the fact that (iv) contains a complement CP while (v) contains an adjunct CP.

(vi) CP may form a binding domain when it is not governed.

allowed (cf. 54), as in the ECM construction. Finally, suppose that V-to-V RR is optional so that a matrix verb will not necessarily Case-govern an embedded subject. If no V-to-V RR applies, then C and I would induce the MC. Thus, the possibility of PRO (cf. 57) is explained, given that C and I[-Tense, -Agr] are not proper governors: no V-to-V RR applies and therefore no ACC assignment from a matrix verb is obtained.

So far, we have discussed the idea that the ACC-ing construction is obtained by two overlapping dependencies: the V-to-V covert RR and the I(-ing)-to-V (deep-overt) RR. The interaction of these two dependencies rather nicely explains the 'mixed' properties of the ACC-ing construction: it differs from the ECM construction (cf. V-to-V RR), on the one hand, and from the 'restructuring' construction on the other hand (cf. -ing-to-V RR).

#### 4.1.5. Tree pruning; whiz deletion

One more linguistic phenomenon that falls under the explanatory domain of RR is a phenomenon which used to be described in terms of tree pruning (for example, whiz-deletion; to be deletion in Ross (1967)). In this subsection, we discuss the whiz-deletion construction for illustrations. Consider the following.

(59) John knew [the boy studying in the library]. (VP)

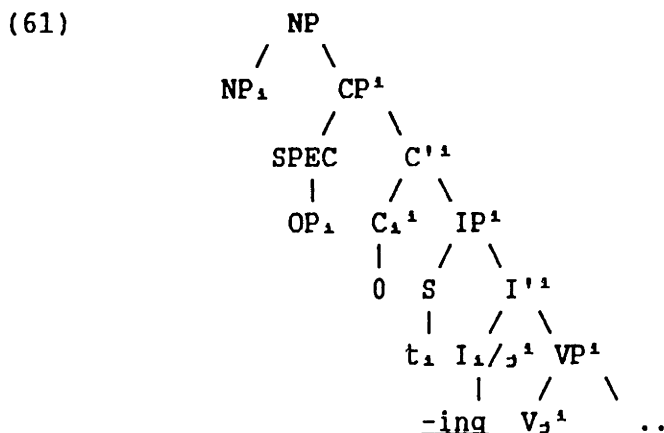
NP-ing phrases, as we have seen, are structurally ambiguous. The unambiguity of (59) is obtained by selectional restrictions of the verb know, which selects an NP (and a CP). The V-ing subphrase modifies an NP, whose semantics are the same as that of relative clauses and hence whiz deletion is motivated. In fact any phrases that can be followed by which/who is



(except for predicate NP's)<sup>7\*</sup> occur on the right side of an NP. The categories of NP modifiers vary, as shown below.

- (60) a. John knows the boy killed by an enemy. (VP)  
 b. John knows the boy on the bench. (PP)  
 c. John knows the boy generous about everything. (AP)  
 d. \*John knows the boy a doctor. (NP)  
 e. The problem that John is too stupid is not new. (CP)

Since the projection principle (on X-heads) would not allow whiz deletion, one may suggest that XPs are simply adjoined to NPs, like a relative clause in which a CP is adjoined to a head NP. In fact, the XP of the NP+XP sentence in (60) turns out to be CP under the present framework. If every predicate is automatically projected up to CP, as we suggest (the syntactic position in Chapter 3), the NP+XP structure (60a and c) should be NP+CP, which is syntactically the same as relative clauses. Semantically, in (60b and e), the PP and CP have the predicate reading (the boy is on the bench; the problem is that John is too stupid). Thus, all instantiations in (60) should be considered as containing relative clauses in which C (and I) are not phonetically realized and null operators are contained.



In (61), S is not assigned NOM because -ing does not assign Case and no other Case-assigners are available. Thus let us suggest that PRO is

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<sup>7\*</sup> In the case of (60c), the AP phrase should be long enough: \*John knows the boy generous. We have no explanation for this.

generated in the  $\bar{t}$  position so that no wh-operator appears and moves through A-bar movement, obtaining an index of the head NP through the prediction relation between NP and CP<sup>1</sup>. PRO-operator-movement to the SPEC of CP would violate the ECP since  $\bar{t}$  is not antecedent-governed by the PRO operator because of C. Thus, we motivate C-to-I RR; if C-to-I RR applies, then C does not induce the MC and PRO-operator-movement satisfies the ECP. I-to-V RR should be independent of C-to-I RR so that V does not assign Case to S in the configuration (61) because of C that would induce the MC.

This approach, however, undermines the thesis that variables are Case-marked (cf. Chomsky (1981)). We suggest, by analogy with PRO in a ungoverned position, that PRO operators base-generated in non-Case positions<sup>79</sup> are highly restricted in that they occur only in -ing contexts so that non-Case-marked traces are also so restricted. The thesis that PRO-operators are base-generated in the -ing contexts seem to be empirically supported. Consider the following:<sup>80</sup>

- (62) a. I know [<sub>NP</sub> the boy to meet].  
       b. \*I know [<sub>NP</sub> the boy to meet Mary].  
 (63) a. \*I know [<sub>NP</sub> the boy meeting].  
       b. I know [<sub>NP</sub> the boy meeting Mary].

In (62), a variable must be in the object position; in (63), it must be in the subject position. We suggest that this property has to do with the government property of -ing: -ing allows a PRO operator within the IP

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<sup>79</sup> Note that PRO need not be Case-marked.

<sup>80</sup> According to Howard Lasnik (p.c.), (62b) is not so ungrammatical and the following (1a) is acceptable.

- (1) a. I know the man to solve the problem.  
       b. I saw the man to solve the problem.

However with a different matrix verb, the sentence is ungrammatical, as we see in (1b). We will not attempt to explain why such a contrast in (1a) and (1b) is obtained; we simply speculate that the contrast has to do with the semantics of a matrix verb, and therefore with the syntax of the structure containing it.

projection (as in the ACC-ing construction) when the subject position is not assigned Case, but to does not. Thus (62b) is not acceptable since to does not license a PRO operator and allows PRO in subject position.

If ing can license a PRO operator, we expect that PRO in the ACC-ing construction is actually a PRO operator when V-to-V RR does not apply: I hate [<sub>CP</sub> PRO<sub>i</sub> C [<sub>IP</sub> t<sub>i</sub> hitting a dog]]. We would then expect that wh-extraction out of the object position would violate Subjacency, unlike the case in which V-to-V RR applies. In fact, the following contrast is obtained.<sup>21</sup>

- (64) a. \*What do you hate hitting?  
b. (?)What do you hate the boy hitting?

In addition, if ing can license PRO operators, we would also predict that overt wh-movement to an embedded SPEC of CP is not possible. This prediction also seems to be borne out, as shown below (cf. fn. 81).

- (65) a. Rudy didn't remember what to do.  
b. \*Rudy didn't remember what doing. ((31) in Reuland (1983))

In (65b), what cannot move to the SPEC of CP, since a PRO operator already occupies the position; in (65a), PRO (but not a PRO operator) is available so that what can move to the SPEC of CP.

Based on the above discussion, we now suggest that in (60) he is not realized, and that phonetically unrealized he can also license PRO operators, as in (61). In other words, all the instantiations in (60) have the structure in (61) with different IP and VP projections. Note that we are

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<sup>21</sup> Noam Chomsky (p.c.) has pointed out to us that (64a) is O.K. with reading (ia) but not with reading (ib).

- (i) a. What do you<sub>i</sub> hate PRO<sub>i</sub> hitting?  
b. What do you<sub>i</sub> hate PRO<sub>α,β</sub> hitting?

We suggest that the (ia) reading is from the control phenomenon and PRO, not a PRO operator, is involved. In (ia), PRO does not move to the SPEC of CP so that what can move into it, while in (ib), a PRO operator moves to the SPEC of CP, preventing what from moving into it, so that movement of what violates the wh-island condition.

assuming that null X-heads have enough basic syntactic and semantic features to be X-heads (even if they are not rich), justifying the following thesis: Even if they are phonetically null, they are syntactically real enough to license PRO operators.

So far, we have presented a possible approach to the whiz-deletion construction under the notion of RR and the wide interpretation of the projection principle. We have tried to show that some null categories, which do not have phonological features, are predicted to be real in the position in which they are supposed to appear, given partial overt realization of the projections in (60) and given X-bar theory and the assumption that the appearance of VP automatically predicts the existence of CP node and vice versa. What we have suggested in this subsection is that although some categorially (or functionally) weak instantiations of categories tend to be covert, they have (minimal) syntactic functions or semantics in configurational structure, since null X-heads may induce the MC or license PRO operators.

#### 4.1.6. Summary

We have discussed various constructions with F-L and F-F amalgamation in terms of RR. We have shown that overt/covert versions of F-L and F-F amalgamation trigger change in word order (cf. RR conventions). We have also shown that the effects of amalgamation vary, depending on the language-specific parameterization of the levels of rule-application (RR parameters) and on the properties of functional X-heads INFL (or C) (cf. the syntactic position discussed in Chapter 3).

During the discussion, we introduced the notion of open and closed maximal projections derived by RR. This notion implies that the intrinsic

nature of categories imposed by theta-theory and by X-bar theory is independent of the properties of categories imposed by RR and that UG includes a mechanism governing deep and formal/surface properties. Remember that the [+V] feature of INFL obtained through RR does not represent a 'deep' property and does not make INFL a lexical category. The notions of deep and surface/formal ergativity or of transitivity (i.e., [+/-Case transitivity]) in Italian and Eskimo languages (cf. Chapter 2) also illustrate this aspect of linguistic representation.

The present analysis also suggests that an instantiation of F-F/L amalgamation is derived either by theoretical necessity (I-to-V and matrix C-to-I amalgamation) or by the Lexical properties of matrix Vs (ACC-ing and ECM constructions). Functional categories would never be targets of RR when lexical categories are triggers of RR, probably for semantic reasons (cf. the semantics of Vx and Vk in Chapter 3); no V-to-C or V-to-I RR is empirically instantiated. We have discussed I-to-V RR (inflection); C-to-I RR governed by properties of matrix verbs (ECM); C-to-I RR in matrix clauses; V-to-C-to-I-to-V (ACC-ing) governed by properties of matrix verbs and those of INFL (-ing). We have also shown that functional X-heads amalgamate with other heads only through RR but not through head-movement alone (no V-to-I or V-to-C head-movement). In fact, we have shown that all the instantiations of head movement to I or to C discussed in the literature turned out to be instantiations of RR. Thus the proper generalization is that the target of head-movement is not a functional category.<sup>82</sup>

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<sup>82</sup> In Chapter 5, this generalization derives from (a certain version of) the HMC.

Therefore the following configuration is not the domain of head-movement but that of RR (which may be accompanied by head-movement).<sup>83</sup>

(66) [<sub>CP</sub> ..C ..I..V ]

If functional X-heads amalgamate with V in terms of RR, then, the apparent V-to-V amalgamation is actually CIV-to-V amalgamation. If the landing sites of head-movement are not functional heads, then only when intervening functional heads are overtly or covertly RRed with lexical heads is head-movement possible.<sup>84</sup> In the following two Sections, we will discuss predicate-to-predicate (CIV-to-V or V-to-CIV) amalgamation in terms of RR and head-movement.

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<sup>83</sup> In the case of NP structure, if either KP or DP is an actual projection of N (cf. Hale (1986; class lectures); Abney (1986)), then the following configuration will represent the domain of RR : [<sub>KP/DP</sub> ..(K) ..(D) ..N ]. We leave specific empirical data open for further research.

<sup>84</sup> Notice that we predict that there may be an instantiation of C-to-V head-movement. Nevertheless, such amalgamation is not observed to our knowledge. We leave this open for further research. However, see Choe (1987b), who shows that X-to-V head movement is attested to in languages such as Korean when X is a functional category within NP.

## 4.2. Causative construction

### 4.2.0. Introduction

In Chapter 3, we have seen that some morphologically-complex predicates which contain causative predicates are derived by head-movement. In this Section, assuming that V-V amalgamation is actually VIC/CIV-V amalgamation (based on discussions in Section 4.1.), we show that some causative complex predicates are also derived by RR. We will compare Korean and Japanese causative constructions, on the one hand, and Korean and Romance causative constructions on the other hand. In the second part of this Section, we will suggest that both Italian (and English) psych-verbs and Korean psych-causative predicates instantiate causative complex predicates in which causative predicates are ergative.

We are assuming here that each lexical X-head (with the features [+/-N, +/-V]) has its own theta-structure. If causative construction is biclausal, then the theta-structures of the two predicates (the caus predicate and the embedded predicate of causative construction are connected in terms of complementation. For expository purposes, let us assume that the theta-structure of causative construction can be represented in the manner given in (1c), which we call CFC structure; we adopt Williams's (1981) underlining notation to indicate logical subjects in Marantz's (1984) sense.

- (1) a. John makes his brother laugh.  
b. John makes his brother like Mary.  
c. the CFC structures of (a) and (b): (1a) = (x, (y)<sub>x</sub>); (1b) = (x, (y, z)<sub>x</sub>),  
where x is a logical subject of the matrix verb, y and z are a logical subject and a logical object of the embedded verb, and y plays another role s-selected by the matrix verb.

CFC structure contains information about the position of each theta-role, embedded or matrix. Let us further assume that the first slot of theta-structure indicates the position of the grammatical subject. When there is no logical subject, CFC structure is  $(e, y...)$ , in which  $e$  represents an empty slot. Given this notion of CFC structure we can conceive of change in CFC structure when A-movement applies. After the application of subject-to-subject raising, for example, CFC structure is changed as this:

$$(e, (y, z)_x) \text{ ----> } (y_1, (t_1, z)_x).$$

Cross-linguistically, causative constructions differ depending on whether causative predicates are morphologically-complex and depending on the argument structures they take. For example, in both English and in French (cf. 2 and 3), causative predicates are independent of embedded predicates; in both Korean and Chichewa (cf. 3 and 4), causative predicates are morphologically complex. On the other hand, when an embedded verb is transitive, in English and in Korean, an embedded subject takes ACC but in French, Korean, and one dialect of Chichewa, it takes dat.<sup>1</sup>

- (2) a. John made Mary laugh.  
       b. John made Mary hit Tom.  
 (3) a. Il a fait partir son amie.  
       "He had his friend leave."  
       b. Elle a fait visiter la ferme à ses parents.  
       "She had her parents visit the farm." ((5a) and (6c) in Kayne (1975; 203-204))

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<sup>1</sup> According to Baker, the data (5) represent one dialect of Chichewa (data from Mchombo (p.c.)). The other dialect of Chichewa (data from (Trithart (1977)) patterns like English in that an embedded subject is a bare NP (as if it took ACC), when an embedded V is transitive.

- (1) a. Mtsikana anau-gw-ets-a        mtsuko  
       girl        agr-fall-make-asp waterpot  
       "The girl made the waterpot fall."  
       b. Catherine ana-kolol-ets-a        mwana        wake chimanga  
       Catherine agr-harvest-made-asp child        her        corn  
       "Catherine made her child harvest corn." ((3) in Baker (to appear; Chapter 4))



- (4) a. ai-ka emeni-lul wu-ki-n-ta  
 child-sub mother-obj smile-caus-pres-me  
 "The child makes the mother smile."  
 b. emeni-ka ai-{lul/eykey} pap-lul mek-i-n-ta  
 mother-sub child-{obj/dat} cooked rice eat-caus-pres-em  
 "The mother made the child eat cooked rice."
- (5) a. Buluzi a-na-sek-ets-a ana  
 lizard SP-pst-laugh-caus-asp children  
 "The lizard made the children laugh."  
 b. Anyani a-na-meny-ets-a ana kwa buluzi.  
 baboons SP-pst-hit-caus-asp children to lizard  
 "The baboons made the lizard hit the children." ((42 and 44a) in  
 Baker (to appear; Chapter 4))

Under the syntactic position, the CFC structure of the causative construction is expected to be the same, as in (1c), whether the causative construction contains a morphologically-complex predicate or not.<sup>2</sup> The argument structures of the causative construction is expected to differ cross-linguistically, exhibiting a small number of variations according to the syntactic derivations of causative complex predicates. Although the argument structure of the causative construction shows some predicted variations, we expect the causative construction to have the CFC structure in (1c).

Under the strong lexicalist position, the CFC structure of the causative construction is expected to differ depending on whether a causative predicate is morphologically-complex. When a causative predicate is not morphologically-complex, the CFC structure of the causative construction is as in (1c). On the other hand, when it is morphologically-

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<sup>2</sup> It seems that the morphological aspects of causative predicates do not entail bi- or mono-clausality, as we will confirm in the following subsections. Baker (to appear; fn. 11; Chapter 4) reports that the causative construction of Mchombo's dialect shown in (i) exhibits bi-clausality by having the scope ambiguity of an adverbial.

- (i) Kambuku a-ma-yend-ets-a njovu ndi mpini  
 leopard SP-hab-walk-caus-asp elephant with hoe-handle  
 "The leopard made the elephants walk with a hoe-handle."  
 (Elephants use hoe-handles in walking, OR  
 Leopards push elephants with a hoe-handle.)

complex, the CFC structure of the causative construction differs from (1c) since morphologically-complex predicates are obtained by lexical rules in the Lexicon and therefore project mono-clausal structures. Consider for example one of Grimshaw and Mester's (1985; 10-11) lexical rules, called the -kqu- rule (in Greenlandic Eskimo), in which -kqu- belongs to the same class as a causative predicate in the language.

(6) a.  $V(S, \dots) \rightarrow V\text{-kqu-}(S, 0, \dots)$

$\begin{array}{ccc} & & | \\ & & | \\ y & & x \ y \end{array}$

b. Add  $x$ , reassign grammatical functions (where  $S$  and  $0$  represent grammatical functions and  $x$  and  $y$  arguments)

The rule is a version of Williams's (1981b) rule of internalization for lexical causativization,  $I(X)$ , which is interpreted as follows:

(7) a.  $I(X)$ : (a) Set the external argument of the input word 'equal to'  $X$  in the output word.

(b) Add a new external argument (A)gent.

b.  $I((\text{Theme}))$ :  $V(A) \rightarrow V\text{-caus}(A, \text{Th} = A)$  (cf. (42 and 45) in Williams (1981b;99-100))

In either rule, causativization requires two steps: add an external theta-role and demote an original external theta-role into a non-external theta-role (7b) or into a grammatical object (6b). (6), for example, implies that the CFC structure of the Eskimo causative construction is as follows:  $(X, w)$ .

Under the syntactic position we are assuming, the effects of these two rules follow, given principles of UG (concerning Case assignment and the notion of government). We do not need to add an external theta-role (a matrix logical subject,  $x$  in (1c)), since a matrix predicate (causative predicate) requires a logical subject. Second, we do not need to have a rule to demote an original external theta-role (an embedded logical subject:  $w$  in (1c)) or to change grammatical functions since the embedded logical subject is assigned ACC by caus-V when  $V$  is intransitive ( $V$ , which is the

s-head, assigns Case being intransitive (Case-transitive)).<sup>3</sup> The two rules are dispensed with because of the D-structure condition/theta-criterion and because of the rules of Case-assignment and of the notion of government, both of which are independently motivated in syntax.

The rules in (6-7) intend to explain only the case in which an embedded verb is intransitive. The strong lexicalist position would thus require a different internalization rule for the case in which an embedded clause is transitive in the following way: An embedded object becomes a grammatical object of a complex predicate and an embedded subject is assigned ACC (cf. 2b and 4b) or Case by the dative Case marker to; since caus-V can assign only one ACC, one of the two embedded arguments should be assigned by to (cf. (4b) with a dat causee and (5b)).<sup>4</sup> In addition, when a matrix verb is ergative, the strong lexicalist position would also need another lexical rule. However, the syntactic position would have CFC structure (8a) whose change is motivated in syntax, subject to universal principles (unlike the rule in (8b) which the strong lexicalist position might have); z moves to a Case position.

- (8) a.  $(e, (x, z)_y) \rightarrow (z_1, (x_1, t_1)_y)$  (cf. subsection 4.2.2. below)  
       b.  $V(e, x) \rightarrow V\text{-caus}(z, x)$   
           |  
           lexical rules

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<sup>3</sup> In (6), the rules imply a change in grammatical functions but in (7), the rules imply a change in theta-role; they trigger complex theta-roles; the embedded subject argument is both theme and agent. Here we discuss change in grammatical functions, suggesting that change in theta-role may be explained independently.

<sup>4</sup> As Grimshaw and Mester (1985) argue, the strong lexicalist position heavily relies on the assumption that predicates cannot have more than one grammatical subject or object. Williams's position may, however, have some difficulties in incorporating this assumption. Either way, even if we have another rule for the case in which an embedded verb is transitive, the strong lexicalist position may find difficulty in explaining the double object in (4b) with a -lul causee (also cf. Chichewa; (i) in fn. 1)).

In short, the strong lexicalist position is forced to add new rules in nonpredicted ways depending on types of subpredicate and therefore can not predict possible variations of the argument structure of the causative construction. The strong lexicalist position thus lacks some predictability which the syntactic position might have. Below, we show how we (the syntactic position) predict that different rules (RR and head-movement) derive a small number of different types of causative predicate and that the ergativity/transitivity of causative predicates determines some limited different types of argument structure of the causative construction. Given the notions of M/R-, M- and R-complex words, we discuss possible variations of causative complex predicates and their empirical data. As for empirical data, we discuss mostly causativization in Korean, psych-verbs in Italian and the causativization of psych-adjectives in Korean. We will also see not only that the syntactic position is theoretically and empirically viable but also that some instantiations of complex predicates must be derived transformationally.

#### 4.2.1. Causative complex predicates

In this subsection, we discuss Korean V-key ha- and V-i- causative complex predicates<sup>5</sup> as instantiations of R and M-complex words, comparing them with Japanese V-sase causative complex predicate and with Romance causative complex predicates.

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<sup>5</sup> There are many different terms for -i- causativization: short form causativization (cf. I.-S. Yang (1972); direct causativization (cf. Shibatani (1973b)); lexical causativization (cf. K.-D. Lee (1975a); Shibatani (1975)); morphological causativization (cf. K. Park (1986)). -key ha- causativization is also called several names: long form causativization, indirect causativization, clausal/periphrasal causativization. We simply use the terms -key ha- and -i- causativizations to avoid any (theoretical) implications.

## 4.2.1.1. Causative constructions in Korean

Korean employs three apparently different ways of making causative construction (cf. Choi (1935;410-20)).<sup>6</sup> First, when verbs are denominal verbs in the form of N-ha- (N-do)<sup>7</sup> in which N is an abstract noun, they are causativized in the form of N-sikhi- (N-have/make) or -sikhi-.<sup>8</sup>

- (9) a. Chelswu-ka nolay-ha-ess-ta (Vi)  
           -sub song-do-past-em "Chelswu sang."  
       b. Yenghi-ka Chelswu-lul nolay-sikhi-ess-ta  
           -sub           -obj song-make/have-past-em  
           "Yenghi had Chelswu sing."

<sup>6</sup> There is one more causativization which Choi (1935) does not mention. V-e-ci- (especially in the lexicalized form) is causativized (or transitivized) in the form of V-e-ttuli-, whose semantics are roughly V-e-ci-0-key ha- (V-Inf-become-Inf-comp do)..

- (i) a. [0] nemeci-0-ta  
           fall down-pres-em "[0] falls down."  
       b. [0] [0] nemettuli-0-ta  
           knock down-pres-em "[0] knocks down [0]."  
 (ii) a. [0] puleci-0-ta  
           get broken-pres-em "[0] gets broken."  
       b. [0] [0] pulettuli-0-ta  
           break-pres-em "[0] breaks [0]."

Whether the phenomenon is derived lexically or syntactically is a question that we will leave open here.

<sup>7</sup> or ha- (do) as a main verb.

<sup>8</sup> N may be either Korean or Sino-Korean (i) (cf. Choi (1935;416)):

- (i) Korean: il-ha (work-do = work); mal-ha- (language-do = speak);  
           hongpwu-ha (study-do = study); kekceeng-ha- (worry-do = worry)  
       Sino-Korean: wuntong-ha- (exercise-do = (take) exercise); yenkwu-ha-  
           (research-do = make researches); cungmyeng-ha- (proof-do  
           = prove); kwuseng-ha- (organization-do = organize) ...

On the other hand, not every abstract N allows N-sikhi- causation (ii).

- (ii) Korean: salang-ha- (love-do = love) --> \*salang-sikhi-;  
           kwungkwum-ha- (wonder-do = wonder) ---> \*kwungkwum-sikhi- ...  
       Sino-Korean: bwuncwu-ha- (business-do = busy) ---> \*bwuncwu-sikhi-  
           conkyeng-ha- (respect-do = respect) --> \*conkyeng-sikhi- ..

When N is not an abstract noun (iiia), or deadverbial (iiib/c), or N-ha- is adjectival (iiic), -sikhi- causation is not possible.

- (iii) a. pap-ha- "rice do = cook rice" ---> \*pap-sikhi-  
       b. kiwus-ha- "peeping (Adj) or tilt (V)" ---> \*kiwus-sikhi-  
       c. santtus-ha- "neat (Adj)" ---> \*santtus-sikhi-

- (10) a. Chelswu-ka posuthon-lul kwukyeng-ha-n-ta (Vt)  
           -sub Boston-lul sightseeing-do-pres-em  
           "Chelswu goes sightseeing to Boston."  
   b. Yenghi-ka Chelswu-{eykey/lul} posuthon-lul kwukyeng-sikhi-ess-ta  
           -sub -{to/obj} Boston-obj sightseeing-make/have-past-em  
           "Yenghi had Chelswu go sightseeing to Boston."

On the other hand, other verbal stems (intransitives, adjectives or transitives) can be causativized in the form of V-i-\*,<sup>10</sup>

- (11) a. elum-ka nok-ass-ta (Vi)  
           ice-sub melt-past-em "Ice melted."  
   b. Yenghi-ka elum-lul nok-i-ess-ta  
           -sub ice-obj melt-caus-past-em "Yenghi had ice melt."  
 (12) a. i kil-ka nelp-0-ta (Adj)  
           this road-sub broad-pres-em "This road is broad."  
   b. ilkwun-tul-ka i kil-lul nelp-hi-n-ta  
           worker-pl-sub this road-obj broad-caus-pres-em  
           "The workers make this road broad."  
 (13) a. Chelswu-ka ku kapang-lul tul-ass-ta (Vt)  
           -sub the bag-obj hold-past-em "Chelswu held the bag."  
   b. Yenghi-ka Chelswu-{lul/eykey} ku kapang-lul tul-li-ess-ta  
           -sub -{obj/to} the bag-obj hold-caus-past-em  
           "Yenghi had Chelswu hold the bag."

These two causativizations have some common properties: First, when an

\* Depending on its phonetic environment, -i- is realized as {i/hi/li/-ki/wu/khi/hwu-} (cf. Choi (1935)).

<sup>10</sup> Some verbal stems do not allow -i- causativization.

(1) \*ka-i- (go-caus; Vi); \*kil-i- (long-caus; Adj); \*catu-i- (lock-caus; Vt)

Because of its selective productivity, one might suggest that V-i- is lexically derived and that the notion of blocking (cf. Aronoff (1976)) operates to block some V-i- instantiations since go-caus has an independent word for it: ponay- (send). However, there are no independent lexical items for long-caus or lock-caus. Apparently, there seems to be no generalization about what verbal stems are not -i- causativized.

embedded verb is intransitive, an embedded subject takes -lul (obj).<sup>11</sup> On the other hand, when it is transitive, an embedded subject takes either -eykey (dat)<sup>12</sup> or -lul (obj). Second, -i- and -sikhi- causativizations are not fully productive and rather have selective productivity (cf. fns. 8 and 10). Third, semantically, these two causativizations tend to have the direct causation meaning although they also instantiate the indirect causation meaning (and the permissive reading)<sup>13</sup> (cf. Gruber (1965/76); I.-S. Yang (1972; 1976)).

There is one more causativization in Korean: -key ha- causativization. -key ha- causativization, which is sometimes called 'periphrasal' causation, is entirely productive (as Choi (1935) notes): verbs that can be -i- causativized (14), N-ha verbs (15), or any other verbals (16) can be -key ha- causativized.

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<sup>11</sup> In both -i- and -sikhi- causative constructions, when a causee is animate, it may take the dative -eykey (sometimes marginally) with the indirect causation meaning.

(i) Yenghi-ka Chelswu-eykey nolay-sikhi-n-ta  
       -sub          -day song-cause-pres-em

"Yenghi caused Chelswu to sing."

(ii) ??hwukuk paywu-ka chengcwung-eykey wu-ki-n-ta  
       comic actor-sub audience-dat smile-caus-pres-em

"The comic actor caused the audience to smile." (cf. I.-S. Yang (1976))

<sup>12</sup> When an embedded V is a transitive reflexive verb in the form of NP<sub>i</sub> V {NP<sub>i</sub>/\*NP<sub>j</sub>} 's N (cf. 1a), an embedded subject with -eykey is marginal or ungrammatical (cf. 1b).

(1) a. Yenghi<sub>i</sub>-ka {[0]<sub>i</sub>/\*Chelswu-uy} meri-lul kam-ess-ta  
       -sub                          -gen hair-obj wash-past-em

"Yenghi washed {her/\*Chelswu's} hair."

b. Yenghi-ka Chelswu<sub>i</sub>-{lul/\*eykey} {[0]<sub>i</sub> meri-lul kam-ki-n-ta  
       -sub                          -obj/dat hair-obj wash-caus-pres-em

"Yenghi makes Chelswu wash (his) hair."

<sup>13</sup> The term 'direct causation' indicates that causation is more like transitivization. In other words, a matrix subject has a direct effect on an embedded subject. On the other hand, in indirect causation, a matrix subject does not affect an embedded subject directly; rather, it causes a embedded subject's action indirectly.

- (14) a. Yenghi-ka Chelswu-lul posuthon-ey ka-0-key ha-ess-ta (\*ka-i-)  
           -sub          -obj Boston-to go-Inf-comp do-past-em  
           "Yenghi caused Chelswu to go to Boston."  
   b. Yenghi-ka ladio-soli-lul khu-0-key ha-ess-ta (\*khu-i-)  
           -sub radio-volume-obj loud-Inf-comp do-past-em  
           "Yenghi caused the radio sound to be loud."  
   c. Chelswu-ka Yenghi-{eykey/lul} chayk-lul cong-i-lo (\*ssa-i-)  
           -sub          -{to/obj} book-obj paper-with  
           ssa-0-key ha-ess-ta  
           wrap-Inf-comp do-past-em  
           "Chelswu caused Yenghi to wrap books in paper."
- (15) Chelswu-ka ai-{eykey/lul} pwumonim-lul conkyeng-ha-0-key ha-ess-ta  
           -sub boy-{to/obj} parentH-obj respect-do-Inf-comp do-past-em  
           "Chelswu caused the boy to respect (his) parents." (\*N-ha-i-)
- (16) a. Yenghi-ka elum-lul nok-0-key ha-ess-ta (nok-i-)  
           -sub ice-obj melt-Inf-comp do-past-em  
           "Yenghi caused ice to melt."  
   b. Yenghi-ka Chelswu-{eykey/lul} ku kapang-lul tul-0-key ha-ess-ta  
           -sub          -{to/obj} the bag-obj hold-Inf-comp do-past-em  
           "Yenghi caused Chelswu to hold the bag." (tul-i-)

Like -i- or -sikhi- causativization, when an embedded verb is intransitive, an embedded subject may take -lul (obj);<sup>14</sup> when it is transitive, an embedded subject may take either -lul (obj) or -eykey (dat).

In the following subsection, comparing Romance and Japanese causative constructions, we discuss the three different causative complex predicates in Korean as instantiating two types of causative complex predicate: V-i- and V-sikhi- as M-complex words and V-key ha- as an R-complex word. Our analysis will show that morphologically-complex causative predicates (V-i- and V-sikhi-) are syntactically-derived.

#### 4.2.1.2. V-key ha- complex predicates and R-complex words

In the V-key ha- causative construction, even though the realization of tense elements cannot appear between V and -key, there are some pieces

<sup>14</sup> When an embedded verb is intransitive, if a causee is animate, it may take -eykey (dat) (sometimes marginally and sometimes perfectly); with -eykey, the indirect causation meaning is strong (cf. I.-S. Yang (1976; 76)).



of evidence that V-key ha- represents bi-clausality.<sup>15</sup> First, agreement elements may overtly appear between V and -key.

- (17) a. sensayng-nim-tul-lul tul-e o-si-(\*ess-)key-tul ha-ess-ta  
 teacher-H-pl-obj enter-Inf come-H-(past-)comp-pl do-past-em  
 "[0] caused teachers to come in."
- b. halmenim-{lul/kkey} cinci-lul tu-si-(\*ess-)key ha-ess-ta  
 grandmotherH-{obj/datH} mealH-obj eatH-H-(past-)comp do-past-em  
 "[0] caused grandmother to have her meal."

The facts about agreement in (17) suggest that the embedded V-key clause contains INFL[-Tense,+Agr]. Since INFL[-Tense,+Agr] can assign Case (NOM) in Korean, we predict that a causee can be assigned NOM in the -key ha- construction; this prediction is borne out, as shown below.

- (18) a. sensayng-nim-tul-kkeyse tul-e o-si-key-tul ha-ess-ta  
 teacher-H-pl-subH (= NOMH) enter-Inf come-H-comp-pl do-past-em  
 "[0] caused teachers to come in."
- b. halmenim-kkeyse cinci-lul tu-si-key ha-ess-ta  
 grandmotherH-subH (= NOMH) mealH-obj eatH-H-comp do-past-em  
 "[0] caused grandmother to have her meal."

(Note that the fact that the embedded subject is assigned NOM suggests that the morphological amalgamation of V-key is obtained through surface-overt C-to-V RR. If C-to-V RR is deep-overt, INFL[+SC] would not be visible with respect to Case assignment in syntax.) Second, the [...V-key] phrase may be assigned Case by the verb ha- (nonergative or Case-transitive verb) which may indicate that the [...V-key] phrase is the complement of the verb ha-.<sup>16</sup>

<sup>15</sup> A bi-clausal approach to -key ha- causativization is not controversial (cf. H.-B. Lee (1970); I.-S. Yang (1972); etc.).

<sup>16</sup> I.-S. Yang (1972;202-203) observes that (19) is ambiguous: it has either the causative reading or the permissive reading (cf. Gruber (1976)). A causer or permitter in (19) with -ka (sub) or with -eykey (dat) has less control over a causee or permittee than that in (19) with -lul (obj). In other words, a causee or permittee with -lul has a stronger patient reading than one with other case markers. With -eykey, the permissive reading is stronger than the causative reading in (19a).

- (19) a. John-ka Mary-{ka/lul} us-0-key-lul ha-n-ta  
           -sub     -sub/obj     smile-Inf-comp-obj do-pres-em  
           "John causes Mary to smile."  
       b. John-ka Mary-{ka/lul/eykey} kongpwu-lul ha-0-key-lul ha-n-ta  
           -sub     -sub/obj/dat     study-obj     do-Inf-comp-obj do-pres-em  
           "John causes Mary to study." (cf. (1 & 18b) in I.-S. Yang (1972:202 & 212))

Third, sentential (20a) and nonsentential adverbials (20b) may fall under the scope of an embedded clause.

- (20) a. Chelswu-ka Yenghi-{ka/lul} holwucongil wus-0-key ha-ess-ta  
           -sub     -sub/obj     all day long smile-Inf-comp do-past-em  
           "Chelswu caused Yenghi to smile all day long."  
       b. Chelswu-ka Yenghi-{ka/lul} ppalli ttwi-0-key ha-ess-ta  
           -sub     -sub/obj     fast run-Inf-comp do-past-em  
           "Chelswu caused Yenghi to run fast."

In addition, two sentential adverbials may have different scope readings.

- (21) khochi-ka ecey-puthe senswu-tul-lul achim-mata  
       coach-sub yesterday-from players-obj morning-every  
       ttwi-0-key ha-ess-ta  
       run-Inf-comp do-past-em  
       "Since yesterday, the coach has caused the players to run every morning."

We conclude that an embedded INFL, which is [-Tense, +Agr], is strong enough to license sentential adverbials (like to in English infinitive), having the feature [+A], unlike the small clause with [-A].<sup>17</sup>

An array of binding facts also suggests that a causee behaves like an embedded subject no matter what case marker it takes. A causee can bind a reflexive anaphor, which means that a causee is the embedded subject at a certain level of representation:

- (22) a. Yenghi<sub>i</sub>-ka ai<sub>j</sub>-{ka/lul/eykey} caki<sub>i</sub>{<sub>i</sub>/<sub>j</sub>} os-lul  
           -sub child-sub/obj/dat self clothes-obj  
           ip-0-key ha-ess-ta  
           put on-Inf-comp do-past-em  
           "Yenghi caused her child to put on her/his clothes."  
       b. Chelswu<sub>i</sub>-ka tongsayng<sub>j</sub>-{ka/lul/eykey} caki<sub>i</sub>{<sub>i</sub>/<sub>j</sub>} pang-ey(se)  
           -sub brother-{sub/obj/dat} self room-in

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<sup>17</sup> Remember that we suggested in Chapter 3 that INFL with the feature [+A] licenses sentential adverbials while INFL with the feature [-A] does not.

ca-0-key            ha-ess-ta  
 sleep-Inf-comp do-past-em  
 "Chel<sub>1</sub>swu caused his brother to sleep in his room."

The bi-clausal aspect of -key ha- causativization become clear in the case of the reciprocal binding in the -key ha- causative construction. Reciprocals are bound by the closest subject binder (SSC effects), as shown in (23):<sup>20</sup>

- (23) uli<sub>1</sub>-ka kutul<sub>3</sub>-ka selo{<sub>3</sub>/\*<sub>1</sub>}-lul    salangha-n-ta-ko sayngkakha-n-ta  
       we-sub    they-sub    each other-obj    love-pres-em-comp think-pres-em  
       "We<sub>1</sub> think they<sub>3</sub> love each other{<sub>1</sub>/\*<sub>3</sub>}."    (cf. D.-W. Yang (1983))

In the -key ha- causative construction, only a causee is available as a binder of the reciprocal selo, no matter what case marker a causee takes, as shown in (24).

- (24) uli<sub>1</sub>-ka kutul<sub>3</sub>-{ka/lul/eykey} selo{<sub>3</sub>/\*<sub>1</sub>}-lul salangha-0-key ha-ess-ta  
       we-sub    they-{sub/obj/dat}    each other-obj    love-Inf-comp do-past-em  
       "We<sub>1</sub> made them<sub>3</sub> love each other{<sub>3</sub>/\*<sub>1</sub>}."

These binding facts in (23-24) suggest that the causee is the embedded subject. Finally, binding condition B also suggests that the -key ha- construction is bi-clausal.

- (25) Chelswu<sub>1</sub>-ka Yengswu<sub>3</sub>-{eykey/lul/ka} ku{<sub>1</sub>/\*<sub>3</sub>}-lul  
       -sub                    -dat/obj/sub    he-obj  
       piphanha-0-key    ha-ess-ta  
       criticize-Inf-comp do-past-em  
       "Chelswu<sub>1</sub> caused Yengswu<sub>3</sub> to criticize him{<sub>1</sub>/\*<sub>3</sub>}."

In (25), a causer but not a causee can be coreferential with ku (he). To conclude, -key ha- causativization is bi-clausal regardless of what case marker a causee takes. Note also that the binding facts discussed above suggest that the dative marker -eykey is a dummy Case marker. In fact, the RR conventions imply that surface-overt C-to-V RR does not affect the

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<sup>20</sup> Remember that in Italian a and French a causativization, when an embedded verb is transitive, an embedded subject that takes a (a insertion (cf. Kayne (1975); Burzio (1986)) behaves like a subject, with respect to the Specified Subject Condition (cf. Chapter 3).

subjecthood of an embedded subject. We suggest that languages employ dummy Case markers to preserve the subjecthood of an embedded subject in RR environments when the embedded subject lacks Case and that those dummy Case markers are used in restricted C-to-V RR environments (i.e., small clause-s).

The -key ha- construction behaves as if it were mono-clausal in other respects, as in the Korean V-to-V RR 'restructuring' construction: The clause-mate requirement that a quantifier amwu-to (nobody) and its scope marker an- (neg; not) should lie in the same clause and the requirement that an- should lie in a matrix INFL when the quantifier construed with it is inverted are apparently violated in the -key ha- causative construction: (cf. Appendix II of Chapter 3):

- (26) a. Chelswu-ka [Yenghi-ka amwu-to manna-0-key] ha-ci an-ass-ta  
           -sub          -sub nobody meet-Inf-comp do-to not-past-em  
           "Chelswu neg caused Yenghi to meet nobody."  
           = There is nobody such that Chelswu caused Yenghi to meet the person.
- b. Chelswu-ka [Yenghi-ka ani-manna-0-key] ha-ess-ta, amwu-to  
           -sub          -sub not-meet-Inf-comp do-past-em nobody  
           "Chelswu caused Yenghi neg to meet nobody."
- c. Chelswu-ka [Yenghi-ka amwu-to ani-manna-0-key] ha-ess-ta  
           -sub          -sub nobody not-meet-Inf-comp do-past-em  
           "Chelswu caused Yenghi neg to meet nobody."

In (26a), with amwu-to in the embedded clause and an- in the matrix clause, the sentence is perfect with the wide scope reading of amwu-to. In (26b), with an- in an embedded clause, inverted amwu-to does not make the sentence ungrammatical and amwu-to in (26b) also has the wide scope reading. In fact, even when an- is in the same clause as amwu-to (26c), only the wide scope reading is obtained.

One might suggest that wide scope is obtained since causative clauses have certain kinds of defective clausal properties caused by INFL[-Tense, -Agr]. The suggestion would not be viable. Even though the ECM construc-



- (29) a. \*Chelswu-ka [Yenghi-ka amwuket-to ha-0-key]  
           -sub          -sub nothing      do-Inf-comp  
           {mantul/sikhi}-ci an-ass-ta  
           {make/order}-to not-past-em  
           "Chelswu neg {made/odered} Yenghi (to) do nothing."  
 b. \*Chelswu-ka [Yenghi-ka ani-ha-0-key] {mantul/sikhi}-ess-ta,  
           -sub          -sub not-do-Inf-comp {make/order}-past-em  
           amwu-ket-to  
           nothing  
           "Chelswu {made/ordered} Yenghi neg (to) do nothing."  
 c. Chelswu-ka [Yenghi-ka amwu-ket-to ani-ha-0-key]  
           -sub          -sub nothing      not-do-Inf-comp  
           {mantul/sikhi}-ess-ta  
           {make/order}-past-em  
           "Chelswu {made/ordered} Yenghi neg (to) do nothing."  
           = Chelswu ordered that there must be nothing that Yenghi does the  
           thing.

When the clause-mate requirement is satisfied, as in (29c), only narrow scope is allowed. Based on the semantics and syntax of the -key ha- construction, we conclude that the Korean -key ha- causative construction is derived by 'restructuring,' i.e., covert RR between V-key and ha- and therefore that V-key ha- forms an R-complex word. Whether an embedded subject is realized or not, an embedded subject status always remains intact (cf. RR conventions). Therefore the binding facts in (22-25) follow.

There is one more difference between -key ha- and V-key {mantul/-sikhi}- constructions. An embedded verb can be passivized in both constructions, as shown in (30), but the verb ha- in the -key ha- construction is not passivized while the verb mantul- in the -key mantul- construction is, as we see in the contrast in (31 and 32).<sup>20</sup>

<sup>20</sup> In Korean, either an embedded subject or object can move to the matrix subject position through A-movement when a matrix verb is passivized (cf. 31 and 32a).

- (1) a. \*ku os-ka          ai-eykey emeni-eyuyhayse ip-0-key  
           the clothes-sub child-dat mother-by          put on-Inf-comp  
           ha-ye ci-ess-ta  
           do-Inf past-past-em  
           "The clothes were made to be put on by the child by mother."  
 b. ?ku os-ka          ai-eykey emeni-eyuyhayse ip-0-key

- (30) a. emeni-ka ai-eykey os-lul ip-0-key {ha/mantul}-ess-ta  
 mother-sub child-dat clothes-obj put on-Inf-comp {do/make}-past-em  
 "The mother caused the child to put on the clothes."  
 b. emeni-ka ku os-ka ai-eykey ip-hi-0-key  
 mother-sub the clothes child-by put on-pass-Inf-comp  
 {ha/mantul}-ess-ta  
 {do/make}-past-em  
 "The mother caused the clothes to be put on by the child."
- (31) a. \*ai-ka emeni-eyuyhayse ku os-lul ip-0-key ha-ye ci-ess-ta  
 child-sub mother-by the clothes-obj put-on-comp do-Inf pass-past-em  
 "The child was made to put on the clothes by the mother."  
 b. \*Yenghi-ka wus-0-key ha-ye ci-ess-ta  
 -sub smile-Inf-comp do-Inf pass-past-em  
 "Yenghi was caused to smile."
- (32) a. ai-ka emeni-eyuyhayse ku os-lul ip-0-key  
 child-sub mother-by the clothes-obj put on-Inf-comp  
 mantul-e ci-ess-ta  
 make-Inf pass-past-em  
 "The child was made to put on the clothes by the mother."  
 b. Yenghi-ka wus-0-key mantul-e ci-ess-ta  
 -sub smile-Inf-comp make-Inf pass-past-em  
 "Yenghi was made to smile."

To explain the contrast between (31) and (32), we suggest that [+CD] predicates (auxiliary predicates) are not passivized because of their auxiliary properties. In fact, the Vx's in Korean discussed in Chapter 3 are never passivized. For example, the passive applies to the verb po- (see) as a nonVx, but it does not apply to po- (attempt) as a Vx.

- (33) a. san-ka po-i-n-ta  
 mountain-sub see-pass-pres-em "The mountain is seen."  
 b. \*ttokki-ka Chelswu-eyuyhayse cap-a po-i-ess-ta  
 rabbit-sub -by hold-Inf attempt-pass-past-em  
 "The rabbit was attempted to hold by Chelswu."  
 c. \*ttokki-ka Chelswu-eyuyhayse cap-hi-e po-i-ess-ta  
 rabbit-sub -by hold-pass-Inf attempt-pass-past-em  
 "The rabbit was attempted to be hold by Chelswu."

We therefore suggest the generalization in (34).

- (34) [+CD] predicates (auxiliary predicates) are not passivized.

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the clothes-sub child-dat mother-by put on-Inf-comp  
 mantul-e ci-ess-ta  
 make-Inf past-past-em  
 "The clothes were made to be put on by the child by mother."

The Vx's in Italian also are not passivized although transitive Vk's may. There is, however, a class of verbs that constitute counterexamples to the generalization in (34). Burzio (1986;376) illustrate that Italian has two verbs cominciare (begin) and continuare (continue)<sup>21</sup> that can trigger both auxiliary change (35a) and passivization (35b),<sup>22</sup> not to mention clitic climbing, as shown in (35c); examples with cominciare are given below.

- (35) a. Mario la comincia a battere a macchina domani.  
 "Mario will start typing it tomorrow (his thesis)."  
 b. Il palazzo fu cominciato a costruire sotto Carlo V  
 "The palace was begun to build under Charles V."  
 c. Le truppe {hanno cominciato/sono cominciate} ad arretrare vistosa-  
 mente.  
 "The troops {have/are} begun to draw back considerably."  
 ((a and c) are (13b) and (81a) in Rizzi (1982; chap 1); (b) is ((141) in Burzio (1986;376))

To explain (35) under the generalization given in (34), we suggest that Italian employs two instantiations of the verb begin or continue:<sup>23</sup> One is an auxiliary predicate and the other is a usual control predicate. That suggestion is supported by the fact that 'restructuring' is optional in

<sup>21</sup> According to Burzio (p.c.), only two verbs behave in this way.

<sup>22</sup> Rizzi shares the same judgments as Burzio on the passive example in (35b); both Rizzi's and Burzio's dialects represent a dialect of the northern part of Italy. According to Andrea Calabrese (p.c.), whose dialect represent a dialect of the far southern part of Italy, (35b) is not grammatical. Thus it seems that there are some idiolectal variations.

<sup>23</sup> As James Higginbotham (p.c.) has pointed out, the English verbs begin and continue and their passive counterparts semantically differ. For example, in (i)

- (i) a. John continued the race.  
 b. The race was continued.

the meaning of continue in (ib) implies that the race was continued after it was stopped, but (ia) does not. This difference may derive from the semantics of the passive predicate -en in English (see Section 4.3.), but it is also possible that the verb continue that is passivized actually differs from the continue that is not passivized. If that is so, then the verb cominciare in the passive construction and the verb cominciare in active construction may be different verbs.



Italian, as shown in (35c). The verb begin in (35b) and in (35c) with no auxiliary change is not an auxiliary predicate while that in (35a) and (35c) with auxiliary change is an auxiliary predicate. A question one can raise is then why other Vx's in Italian are not passivized although they are also either [+CD] or [-CD], like the verb begin. We suggest that the nonpassivizability of Vx's discussed by Rizzi follows from the subject-control property of Vx's (motion/modal/aspectual expressions) since subject control verbs are not usually passivized in any forms. Given that the two verbs take a infinitives, we may then attribute their passivizability to a property of a infinitives. In fact, as we will see in Chapter 5, verbs taking di infinitives, which are subject control verbs, can also be passivized. We thus reason that some restricted verbs, which happen to select a or di infinitives, can be passivized only when they are [-CD], while most Vx's are not passivized even when they are [-CD]. The verb begin as a [-CD] verb can thus be passivized (even if it is subject control) because it can be passivized for some reason. By limiting the set of [-CD] verbs that can be passivized, we maintain the generalization in (34) and suggest that the generalization explains the contrast in (31) and (32). Note also that in Korean, in which Vx's verbs are not ambiguous, all Vx's are not passivized (cf. fn. 7 in Section 3.4.).

The Korean -key ha- causativization is similar to the French faire causativization: First, both the Korean ha- and the French faire verbs are the do verbs in Korean and in French, respectively. Second, unlike its Italian counterpart (37b and c), the French faire cannot be passivized, as shown in (36).

(36) French:

\*La maison a été faite construire (par Casimiro).

"The house was made to be constructed by Casimiro." ((59b) in Zubizarreta (1985))

(37) Italian:

- a. Giovanni fu fatto riparare la macchina  
                     was made repair the car

"Giovanni was made to repair the car."

- b. La macchina fu fatta riparare a Giovanni  
                     the car was made repair to

"The car was made to be repaired by Giovanni."

- c. La macchina fu fatta riparare dy Giovanni  
                     the car was made repair by

"The car was made to be repaired by Giovanni." (cf. (9) and (64) in Burzio (1986;232 & 258))

Given the generalization in (34), French causativization, we suggest, is derived by V-to-V RR. Thus French causativization differs from Italian causativization even though word order is the same: faire-to-CIV covert RR applies in French while it does not in Italian.<sup>24</sup> Remember that we have seen that the Italian fare does not trigger RR since it does not trigger auxiliary change. Italian causativization is thus like Korean -key mantul- causativization in that no RR applies between fare and an embedded predicate. On the other hand, French causativization is like Korean -key ha- causativization in that RR applies between faire and an embedded predicate. One more similarity between Korean and Romance a causative construction is that when the embedded verb is transitive, an embedded subject takes a dative marker (a and -eykey), without losing its subject status (cf.

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<sup>24</sup> Note also it has been argued that Italian causativization differs from 'restructuring' construction (see Rizzi (1982) and Napoli (1981) but also see Burzio (1981/86)); On the other hand, French causativization is discussed in connection with 'restructuring' (effects). Some analyses along the lines of the 'restructuring' approach are found in Rouveret and Vergnaud's (1980) thematic rewriting and semantic units, Zubizarreta's (1982;1985) parallel structure approach to French causativization, and Di Sciullo and Williams's (1987) coanalysis. Analyses of French causativization generally imply that faire+V forms a semantic unit. On the other hand, although there is a study in which faire is considered as a morpho-syntactic bound morpheme (cf. Zubizarreta (1985; 274)), to our knowledge, no studies explicitly suggest that the Italian counterpart fare+V forms a semantic unit. From our point of view, the Italian fare+V does not form an R-complex word while the French faire+V forms an R-complex word, which can be considered as a semantic unit since faire is like an auxiliary verb to an embedded verb.

Section 3.3.). In Romance causative construction, the subject in an C-to-V RR environment triggers SSC effects (cf. Kayne (1975); Burzio (1986)), as we discussed in Section 3.3.. We have also seen that no matter what case marker it takes, a causee may also trigger SSC effects (cf. 24) in Korean.

Unlike the Italian and French V in the {faire/faire}+V construction, in which C-to-V RR is deep-overt, as we saw in Section 3.3., and the Korean V-key in the V-key {ha/mantul}- construction is obtained by C-to-V surface-overt RR, as we discussed. There is one more piece of evidence that C-to-V RR is surface-overt in Korean: VP movement out of embedded clauses is possible in the -key {ha/mantul}- construction, as shown below.

- (38) pap-lul ha-ki-nun Chelswu-ka Yenghi-{eykey/ka} ha-0-key  
 rice-obj do-to-TOP -sub -{to/sub} do-Inf-comp  
 {mantul/ha}-ess-ta  
 {make/do}-past-em  
 "As for cooking rice, Chelswu caused Yenghi to do it."

Korean -key ha- causativization therefore differs from Romance causativization in two respects. First, in the Romance a causativization, C-to-V deep-overt RR applies to the embedded clause (that causes the peculiar V+V order) while in the Korean -key ha- causativization, C-to-V surface-overt RR applies to the embedded clause so that an embedded VP is syntactically active and so that INFL can be a Case assigner in syntax. Second, in Romance causativization, an embedded INFL is [-Tense, -Agr] (small clause) while in Korean -key ha- causativization, an embedded INFL is [-Tense, -+Agr, +A], which can assign NOM and license sentential adverbials, as shown in (18) and (20).

#### 4.2.1.3. Japanese sase causativization and M-complex words

We expect there to be causative complex predicates that are morphologically complex with the same INFL properties ([-Tense, +Agr]). In fact,

a morphologically-complex counterpart of Korean -key mantul- causativization is found in Japanese -sase- causativization. There are many similarities between sase and -key mantul- constructions except in their morphological aspects.

It has been well-known that Japanese -sase- causative clauses have bi-clausal aspects although V-sase- is morphologically-complex. First, do-so sentences may be interpreted as controlling a matrix VP or an embedded VP.<sup>25</sup>

(39) Boku-wa muskuko-o gakkoo-ni nokor-sase-ta, suruot Hanako-mo soo su-ta  
 I school stay-caus and  
 "I made my son stay at the school, and so did Hanako." ((17) in Shibatani (1972))

According to Shibatani (1972), the second conjunct may mean either 'Hanako also made her son stay at the school,' or 'Hanako also stayed at the school.' Second, a causer and a causee can bind an anaphor.<sup>26</sup>

(40) Boku-wa Taroo-ni zibun-no hon-o mot-sase-ta  
 "I made Taroo have my/his own book." ((25) in Shibatani (1972))

Third, a subject-oriented adverbial (of his own will = voluntarily) or a manner adverbial may go either with a matrix subject or with an embedded subject.<sup>27</sup>

<sup>25</sup> The first three arguments are found in Shibatani (1972). Based on Fodor (1970), Shibatani gives three arguments that lexicalized causative verbs such as koros (kill) in Japanese are not derived (by predicate raisings), comparing them with 'non-lexicalized' V-sase- verbs. See also Miyagawa (1984) who note that Japanese has two causativizations: sas and sase causativizations. We will not discuss sas causativization here.

<sup>26</sup> This bi-clausal aspect with respect to anaphor binding is also found in Kuroda (1965) and Kuno (1973), both of whom assume underlying bi-clausal structures for Japanese sase causativization.

<sup>27</sup> The same is true in Korean -key ha- causativization:

(i) Chelswu-ka caki-ttus-taylo tongsayng-{ka/eykey} ku tayhak-ey  
 -sub self-mind-after brother-{sub/dat} the university-to  
 tul-e ka-0-key ha-ess-ta  
 enter-Inf go-Inf-comp do-past-em  
 a. "As he, wished, Chelswu, caused his brother, to enter the university."

- (41) a. Hahaoya-wa musume-o zibun0no isi-de zyosidai-ni hair-sase-ta  
 (i) "The mother voluntarily made her daughter enter a women's college."  
 (ii) "The mother brought it about that her daughter entered a women's college voluntarily."  
 b. Taroo-wa Ziroo-o isoi-de tamar-sase-ta  
 (i) "Taroo hastily made Ziroo stop."  
 (ii) "Taroo brought it about that Ziroo stopped hastily." (cf. (30a) and (32a) in Shibatani (1972))

Finally, as Aissen (1974) notices, in Japanese causativization a pronominal can be bound by a causer, which shows that the sase causative construction is bi-clausal.<sup>28</sup>

- (42) ?John<sub>1</sub>-wa Mary-ni kare<sub>1</sub>-o hihans-ase-ta  
 "John<sub>1</sub> caused Mary to criticize him<sub>1</sub>."

It also appears that the Japanese sase shares some other similar properties with the Korean -key ha-. First, like -key mantul- causativization, -sase- causativization is highly productive (cf. Shibatani (1972; 127); Miyagawa (1984;180)). The second similarity comes from the fact that honorific agreement (o... ni naru-) may appear between V and sase, just as it appears between V and another independent verb (want).<sup>29</sup>

- (43) q-yasumi ni nari-ta-i dake q-yasumi ni nar-ase te o-oki-sita  
 rest H-want extent rest H-caus and leave  
 hoo ga ii-no-de-wa-nai-desu-ka  
 option-nom may-be-good-Q

- b. Chelswu<sub>1</sub> caused his brother<sub>2</sub> to enter the university as he<sub>2</sub> wished."

<sup>28</sup> Miyagawa (1984;200) notes that Inoue (1976) and Oshima (1979) notice the same fact in (39) with a full degree of grammaticality.

<sup>29</sup> This example is drawn from Kitagawa (1986), who attributes the observation to Kuroda (1981). Kitagawa (1986) shows that some sentential aspects may be captured in terms of affix-movement at LF (under the framework of Pesetsky (1985)). Kitagawa (1986) thus suggests, based on some theory-internal hypotheses, that the example which Kuroda uses for an argument that V-sase is syntactically derived can also be explained under the assumption that V-sase is lexically derived. In our opinion, Kitagawa does not succeed in showing that honorification must be lexically derived; evidence that V-sase forms a word does not show that it is lexically derived since syntactically-derived words also have properties of words (cf. Eskimo languages; (Sadock (1980); Smith (1982)). Furthermore he cannot be right, as long as the honorific marker in (40) does not form a word with V and sase.

"Is it not better to let [0] rest as much as [0] wants." ((5) in Kitagawa (1986;185); originally from Kuroda (1981))

As in Korean -key ha- causativization, even when the V of a V-sase complex word is intransitive, both dat and obj may be assigned to a causee.

- (44) a. Chelswu-ka ku ai-{lul/eykey} ka-0-key ha-ess-ta  
           -sub the child-{obj/dat} go-Inf-comp do-past-em  
           "Chelswu caused the child to go."  
       b. Taroo-ga kodomo-{o/ni} ik-(s)ase-ta  
           "Taro made the child go." (cf. (68) in Miyagawa (1987))

Like the Korean dative -eykey in the -key ha- causativization, the Japanese ni is like a dummy Case marker. Thus, anaphors can be bound by NP-dat in both Korean (45a) and Japanese (45b).

- (45) a. Chelswu<sub>1</sub>-ka tongsayng<sub>1</sub>-eykey cak<sub>1</sub>{<sub>1</sub>/,<sub>1</sub>} pang-eyse ca-0-key ha-ess-ta  
           -sub brother-dat self room-in sleep-Inf-comp do-past-em  
           "Chelswu<sub>1</sub> caused his brother<sub>1</sub> to sleep in his<sub>1</sub>{<sub>1</sub>/<sub>1</sub>} room."  
       b. John-wa Mary-ni zibun no ie de benkyoos-ase-ta  
           "John made Mary study in his/her house." (cf. (88) in Aissen (1974))

In addition, passivization may also apply to the V of a V-sase complex word (cf. (30) for the Korean data).

- (46) Mary-wa Taroo-o Ziroo-ni home-rare-sase-ta  
           -TOP -ACC -DAT praise-pass-cause-past  
           "Mary caused Taro to be praised by Ziro." (cf. (7:87) in Marantz (1984))

To conclude, it seems that Japanese V-sase represents a morphological-counterpart of Korean V-key ha- or V-key mantul-. The next question is what triggers morphological amalgamation and when. One piece of evidence that V-sase is an M-complex word but not an M/R-complex word comes from the fact that sase can be passivized (cf. 32).

- (47) a. Taroo-wa Hanako-ni sashimi-o tabe-sase-ta  
           -TOP -dat sashimi-acc eat-cause-past  
           "Taro made Hanako eat sashimi."  
       b. Hanako-wa Taroo-ni sashimi-o tabe-sase-rare-ta  
           -TOP -dat sashimi-acc eat-cause-pass-past  
           "hanako was made to eat sashimi by Taro." (cf. (7.86) in Marantz (1984;273); originally from Farmer (1980;105))

Given the generalization in (34), we suggest that V-sase is not derived by RR since sase can be passivized. Thus it seems that V-sase is derived by V-to-sase head-movement in syntax forming an M-complex word. Note also that an embedded verb and sase must be independent of each other in syntax because of the data given in (39-46), which support the bi-clausal nature of V-sase causativization.

Korean -key mantul- and Japanese sase causativizations also have some differences. In Japanese sase construction, an embedded subject is not assigned NOM even though an embedded I is inflected ([+Agr]). The examples (48) with ga (NOM) are not grammatical, although NOM-assignment is observed in their Korean counterparts (cf. 17 and 18).

- (48) a. Taroo-ga Yasai-{o/\*ga} kusar-(s)sase-ta  
           -nom vegetable-{acc/nom} rot-cause-past  
           "Taro caused the vegetable to rot."  
       b. Taroo-ga Hanako-{ni/\*ga} hon-o yom-(s)sase-ta  
           -nom         -dat/nom book-ACC read-cause-past  
           "Taro made/let Hanako read the book."  
       (cf. (27) and (1a) in Miyagawa (1984))

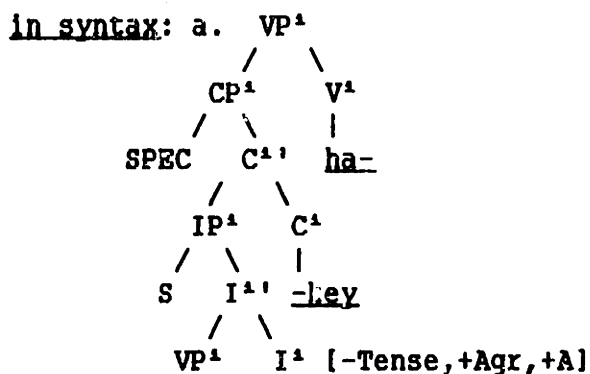
Examples (48) suggest that the V of V-sase forms a VIC M/R-complex word through C-to-V deep-overt RR<sup>30</sup> while V-sase is a VIC-V M-complex word through VIC-to-V head-movement. Since C-to-V RR is deep-overt, V-sase assigns only one Case (ACC); only the Case feature of V is visible with respect to Case assignment (V is the s-head since V-sase is derived by head-movement). On the other hand, the V of -V-key mantul- forms a VIC M/R-complex word through C-to-V surface-deep RR (cf. 38) so that an embedded VP is syntactically active so that an embedded INFL can potentially assign Case; the V-key {ha/mantul}- forms a VIC-V R-complex through V-to-VIC covert RR.

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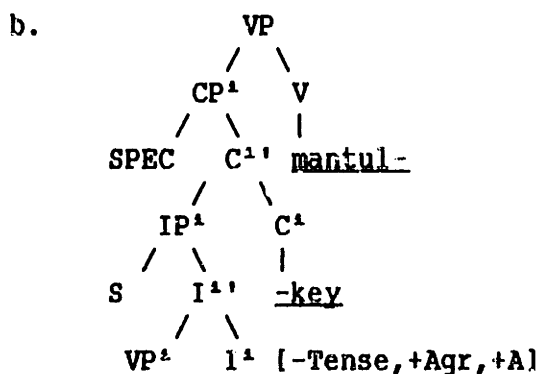
<sup>30</sup> Note that V-to-C head-movement is not an option (cf. Section 4.1. and Chapter 5).

To summarize, Japanese sase causativization is derived by V(VIC<sup>1</sup>)-to-sase head-movement while the small clause nature of an embedded clause is derived by C-to-V deep-overt RR. On the other hand, Korean -key ha- causativization is derived by V-to-V (covert) RR and the embedded clause of the -key {ha/mantul}- construction is obtained by C-to-V surface-overt RR. In both cases, embedded INFL is [-Tense,+Agr], which can assign NOM. However, in Japanese, NOM is not assigned since C-to-V RR is deep-overt. We thus have the following structures of cross-linguistically different types of causative construction.

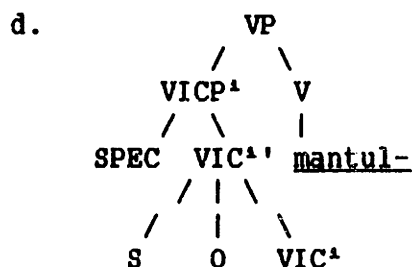
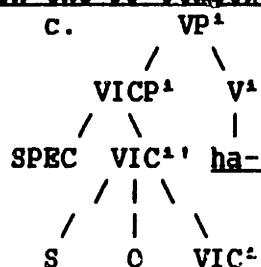
(49) -key ha- causativization



-key mantul- causativization

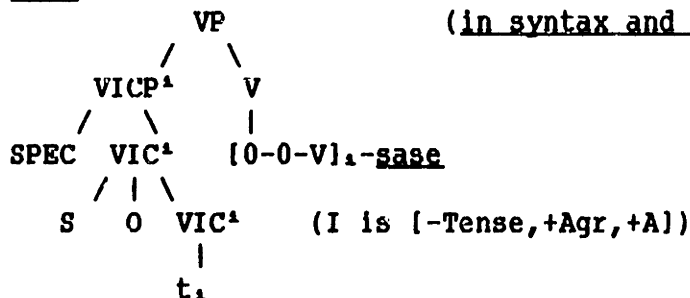


in the PF component:



(50) sase causativization

(in syntax and in the PF component)



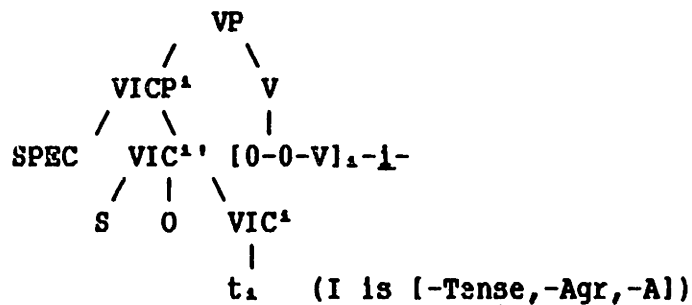


Incidentally, (49c and d) instantiate Italian and French a causativizations in syntax with different instantiations of INFL[-Tense]: INFL[-Tense, -Agr], and with different head-parameters (for the structures of Italian and French causative constructions, see Section 3.3.). Given the above structures, it seems that whether or not V-to-V amalgamation takes place, the causative construction always contains a small clause triggering C-to-V deep-overt or surface-overt RR. Given that all instantiations in (49-50) employ C-to-V RR, which preserves the subjecthood of [NP,IP], the dative markers in Korean and Japanese causative constructions are dummy Case markers; this is well supported by the binding facts in (22-25) and (45). Also, in Italian and French a causativizations, the a subjects behave like subjects with respect to bindings and SSC effects (cf. Kayne (1975); Burzio (1986)).

#### 4.2.1.4. Korean -i-/-sikki- causativization and M-complex words

We have seen that the Japanese V-sase is a morphologically-complex version of the Korean V-key mantul- and both allow INFL[-Tense,+Agr,+A] in embedded clauses. We expect that there may be morphologically-complex counterparts to the Italian/French fare/faire+V, which contain small clauses in which an embedded INFL is [-Tense,-Agr]. We will in fact suggest that Korean -i- causativization is syntactically derived and that in the -i- causative construction embedded INFL is [-Tense,-Agr,-A], forming an M-complex predicate V-i- (a morphologically-complex counterpart of the Italian fare+V).

(51)



Note that structure (51) differs from structure (50) only in that I is [-Agr, -A]. We will also show that this difference results in a number of surface differences between Japanese sase and Korean -i- causativization,<sup>22</sup> and triggers some apparent mono-clausal aspects of the -i- casative construction.

There are some differences between -key ha- and -i- causative constructions that might suggest that -i- causative construction is mono-clausal and that the complex predicate V-i- is lexically derived. First, the variants of the case marker of an embedded subject in the latter are much more restricted than those in the former in that a causee cannot take -ka (subjective marker; NOM) (cf. 18 and 19).

- (52) a. Chelswu-ka hangsang salam-{\*ka/lul} wus-ki-n-ta  
           -sub always people-{sub/obj} smile-caus-pres-em  
           "Chelswu always makes people {smile/laugh}."  
       b. emeni-ka ai-{lul/eykey/\*ka} kulim chayk-lul po-i-n-ta  
           mother-sub child-{obj/dat/sub} picture book-obj see-caus-pres-em  
           "Mother makes the child see a picture book."  
           "Mother shows a picture book to the child."

<sup>22</sup> There have been debates between Shibatani (1973;1975) and I.-S. Yang (1972;1976) on the status of sase causativization and -i- causativization. While Shibatani argues that the -i- causative construction is syntactically mono-clausal and semantically direct causation, Yang argues that it is syntactically bi-clausal and semantically either direct or indirect causation. We support Yang by showing that the -i- causative construction is bi-clausal and that the complex predicate V-i- is derived by head-movement. As we will see, some apparent mono-clausality of V-i- causativization is derived from the fact that -i- selects a small clause complement in which INFL is [-Tense, -Agr, -A], as in small clauses in English and as in Romance causative clauses.

Second,<sup>22</sup> embedded INFL is [-Tense, -Agr]; no agreement elements (honorific markers) appear:

- (53) a. Chelswu-ka halmenim-lul wus-(\*usi-ess-)ki-n-ta  
           -sub grandmother<sub>H</sub>-obj smile-(<sub>H</sub>-past-)caus-pres-em  
           "Chelswu makes the grandmother smile."  
       b. Chelswu-ka halmenim-{lul/eykey} sacin-lul  
           -sub grandmother<sub>H</sub>-{obj/dat} picture-obj  
           po-(\*si-ess-)i-n-ta  
           see-(<sub>H</sub>-past-)caus-pres-em  
           "Chelswu makes the grandmother see a picture."

Third, some adverbials are not under the scope of an embedded VP, unlike -key ha- causativization.<sup>23</sup>

- (54) a. Pak-ssi-nun ai-eykey namwu-ey twu-son-ulo olu-0-key ha-ess-ta  
           Pak-Mr-TOP child-dat tree-to two-hands-with climb-Inf-comp do-  
           past-em  
           "Mr Pak caused the child to go up the tree with both hands."  
       b. Pak-ssi-nun ai-lul namwu-ey twu-son-ulo ol-li-ess-ta  
           Pak-Mr-TOP child-ACC tree-to two hands-with climb-caus-past-em  
           "Mr Pak made the child up the tree with both hands." (cf. Shibata-  
           tani (1973;286); also cf. K. Park (1986))

In the -key ha- causative construction (54a), the adverbial two-son-ulo (with two hands) is understood as modifying a matrix verb (causative verb) and an embedded verb. On the other hand, in the -i- causative construction (54b), it is understood as 'modifying only a matrix verb' (wide scope). Fourth, an embedded subject apparently does not behave like a subject at D-structure in that it is not available as a binder of an anaphor within an adverbial expression. In the -key ha- causative construction, a causee can bind an anaphor even if it takes a dative case marker (-eykey) (cf. 22 for example). However, in the -i- causative construction, a causee is not served as the antecedent of an anaphor.<sup>24</sup>

<sup>22</sup> The following three properties of -i- causativization have been observed by Shibatani (1973) (see also Fodor (1970); McCawley (1971)).

<sup>23</sup> This argument also applies to time and locative adverbials (sentential adverbials).

<sup>24</sup> I.-S. Yang (1976) reports that when a causee takes -eykey, caki can be

(55) emeni<sub>1</sub>-ka atul<sub>3</sub>-lul caki<sub>1</sub>{<sub>1</sub>/\*<sub>3</sub>} pang-eyse cay-wu-ess-ta  
 mother-sub son-obj self room-in sleep-caus-past-em  
 "The mother made the son sleep in self's<sub>1</sub>{<sub>1</sub>/\*<sub>3</sub>} room." (cf. (37) in I.-S. Yang (1976))

Finally, -i- causativization is lexically selective and some cases are lexicalized.<sup>35,36</sup> Thus these aspects seem to show that -i- causativization is mono-clausal and V-i is derived in the Lexicon.

However, there are some good reasons to suggest that the -i- causative construction is bi-clausal at some level of representation, i.e., at D-structure. First, sentential adverbials are not considered as having scope over an embedded clause, but some nonsentential adverbials are considered as having scope over an embedded VP.

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bound by atul in (52); we do not agree with his judgment. (It seems that there are some idiolectal variations.) However, instead of -eyse (in), if ey (at) is used, then anaphor binding between a causee and caki is possible probably because the phrase caki pang-ey ca- (self room-at sleep) is somewhat an idiomatic expression, forming a VP, while caki pang-eyse (self room-in) is a sentential locative phrase.

<sup>35</sup> One example of lexicalized V-i- is given below.

(i) sinpwun-lul palk-hi-si-yo  
 identity-obj bright-caus-H-emH "Please identify yourself." (cf. K.-D. Lee (1976))

Thus, the -key ha- causativized version of (i) does not make sense.

(ii) \*sinpwun-lul palk-0-key ha-si-0-yo  
 identity-obj bright-Inf-comp do-H-pres-emH  
 "Please cause (your) identity to be bright."

<sup>36</sup> The lexical selectivity of -i- causativization does not imply the limited/low productivity of -i- causativization. Even though ha-i- is not allowed in standard Korean, Choi (1935;418) notes that in Middle Korean or in some dialects, ha-i- causativization is used. S.-O. Lee (1972;57) also notes that according to Martin (1974), Korean verbals with the morpheme -i- are 586 and among them, verbals used as passive verbals are 265 (the passive predicate -hi- is morphologically identical to the causative predicate -i-; cf. Section 4.3.); verbals used as causative verbs are 287; and verbals used as causative/passive verbs are 34. This survey shows that the productivity of -i- causativization is by no means low even if there is some controversy over whether all instantiations of V-i- are passivized or causativized verbs since in some cases of V-i-, V is not used as an independent verb. Even if there is a problem with productivity, it seems that V-i- complex verbs always have compositional meanings as long as the V of a V-i- complex verb is used as a main verb and V-i- is not lexicalized (cf. fn. 39).

- (56) a. ne-ka ai-lul ppalli ke-li-nikka ai-ka swum-ka  
 you-sub child-obj fast walk-caus-because child-sub breath-sub  
 cha-0 ha-ci an-0-ni.  
 fill up-Inf do-to not-pres-em  
 "Since you make the child walk fast, he is out of breath, isn't he?"
- b. Homcu-nun elum-lul sesei nok-i-ki sicakha-ess-ta  
 Holmes-TOP ice-obj slowly melt-caus-to begin-past-em  
 "Holmes began to make ice melt slowly."
- c. ?ku ai-nun elkul-lul ppalgah-0-key pwul-hi-mye swucwup-e ha-ess-ta  
 the child-TOP face-obj red-Inf-comp red-caus-ing shy-Inf do-past-em  
 "The child was shy and made his face red." (The child flushed his face deep-red out of shyness.)

In (56a), the adverb fast cannot modify the causative verb and can modify only the verb walk. In (56b), the adverb slowly modifies either the causative or the embedded verb. In (56c), in a marginal way, the adverbial modifies the embedded verb. In the -key ha- versions of (56), the scope of adverbials is identical to the scope of adverbials in (56), as shown in (57).<sup>37</sup>

- (57) a. al-lul ppalli ket-0-key ha-ess-ta  
 child-obj fast walk-Inf-comp do-past-em  
 "[0] caused the child to walk fast."
- b. elum-lul sesei nok-0-key ha-ess-ta  
 ice-obj slowly melt-Inf-comp do-past-em  
 "[0] caused ice to melt slowly."
- c. ?elkwul-lul sayppaikkahkey pwul-0-key ha-ko wha-lul nay-ess-ta  
 face-obj deep-red red-Inf-comp do-and anger-obj produce-past-em  
 "[0] caused his face to be red and got angry."

This suggests that at some level of representation, a verbal stem licenses a nonsentential adverbial. If V-i- is derived in the Lexicon, some verbal adverbials have to modify some part of lexically-derived words (cf. 56). Thus we suggest that -i- causativization is bi-clausal and that its embedded clause is a small clause whose INFL is [-Tense, -Agr, -A], not allowing sentential adverbials.

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<sup>37</sup> Shibatani (1973) reports that the adverbial ppalli (fast) in (57a) can modify a causative action. However, in our intuition, the adverbial cayppalli (quickly) (but not ppalli) may modify a causative V but not an embedded V.

If an embedded verb cannot license a sentential adverbial, as in some English or some Korean small clause causative construction (cf. Chapter 3), then all the sentential adverbials in (54 and 55) have scope over the matrix clauses. It follows that an embedded subject cannot bind an anaphor in a sentential adverbial since it does not c-command a sentential adverbial in a matrix clause. Thus in (55), repeated in (58), the anaphor caki within the matrix clause cannot be bound by a causee within the embedded clause.

(58) emeni<sub>1</sub>-ka atul<sub>3</sub>-lul caki<sub>{1/\*3}</sub> pang-eyse cay-wu-ess-ta  
 mother-sub son-obj self room-in sleep-caus-past-em  
 "The mother made the son sleep in self's<sub>{1/\*3}</sub> room."

One might suggest, by analogy with Burzio (1986), that -i- is V but selects a VP complement since a causee is not available as the binder of an anaphor. This approach would eliminate some apparent redundancy of C and I since C and I are never overtly realized in this construction. On the other hand, a bi-clausal approach predicts that when an anaphor is in an object position, anaphor binding with a causee is possible, as in the -key ha- construction (59b). In fact, the prediction seems to be borne out, as shown in (59a).<sup>28</sup>

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<sup>28</sup> K. Park (1986:29) notes that in (59a) with -lul, anaphor binding with a causee is not possible. In I.-S. Yang (1976), with -lul and even with -eykey, anaphor binding with a causee is acceptable. In general, with -lul, anaphor binding with a causee is easily obtained while with -eykey, it is not easily obtained. However, consider (i) drawn from I.-S. Yang (1976).

(i) na<sub>1</sub>-nun Mary<sub>3</sub>-eykey caki<sub>{3/\*1}</sub>-uy os-ul ip-hi-ess-ta  
 I-TOP -dat self-gen clothes wear-caus-past-em

"I made Mary wear {her/\*my} clothes."

In Korean, first person pronoun na- (I) cannot bind caki; thus in (i), caki can be bound only by Mary. We agree with the grammaticality in (i). Thus it seems that a causee with -eykey can bind an anaphor. Shibatani (1973), however, reports that anaphor binding with a causee with -lul is ungrammatical. It seems that Shibatani's data reflect the dialect Park discusses while (59a) reflects the dialect Yang discusses, which also happens to be the same as ours. Note that these dialectal variations do not affect the present argument.

- (59) a. emeni<sub>1</sub>-ka atul<sub>3</sub>-{lul/?eykey} caki<sub>{1/3}</sub> os-lul ip-hi-ess-ta  
 mother-sub son-{obj/dat} self clothes-obj wear-claus-past-em  
 "The mother<sub>1</sub> made the son<sub>3</sub> put on self's<sub>{1/3}</sub> clothes."  
 b. emeni<sub>1</sub>-ka atul<sub>3</sub>-{eykey/lul} caki<sub>{1/3}</sub>-uy os-lul ip-0-key ha-ess-ta  
 mother-sub son-{dat/obj} self-gen clothes wear-Inf-comp do-past-em  
 "The mother<sub>1</sub> had the son<sub>3</sub> put on self's<sub>{1/3}</sub> clothes."

Thus the VP complement hypothesis cannot be viable enough to explain the data given in (59a) since a causee behaves as the embedded subject in (59). The following example also shows that NP-eykey is available as a reciprocal anaphor binder.

- (60) a. Yenghi-ka ai-tul-{eykey/lul} selo-uy os-lul  
 -sub chile-pl-{dat/obj} each other-gen clothes-obj  
 ip-hi-e hakkyo-ey po-0-naγ-ess-ta  
 wear-caus-Inf school-to send-Inf-out-past-em  
 "Yenghi had children put on each other's clothes and sent them to school."

The evidence that V-i- is syntactically derived can also be found in the semantics of V-i-. While some instantiations of V-i- are idiomatic expressions, they can also have compositional meanings, as in -key ha- causativization. Some causativized intransitive verbs have both lexicalized meanings and completely productive cause X to V or let X V meanings.<sup>29</sup>

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<sup>29</sup> The example of -i- causativization in (1a) has both the lexicalized meaning and the compositional meaning, while the V-key ha- phrase has only the compositional meaning.

- (i) a. Chelswu-ka Yenghi-lul nac-hwu-e po-ass-ta  
 -sub -obj low-caus-Inf {see/attempt}-past-em  
 (1) "Chelswu made Yenghi belittled." or "Chelswu belittled Yenghi."  
 (2) "Chelswu attempted to make Yenghi bend (low)."  
 b. Chelswu-ka Yenghi-lul nac-0-key ha-ye po-ass-ta  
 -sub -obj low-Inf-comp do-Inf attempt-past-em  
 \*(1)/(2)

The following are examples in which V-i- has the same compositional meaning as its V-key ha- counterpart.

- (ii) a. tewun nalssi-ka salam-tul-uy elkwul-lul pwul-0-key mantul-ess-ta  
 hot weather-sub people-gen face-obj red-Inf-comp make-past-em  
 "The hot weather caused people's faces to be red."  
 b. tewun nalssi-ka salam-tul-uy elkwul-lul pwul-hi-ess-ta  
 hot weather-sub people-gen face-obj red-caus-past-em  
 "The hot weather made people's faces red."  
 (iii) a. Chelswu-ka (Yenghi-uy) elkwul-lul palk-0-key mantul-ess-ta

Thus we conclude that V-i- is syntactically derived and that at some level of representation, the construction is bi-clausal (cf. K. Park (1986;28-9) for a similar conclusion) (cf. especially 56 and 60). Since an embedded INFL is [-Tense,-Agr,-A], only nonsentential adverbials can appear in an embedded verb. Therefore, some apparent scope and binding facts are observed (cf. 54-55). In short, some aspects which apparently show that the predicate V-i- may be lexically-derived can be attributed to small clause aspects of the embedded clause of -i- causativization. Like V-sase, V-i- is an M-complex word but not an M/R-complex word, since V-i- can be passivized.<sup>40</sup>

- (61) a. ku os-ka emeni-eyuyhayse ai-{ka/eykey} ip-hi-e ci-ess-ta  
 the clothes-sub mother-by child-{sub/dat} wear-caus-Inf pass-past-em  
 "The clothes were put on to the child by (his) mother."

- 
- sub -gen face-obj bright-Inf-comp make-past-em  
 "Chelswu caused {Yenghi's/his} face to be bright."  
 b. Chelswu-ka (Yenghi-uy) elkwul-lul palk-hi-ess-ta  
 -sub -gen face-obj bright-caus-past-em  
 "Chelswu made {Yenghi's/his} face bright."  
 (vi) a. Chelswu-ka (Yenghi-uy) heli-lul kwup-0-key ha-ess-ta  
 -sub -gen waist-obj bend-Inf-comp do-past-em  
 "Chelswu caused {Yenghi's/his} waist to be bent."  
 b. Chelswu-ka (Yenghi-uy) heli-lul kwup-hi-ess-ta  
 -sub -gen waist-obj bend-caus-past-em  
 "Chelswu made {Yenghi's/his} waist bent."

<sup>40</sup> K. Park (1986) reports that passivization of a causee is not possible, when an embedded verb is transitive. In the data used by K. Park (1986) a causee (ai (child) in (61a)) takes -lul. However, in -e ci- passivization (cf. fn. 20 and Section 4.3.), ACC assigned to an embedded object is realized as -ka, as shown in (ia). In fact, even when no passive is involved, with ci- in a matrix clause, ACC assigned to an embedded object is realized as -ka, as shown in (ib).

- (i) a. Chelswu-ka os-{ka/\*lul} ip-hi-e ci-ess-ta  
 -sub clothes-{sub/obj} wear-caus-Inf pass-past-em  
 "Chelswu was made to wear (his) clothes."  
 b. Chelswu-ka ttokki-{ka/\*lul} cap-a ci-ess-ta  
 -sub rabbit-{sub/obj} take-Inf become-past-em  
 "Chelswu tends to take a rabbit."

We will briefly discuss the change in Case realization in the V-to-V RR construction briefly in the Appendix of this Section.



- b. al-ka emeni-eyuyhayse ku os-ka            ip-hi-e ci-ess-ta  
 child-sub mother-by    the clothes-sub wear-caus-Inf pass-past-em  
 "The child was put on the clothes by (his) mother."

At this point, let us briefly discuss the idea that the third type of Korean causativization -- N-ha- → N-sikhi- causativization -- is the same process as V → V-i- causativization in that they are obtained through V-to-V head movement. Note that N-ha- is a denominal verb and that ha- can be considered as a dummy verbal element (as Choi (1935) suggests) which can be deleted (or not realized) when other verbals are amalgamated with that denominal verb. Thus sikhi- causativization can be understood as V2-to-V1 head-movement, as shown below.

- (62) [<sub>v2</sub> N-ha] + [<sub>v1</sub> -sikhi-] ---> [<sub>v1</sub> N-sikhi-]

In fact, N-sikhi- causativization shows the same properties as those of V-i- causativization as discussed in subsection 4.2.1.1. and in this subsection. In short, we suggest that -i- causativization and -sikhi- causativization are the same causativization processes which differ only in that the predicate -i- selects V while the predicate -sikhi- selects N-ha verbs. (Note that V-V selectional restriction is possible when an embedded clause is a small clause, as discussed in fn. 27 in Section 3.4..) In fact, unless a matrix predicate selects a CP complement with rich C or I, some matrix predicates (usually Vx in Korean) are amalgamated with N-ha- in the same way as the verb -sikhi-:

- (63) a. sayngkak-ha- --- sangkak-{na/toy}-  
           idea-do (think) idea-{happen/become} ({happen/come} to think)  
       b. kwukyeng-ha- --- kwukyeng-{o/ka}-  
           attraction-do (watch) attaction-{come/go} ({come/go} to look at)

To summarize, in this subsection comparing Romance and Japanese causative constructions, we have discussed various types of Korean causative construction based on the notions of head-movement and RR. We have shown that Korean allows R- or M-complex causative predicates and that

depending on the properties of INFL and on the type of rules involved, a number of causative variations are obtained. Below, we will discuss another type of causative variations: ergative causative construction. Based on Korean and Italian data, we will discuss instantiations of R-, M-, and M/R-complex causative predicates.

## 4.2.2. Ergative causativization and psych-predicates

### 4.2.2.1. Korean -key ha- ergative causativization and psych-predicates

As we have noted, -key ha- causativization is completely productive so that any predicates may be -key ha- causativized. Thus some adjectives which reveal a 'psychological state'<sup>42</sup> can also be -key ha- causativized, as illustrated below.<sup>43</sup>

- (64) a. Chelswu-nun Yenghi-lul hayngpoksulep-0-key {mantul/?ha}-ess-ta  
           -TOP          -obj happy-Inf-comp      {make/do}-past-em  
           "Chelswu caused Yenghi to be happy."  
       b. Chelswu-nun Yenghi-lul kekcegsulep-0-key {mantul/?ha}-ess-ta  
           -TOP          -obj uneasy-Inf-comp      {make/do}-past-em  
           "Chelswu caused Yenghi to feel uneasy."  
       c. Chelswu-nun Yenghi-lul culkep-0-key      {mantul/?ha}-ess-ta  
           -TOP          -obj delightful-Inf-comp {make/do}-past-em  
           "Chelswu caused Yenghi to be delightful."

The -key ha- causativization of psych adjectives is usually awkward (but not ungrammatical) when a causer has an agent role. When mantul- (make) (which gives strong agentivity to a causer without any difficulties) is used as a causative verb, the sentences in (64) become much better.

Causers can be nonagentive and may also be events (65a), properties, or tendencies of animate objects (65b) or abstract concept objects (65c), as shown below.

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<sup>42</sup> Adjectives that we call 'psych-adjectives' are listed below:

- (i) kwuichanh- (annoying); kulip- (missed); sulphu- (sad); kipwun coh- (pleasant) ...

These predicates are called in various ways: 'sensory verbs' (C.-M. Lee (1976)); 'subjective verbs' (B.-S. Park (1974)); 'self-judgment verbs' (I.-S. Yang (1972;159)); 'emotive adjectives' (K.-D. Lee (1976)). Not every predicate which these authors illustrate belongs to the class of psych-adjectives that fall under our considerations. Psych-adjectives that can only be transitive listed in (ii) do not have the properties that we will discuss below.

- (ii) coh- (fond of); silh- (hateful of); cikyep- (tired of); philyoha- (in need of).

Psych-predicates under consideration listed in (i) are psych-adjectives that can be either transitive or intransitive.

<sup>43</sup> These psych-adjectives are not -i- causativized.

- (65) a. saep-ey      sengkongha-0-n-kes-ka      Yenghi-lul  
           business-in succeed-Inf-comp-thing-sub      -obj  
           hayngpoksulep-0-key {mantul/ha}-ess-ta  
           happy-Inf-comp      {make/do}-past-em  
           "Her succeeding in business caused Yenghi to be happy."  
       b. atul-uy heyakham-ka emeni-lul kekcengsulep-0-key {mantul/ha}-ess-ta  
           son-gen weakness-sub mother-obj uneasy-Inf-comp {make/do}-past-em  
           "Her son's weakness caused the mother to feel uneasy."  
       c. kyengkhoehan umak-ka Chelswu-lul culkep-0-key {mantul/ha}-ess-ta  
           cheerful      music-sub      -obj delightful-Inf-comp {make/do}-past-em  
           "Cheerful music caused Chelswu to be delightful."

One peculiar property of this causativization is related to anaphor binding (as for the peculiar binding in psych-verb construction in English and Italian, see Pesetsky (1987) and Belletti and Rizzi (1986)). In (66), a causee can bind an anaphor within a matrix subject NP.

- (66) a. [caki<sub>i</sub>-ka sengkongha-0-n-kes]-ka      Yenghi<sub>i</sub>-lul hayngpokha-0-key ...  
           self-sub succeed-Inf-comp-thing-sub      -obj happy-Inf-comp  
           "Self's<sub>i</sub> success caused Yenghi<sub>i</sub> to be happy."  
       b. [caki<sub>i</sub> atul-uy heyakham]-ka ku emeni<sub>i</sub>-lul kekcengsulep-0-key ...  
           self son-gen weakness-sub the mother-obj uneasy-Inf-comp  
           "Self's<sub>i</sub> son's weakness caused the mother<sub>i</sub> to be uneasy."  
       c. [caki<sub>i</sub>-ka cakkokha-0-n umak]-ka Chelswu<sub>i</sub>-lul culkep-0-key ...  
           self-sub compose-past-comp music-sub      -obj pleasant-Inf-comp  
           "The music which self<sub>i</sub> composed caused Chelswu<sub>i</sub> to be delightful."

This peculiar binding fact is not observed when a causer is agentive.

- (67) a. \*[caki<sub>i</sub>-uy acessil]-ka Yenghi<sub>i</sub>-lul hangpoksulep-0-key mantul-ess-ta  
           self-gen uncle-sub      -obj happy-Inf-comp      make-past-em  
           "Self's uncle caused Yenghi to be happy."

The binding fact in (66) suggests that the causers in (66) may fail to be base-generated in matrix subject positions. In fact, the following pattern suggests that a causer is not base-generated in a matrix subject position.

- (68) a. Chelswu-ka kekcengsulep-0-ta  
           -sub uneasy-pres-em      "Chelswu is uneasy."  
       b. Chelswu<sub>i</sub>-nun apeci-kkey [caki<sub>i</sub>-uy sengcekphyo-lul  
           -TOP father-datH self-gen report card-obj  
           po-i-l-ill-ka      kekcengsulew-ass-ta  
           see-caus-Inf/comp-thing-obj uneasy-past-em  
           "Chelswu<sub>i</sub> was uneasy about causing his father to see self's report card." (= ... about letting his father see self's report card)  
       c. Chelswu-ka [ .... po-i-l-ill-lul      kekcengsulew-e ha-ess-ta  
           -sub      see-caus-Inf/comp-thing-obj uneasy-Inf do-past-em

- d. [ ... caki-uy ... ]-ka Chelswu--lul kekcengsulep-0-key ha-ess-ta  
           self-gen       -sub                   -obj uneasy-Inf-comp do-past-em  
 "Causing his father to see self.'s report caused Chelswu. to be  
 uneasy."

In (68a), a psych-adjective is intransitive; it takes an NP-ka object when it is transitive, as in (68b). The fact that NP-ka is an object is confirmed by (68c); in (68c), when the verb ha- is 'restructured' with a psych-adjective,<sup>44</sup> the object takes -lul. These psych-adjectives can also be transitive in that they may take an object and assign ACC, which is realized as -ka in Korean, as shown in (68b). When a psych-adjective is -key ha- causativized, the argument structure is reversed, as shown in (68d) (cf. 68b).

Let us assume that the object of a psych-adjective is assigned an influencer role and that the subject is assigned an influencee role. When the psych-adjective is covertly 'restructured' with a verb ha-, as in (68c), a matrix subject is assigned a double theta-role: agent and influencee roles that overlap through RR.<sup>45</sup> But when psych-adjectives are causativized, argument structure is reversed, as shown in (68d). To summarize, the structures of (68) are schematically illustrated as follows:<sup>46</sup>

- (69) a. [ Infl<sub>e</sub>-ka psych-A ]  
       b. [ Infl<sub>e</sub>-ka Infl<sub>r</sub>-ka psych-A ]

<sup>44</sup> Thus, the clause-mate requirement between a quantifier and its scope marker is apparently violated. In (i), amwu-ket-to (nothing) and an- (not) appear in an embedded and a matrix clause, respectively and amwu-ket-to is wide scope.

(i) Chelswu-nun [ amwu-ket-to kekcengsulew-el ha-ci an-nun-ta  
           -TOP   nothing       worrying-Inf   do-to not-pres-em  
 "Chelswu does neg worry nothing."

<sup>45</sup> Thus at LF, the two theta-roles may be interpreted as an experiencer role by some conventions that interpret overlapped theta-roles.

<sup>46</sup> This pattern holds for all psych-adjectives we know of in Korean (cf. (i) in fn. 42).

- c. [ Agent<sub>1</sub>-ka [ (PRO)Infl<sub>1</sub> Infl<sub>2</sub>-lul psych-A-e ] ha- ]  
 d. [ Infl<sub>1</sub>/Caus<sub>2</sub>-ka [ Infl<sub>1</sub>-lul psych-A-key ] ha- ]

The structure (69d) is problematic: If a causer is base-generated in the matrix subject position, we cannot explain the peculiar binding fact observed in (66).

One plausible assumption is that a causer is actually base-generated in the object position having an infl<sub>2</sub> role, as in (68 and 69b), and then by some syntactic necessity, it moves to the matrix subject position in the manner given in (70).<sup>47</sup>

- (70) a. [ e [ Infl<sub>1</sub> Infl<sub>2</sub> psych-A ] -key {mantul/ha}- ]  
       b. [ Infl<sub>2</sub> [ Infl<sub>1</sub> t<sub>2</sub> psych-A ] -key {mantul/ha}- ]

VIC (V-key) can assign ACC since the s-head of VIC (i.e., V) has a Case feature. An Infl<sub>1</sub> argument is assigned ACC by the V of VIC and an Infl<sub>2</sub>

<sup>47</sup> The following pattern may show that the psych-causative versions are derived from the transitive versions (69b) of psych-adjectives but not from the intransitive versions (69a) of psych-adjectives.

- (i) a. Yenghi-ka culkep-0-ta  
       -sub delightful-pres-em "Yenghi is delightful."  
       b. \*?Yenghi<sub>1</sub>-ka (caki<sub>1</sub>-uy) accessi-ka culkep-0-ta  
       -sub self-gen uncle-sub delightful-pres-em  
       "Yenghi is delightful of self's uncle."  
       c. \*?(caki<sub>1</sub>-uy) accessi-ka Yenghi<sub>1</sub>-lul culkep-0-key ha-n-ta  
       self-gen uncle-sub -obj delightful-Inf-comp do-pres-em  
       "Self's uncle caused Yenghi to be delightful."  
 (ii) a. Yenghi-ka kekcengsulep-0-ta  
       -sub uneasy-pres-em "Yenghi is {uneasy/worried}."  
       b. ?Yenghi<sub>1</sub>-ka (caki<sub>1</sub>-uy) accessi-ka kekcengsulep-0-ta  
       -sub self-gen uncle-sug uneasy-pres-em  
       "Yenghi is {uneasy/worried} about self's uncle."  
       c. ?(caki<sub>1</sub>-uy) accessi-ka Yenghi<sub>1</sub>-lul kekcengsulep-0-key ha-n-ta  
       self-gen uncle-sub -obj uneasy-Inf-comp do-pres-em  
       "Self's uncle caused Yenghi to be {uneasy/worried}."

In Choe (in progress), for some other empirical reasons, we discuss a plausible alternative analysis of psych-causative construction that assumes a different D-structure shown in (iii), under the notion of syntactic adjunction as A-movement:

- (iii) a. [ e [<sub>VP</sub> [infl<sub>2</sub>] [<sub>CP</sub> Infl<sub>1</sub> psych-A-key ] ha- ] ]  
       b. [ [infl<sub>2</sub>] [<sub>VP</sub> t<sub>2</sub> [<sub>CP</sub> Infl<sub>1</sub> psych-A-key ] ha- ] ]

The analysis illustrated in (iii) does not affect our discussion of complex predicates in this Section. But the analysis in (iii) leads us to drop Belletti and Rizzi's (1986) 'anywhere principle of condition A,' which the analysis given in (70) has to adopt.

argument moves to the matrix subject position to be assigned NOM by a matrix INFL.<sup>4\*</sup> In fact, the biclausality of the structures in (70) is attested to the following data: The clause-mate requirement between a quantifier and its scope marker is observed in the psych-causative construction, as shown in (71a and b): In (71a), with amwu-to as an Infile argument, an- cannot appear on the causative verb; in (71b), with amwu-ket-to in the subject position, an- cannot appear on a psych-predicate. In (71c), the quantifier has only narrow scope.

- (71) a. i saken-ka amwu-to twulyep-0-key {?\*ha/\*mantul}-ci an-ass-ta  
 this event-sub nobody afraid-Inf-comp {do/make}-to not-past-em  
 "This event neg caused nobody to worry."  
 b. amwu-ket-to Chelswu-lul ani-twulyep-0-key {?\*ha/\*mantul}-ess-ta  
 nothing -obj not-afraid-Inf-comp {do/make}-past-em  
 "Nothing caused Chelswu to neg worry."  
 c. i kes-ka mwu-to ani-twulyep-0-key {ha/mantul}-ess-ta  
 this-sub nobody not-afraid-Inf-comp {do/make}-past-em  
 "This caused nobody to neg worry."

Note that the examples in (71) suggest that both V-key ha- and V-key mantul- are not RRed when ha- and mantul- are ergative.

Since ha- and mantul- do not trigger V-to-V RR, these verbs could be passived if they were not ergative. The passivization of -key {mantul/ha}- with psych-A is not possible, as shown in (72b), which suggests that the verbs {ha/mantul}- in (72) are ergative. Thus the examples in (72) support the analysis given in (70).

- (72) a. i saken-ka Chelswu-lul kekcengsulep-0-key {mantul/ha}-ess-ta  
 this event-sub -obj uneasy-Inf-comp {make/do}-past-em  
 "This event caused Chelswu to feel uneasy."  
 b. Chelswu-ka i saken-eyuyhayse kekcei sulep-0-key  
 -sub this event-by uneasy-Inf-comp

---

<sup>4\*</sup> The reason why only ergative -key ha- or -key mantul- can take psych-A in the embedded clause is attributed to the selectional properties of the ergative -key {ha/mantul}- predicate. For a possible reason for why an Infile argument (instead of an Infile argument) moves to the matrix subject position, see Section 4.3.. But also see fn. 47.

{??\*mantul/\*\*ha}-e ci-ess-ta  
 {make/do}-Inf pass-past-em  
 "Chelswu was made to be uneasy by this event."

In addition, structure (70) explains the peculiar binding fact in (68) if we adopt the 'anywhere principle' of binding condition A in Belletti and Rizzi's (1986;23) sense: condition A is met either at D- or S-structure.<sup>49</sup> Since at D-structure, caki is bound by an Infle argument in (66) (cf. 70a), the sentences in (66) are grammatical.

To conclude, the peculiar binding fact and the argument structure of the psych-causative construction in Korean both suggest that there is ergative causativization in Korean. In short, the verbs {mantul/ha} in Korean can be either transitive or ergative; ergative instantiations trigger some peculiar aspects with respect to binding under a certain principle (the 'anywhere principle' of binding A).

#### 4.2.2.2. Italian psych-verbs and M- and M/R-complex predicates

As with agentive causativization, we expect ergative psych-causativization to instantiate M/R- or M-complex words. In fact, in this subsection, we argue that a morphologically-complex version of the Korean ergative psych-causativization is found in the Italian psych-verb construction described by Belletti and Rizzi (1986).<sup>50</sup> Italian psych-verbs and Korean psych-causativization are similar to each other in significant ways

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<sup>49</sup> Belletti and Rizzi suggest that the principle may also be satisfied at LF. Howard Lasnik (p.c.) has pointed out that binding condition A may fail to apply at LF because of the following data.

(i) \* John thinks Mary is interested in every picture of himself.  
 If condition A is satisfied at LF, because of QR, (i) is expected to be grammatical under the 'anywhere principle' (but cf. fn. 47).

<sup>50</sup> As for discussions on psych-verbs in English, see Jackendoff (1972); Postal (1971); and Pesetsky (1987).



although in Italian there are no indications to suggest that psych-verbs are morphologically-complex predicates.

Consider the following much-discussed pair of psych-verbs (cf. also their English counterparts).

- (73) a. Gianni teme questo "Gianni fears this."  
 b. Questo preoccupa Gianni "This worries Gianni." (cf. (1-2) in Belletti and Rizzi (1986))

Belletti and Rizzi (1986) notice that Questo in (73b), but not Gianni in (73a), shows some of the properties of derived subjects. First, the following contrast shows that the subject in (73b) is derived.

- (74) a. Gianni si teme "Gianni himself fears."  
 b. \*Gianni si preoccupa "Gianni himself worries." ((10) in Belletti and Rizzi (1986))

Belletti and Rizzi (1986) suggest that (74b) above can be ruled out if Gianni is a derived subject, given the following locality conditions of



Finally, the well-known peculiar binding effect (76a) shows up in the Italian psych-verb construction (but not in (76b)), as we saw in the ergative psych-causativization in Korean.

- (76) a. Questi pettegolezzi su di sé, preoccupano Gianni, più di ogni altra cosa "These gossips about himself, worry Gianni, more than anything else."  
 b. \*Questi pettegolezzi su di sé, descrivono Gianni, meglio di ogni biografia ufficiale.  
 "These gossips about himself, describe Gianni, better than any official biography." ((46) and (47) in Belletti and Rizzi (1986))

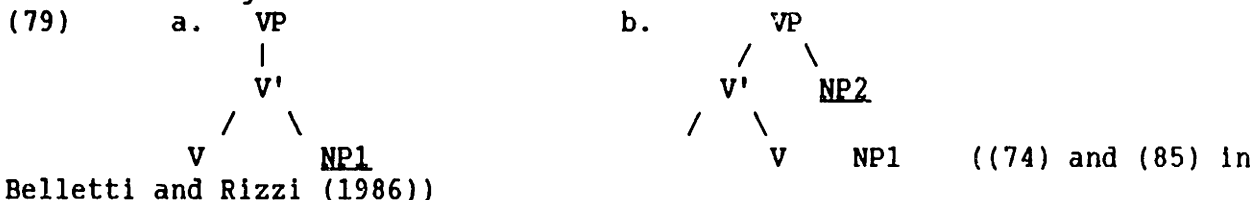
In order to explain these aspects of psych-verbs, Belletti and Rizzi (1986) suggest the following structure (assuming Kayne's binary branching hypothesis (cf. Kayne (1984))).

- (77) a. 
$$\begin{array}{c} \text{VP} \\ / \quad \backslash \\ \text{V}' \quad \text{NP2} \\ / \quad \backslash \quad | \\ \text{preoccupano} \quad \text{NP1 Gianni, (ACC)} \\ \text{(worry)} \quad / \quad \backslash \\ \text{questi pettegolezzi su di sé,} \quad \text{(these gossips about himself)} \end{array}$$
  
 (cf. (48) and (111) in Belletti and Rizzi (1986))
- b. Th-grid (Exp, Th)  
                   |  
                   Case-grid ACC

NP1 is (Th)eme and NP is (Exp)eriencer in their terms (cf. fn. 45). Since preoccupare, being ergative, cannot assign structural Case, NP1 moves to the matrix subject position while NP2 is assigned inherent Case (ACC) determined by the lexical properties of preoccupare in the manner of (77b). Under their analysis, the derived nature of a theme argument is explained in terms of the ergativity of preoccupare; peculiar binding is explained under the 'anywhere principle' of condition A: NP2 c-commands NP1 at D-structure (77a) and therefore condition A is satisfied, even though NP2 does not c-command NP1 at S-structure.

Belletti and Rizzi also argue that the structure in (77a) explains why, in (78/9b), extraction out of NP2 is ungrammatical, unlike extraction from the object position in (78/9a).

- (78) a. La ragazza di cui Gianni teme il padre  
 "The girl of whom Gianni fears the father."  
 b. \*La ragazza di cui Gianni preoccupa il padre  
 "The girl of whom Gianni worries the father."



Belletti and Rizzi suggest that the contrast follows for the following reason: Unlike NP1 in (79a), NP2 in (79b) is not lexically theta-marked (hence not L-marked) and hence the NP2 is a barrier. Since VP inherits barrierhood, extraction from NP2 violates Subjacency.<sup>54</sup> Therefore the extraction of NP2 shown in (78b) is not grammatical.

This analysis, however, contains some serious problems. First, there are some conceptual and empirical problems. Belletti and Rizzi (1986; fn.23) notice that the aspectual auxiliary of the preoccupare class is avere but not essere, which contradicts the generalization that the Italian assignment of an auxiliary reflects the formal ergativity of verbs.<sup>55</sup> Their analysis thus forces them to make a generalization that a verb takes avere if it has the capacity to assign ACC (structural or inherent), and essere otherwise. This modified generalization weakens the essere assign-

<sup>54</sup> Belletti and Rizzi (1986;43) suggest that the option of adjoining the extracted element to VP (along the lines of Chomsky (1986b)) does not vacate barrierhood of the VP under an assumption that inheritance of barrierhood can involve segments.

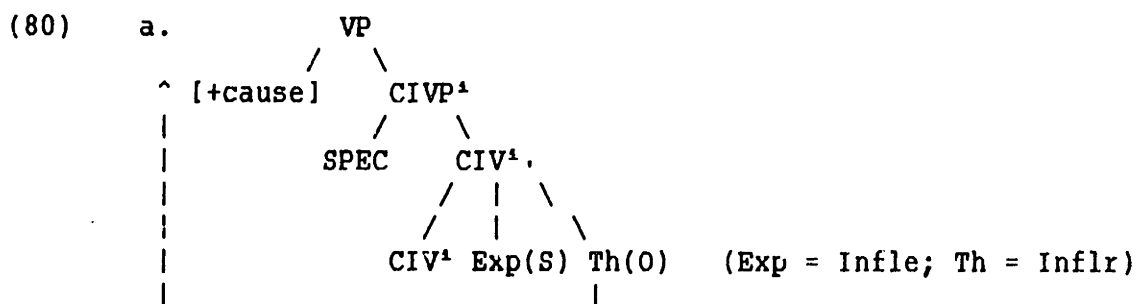
<sup>55</sup> Burzio's essere assignment is formulated as follows.

- (i) Essere assignment: The auxiliary will be realized as essere whenever a 'binding relation<sub>1</sub>' exists between the subject and a 'nominal contiguous to the verb.'  
 (ii) A 'binding relation<sub>1</sub>' is a binding relation other than a relation between elements of independent theta-roles. (cf. (86a) and (103) in Burzio (1986; 55 and 63))

The core case of (i) is that essere is assigned to a predicate that do not assign a logical subject at D-structure. See also Chapters 3 and 5, for some discussion on the auxiliary change in the 'restructuring' construction in Italian.

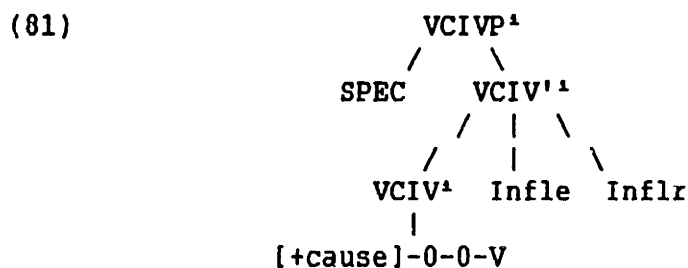
ment in Italian, since it fails to reflect the correlation between the (formal) ergativity of a verb and the auxiliary assignment in Italian. Note that given a 'restructuring' effect -- auxiliary change --, we have shown that essere is assigned to a complex predicate whose s-head predicate is ergative and that essere obtained by the ergativity of the s-head of complex predicates reflects the formal ergativity of complex predicates. In other words, essere is assigned according to the formal ergativity of complex predicates (also cf. Section 5.5.); it is also assigned according to the deep ergativity of a noncomplex predicate. The present analysis suggest that the Italian essere assignment reflects a deeper principle of UG. If the auxiliary assignment that reflects a certain version of Burzio's generalization is derived by deep principles of UG, then Belletti and Rizzi's modification may not be on the right track. In addition, their analysis offers some limited explanatory domain; the analysis does not extend to Korean psych-causative construction, which show almost the same properties: peculiar binding and the derived nature of subject argument.

To eliminate this problem with respect to the auxiliary assignment in Italian and to have a unified account of Korean and Italian psych-predicates, we suggest that in Italian, psych-verbs are morphologically-complex predicates, which are amalgamated with ergative causative predicates from the structure in (80). (We assume that Infle (Exp) and Inflr (Th) are base-generated as a logical subject and a logical object, respectively.)



This structure suggests that there are abstract predicates or feature bundles as causative predicates (cf. Chomsky (1970); Baker (1985/to appear)).<sup>56</sup> The structure implies that the subject in the psych-verb construction is a derived one. Since one of the two arguments in an embedded clause moves to the matrix subject position to be assigned NOM, the peculiar binding is explained as Belletti and Rizzi suggest.

The next question we raise is which operation, head-movement or RR, is responsible for the psych-predicate amalgamation of the verb preoccupare. If CIV<sup>1</sup> moves to [+cause] (head-movement), the formal ergativity will be determined by [+cause]. However, the formal ergativity is not determined by ergative [+cause] since the psych-verb preoccupare takes avere, like a non-ergative verb. We thus suggest that the morphological amalgamation of [+cause] and CIV<sup>1</sup> is derived by overt RR, as in the following.



Since only one Case feature of VCIV ([+SC] of the embedded V) is visible with respect to Case assignment, one of the two arguments in an embedded clause should move to the matrix subject position to be assigned NOM: For

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<sup>56</sup> Postulating a feature as a predicate is not new. Chomsky (1970:215) postulates a feature [+cause], which can be assigned to certain verbs as a lexical property and which can revise the transitivity and selectional properties of those verbs.

(i) John [+cause, grow] tomatoes.

Here, we postulate a predicate X, which contains a semantic feature [+cause] whose amalgamation takes place in syntax. We also suggest, given the wide interpretation of the projection principle, that 'revision of transitivity and of selectional properties of verbs' is actually 'formal' change (but not deep change) that is predicted depending on how two predicates are amalgamated.

some reason, an Inflr argument moves to be assigned NOM. Thus ACC is assigned to the Inflr argument. We thus maintain a certain version of Burzio's generalization of auxiliary assignment as reflecting the formal ergativity of (complex) predicates: a predicate taking the avere auxiliary has the Case feature [+SC], which is visible with respect to Case assignment (cf. formal transitivity).

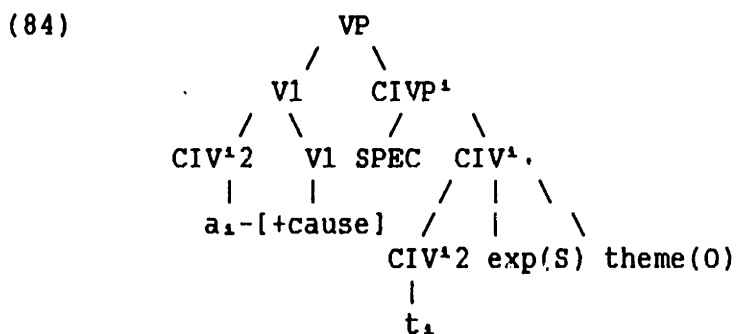
Under this analysis, we expect that there may be another type of complex psych-verb with different formal ergativity since two predicates may also be amalgamated by head-movement. In fact, Belletti and Rizzi (1986) notice another type of psych-verb in Italian.

- (82) La musica è sempre piaciuta a Gianni.  
 "Music always pleased Gianni." ((91b) in Belletti and Rizzi (1986))

The type of psych-verb exemplified in (79) has the following properties.<sup>57</sup>

- (83) a. the NP (exp; Inflr here) is marked with dative Case  
 b. the aspectual auxiliary selected by these verbs is essere.

Given (83b), we predict that piacere (please) is derived by CIV<sup>1</sup>-to-[+cause] head-movement in the following way:



[+cause] is the s-head of piacere. Therefore, the formal ergativity of piacere is ergative and piacere takes the auxiliary essere. This analysis redundantly explains the property given in (83a): The s-head [+cause]

<sup>57</sup> One more property is that the two NPs can change their positions.

(i) A Gianni è sempre piaciuta la musica

"To Gianni always pleases music." ((91a) in Belletti and Rizzi (1986))  
 We have no explanation of this property.

does not have the Case feature [+SC] (being ergative) and therefore piacere does not assign ACC to the object NP (Infl). Thus, while the Inflr argument moves to the matrix subject position to be assigned NOM, the Infl argument should be assigned Case by a dummy Case marker. Note that the subjecthood of the a argument (Infl) is intact even after RR applies given the RR conventions. Thus to preserve the subjecthood of an Infl argument, the dummy Case marker is employed.

Belletti and Rizzi (1986; fn.25) report that some verbs such as interessare (interest) assign either essere or avere and that depending on the auxiliary assignment, Case assigned to an Infl argument differs; with essere, the argument structure is like that of piacere and with avere, the argument structure is like that of preoccupare:

- (85) a. La politica lo ha sempre interessato  
           "Politics him-has always interested."  
       b. La politica gli è sempre interessata  
           "Politics to him-is always interested."

Under the present analysis, the verb interessare is derived either by RR (85a) (cf. 81) or by head-movement (85b) (cf. 84) from the structure (80). The existence of such verbs confirms the real correlation between auxiliary assignment and argument structure (or Case structure), which needs to be explained.<sup>55</sup>

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<sup>55</sup> Belletti and Rizzi (1986;58-59; fn 32) notice that both piacere and preoccupare classes of verbs are also instantiated in German (a fact discussed by den Besten (1982)):

- (i) a. ... dass deine Geschichten meinen Vater überhaupt nicht interessieren  
           that your stories (nom) my father (acc) at all not interest  
       b. ... dass deine Musik meinem Bruder nicht gefällt  
           that your music (nom) my brother (dat) not please

Even though there is no explicit indication of the ergativity of predicates as in Italian, based on the argument structures in (ia and b), we suggest that German, like Italian, employs both instantiations of complex predicates (M/R and M-complex). In other words, German and Italian employ two types of ergative causative predicate: One triggers RR and the other head-movement.



The bi-clausal analysis of psych-verbs in Italian has three important advantages over Belletti and Rizzi's mono-clausal analysis of psych-verbs. First, our analysis explains peculiar binding cross-linguistically. Second, we do not need to weaken a certain version of Burzio's generalization on auxiliary assignment that reflects the formal ergativity of predicates (cf. Burzio (1986)) so that the auxiliary assignment in Italian can be understood as part of UG. Belletti and Rizzi would predict a possibility of having transitive verbs that assign inherent ACC and take the avere auxiliary. However, to our knowledge there are no studies that such predicates exist in Italian. Our analysis maintains the auxiliary assignment in Italian in terms of formal and deep ergativity: the auxiliary assignment of syntactically-derived complex predicates reflects formal ergativity while that of lexically-derived predicates reflects deep ergativity. In short, the present approach explains some seeming exceptions to the auxiliary assignment in Italian in terms of formal ergativity. Finally, Belletti and Rizzi do not correlate (formal) ergativity and Case structure (or argument structure here) and therefore they stipulate Case/argument structure for each type of psych-verb. On the other hand, our analysis explains how (formal) ergativity is related to Case structure and predicts differences in Case structure depending on different types of psych-verbs. At this point, however, it should be noted that our analysis does not offer an account of the contrast given in (78) but suggests that the contrast in (78) might be explained on independent grounds.<sup>59</sup>

By giving a unified account of Korean and Italian psych-predicates, we

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<sup>59</sup> We take up this issue in Choe (in progress) and suggest an explanation of the contrast in (78) under an analysis given in (iii) in fn. 47.

also capture the fact that the Korean translations (86a and b) of (73) have the same argument structures as (73).

- (86) a. Chelswu-ka iket-ka tulyep-0-ta  
           -sub this-sub afraid-pres-em "Chelswu is afraid of this."  
       b. ikes-ka Chelswu-lu tulyep-0-key {mantul/ha}-n-ta  
           this-sub -obj afraid-Inf-comp {make/do}-pres-em  
           "This caused Chelswu to be afraid."  
       c. \*ikes-ka Chelswu-ka tulyep-0-ta  
           this-sub -sub afraid-pres-em "Chelswu is afraid of this."

If both Korean and Italian psych-verbs are ergative causative constructions and if their peculiar binding derives from the ergative nature of a causative predicate, we can also attribute the peculiar binding in the English psych-verb construction to the bi-clausal structure whose matrix predicate is ergative. In fact, morphologically-independent, ergative-causative predicates and morphologically-amalgamated psych-predicates both exhibit peculiar binding in English.<sup>60, 61</sup>

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<sup>60</sup> As for English psych-verbs, Chomsky (1970;192), in fact, suggests that the following D-structure of (ia) with a psych-verb in English might be plausible if the structure of (ia) is (ib) (cf. fn. 56); the stories in S is deleted under identity, and [+cause] and amused are amalgamated into the transitive amuse.

(i) a. The story amused him.

      b. The stories [+cause] [<sub>S</sub> he was amused at the stories.]

Under the current approach, we may suggest the following structure with a hypothetical predicate amuse' without a causative meaning.

(ii) a. [<sub>S</sub> e [+cause] [<sub>S</sub> he amuse' the story ]

      b. [<sub>S</sub> the story [+cause] amuse' him]

Then the unacceptability of the story's amusement of him may be explained for the same reason as (iia); Chomsky (1970;191-192) notices that 'derived' predicates are not nominalized, unlike nonderived predicates.

(iii) a. \*John's certainty to win the prize.

      b. John's certainty that Bill will win the prize. (cf. Chomsky (1970;191))

The existence of amuse' as a transitive verb with an agentive subject is supported by the possibility of the nominalization of amuse, as in (iv).

(iv) Mary's (deliberate) amusement of the children (cf. (20b) in Pesetsky (1987)).

<sup>61</sup> As Kayne (p.c.) has pointed to us, in English there are some indications that certain verbs (ia) are derived from the morphological amalgamation of two predicates, one of which is ergative, given the agentive and nonagentive meanings of accelerate.

(i) a. The cold weather has accelerated the disintegration of our house.

- (87) a. Pictures of each other<sub>i</sub> annoy the politicians<sub>i</sub>. (cf. (4a) in Pesetsky (1987;127))  
 b. Pictures of each other<sub>i</sub> make the politicians<sub>i</sub> uneasy.

The peculiar binding property can also be found in Korean causative construction whenever a causer is not agentive, whether causative predicates are morphologically amalgamated or not (cf. -key ha- (88b) or -i- (88a) causativization).<sup>62</sup>

- (88) a. caki<sub>i</sub>-uy caconsim-ka ku<sub>i</sub>-uy myengseng-lul mang-chi-ess-ta  
 self-gen pride-sub he-gen reputation-obj die out-caus-past-em  
 "Self<sub>i</sub>'s pride made his<sub>i</sub> reputation die out."  
 b. caki<sub>i</sub>-eytayhan kwukmin-tul-uy sengwon-ka ku sensu<sub>i</sub>-lul  
 self-about people-pl-gen cheer-sub the athlete-obj  
 kummaytal-lul tta-0-key {mantul/ha}-ess-ta  
 gold metal-obj gain-Inf-comp {make/do}-past-em  
 "People's cheer to self<sub>i</sub> caused the athlete<sub>i</sub> to gain a gold medal."

The present analysis suggests that the Lexicon should contain predicates/morphemes with no specific phonemes, which we might call 'fusible' morphemes. In fact, given the syntactic position we are assuming, such surface 'fusibility' does not indicate whether complex predicates are lexically-derived or syntactically-derived, as we see in so-called 'irregular' past verbs that do not have the -ed morpheme.

- |      |         |        |               |
|------|---------|--------|---------------|
| (89) | present | --     | past          |
| a.   | read    | [ri:d] | read [red]    |
| b.   | take    |        | took          |
| c.   | run     |        | ran           |
| d.   | hold    |        | held          |
| e.   | hit     |        | hit .... etc. |

Although the past form of the verbs in (89) have various forms, they are all syntactically derived under the present framework, which suggests that in the cases in (89), verbs are selected by the 'fusible' INFL morpheme (tense) while other verbs are selected by the nonfusible INFL tense

- b. They accelerated the speed of the boat.

<sup>62</sup> mang- and -chi- are independent morphemes and the latter has the causative meaning.

morpheme -ed. To conclude, morphological irregularity does not reflect whether complex predicates are syntactically-derived or lexically-derived. This conclusion is consistent with the autonomy theses of syntax with respect to morphology.

#### 4.2.3. Summary

So far, we have seen that there are various types of causative construction; the causative predicates are either agentive or ergative, on the one hand, and causative complex predicates are either M/R-, R- or M-complex words on the other hand. We have seen that causative complex predicates differ in a predictable way under the notions of head-movement and RR. The present analysis has also shown that the morphological aspects of words may fail to indicate the semantic or syntactic complexity of words. Seemingly morphologically-simplex words can be morphologically complex in that they are combinations of two predicates, having bi-clausal structures. If our proposals are on the right track (a strong version of the syntax/morphology autonomy hypothesis), then we have shown that we should not be biased by the morphological aspects of words in determining the syntax of those words. We have also shown that the status of INFL (null or overt) that complex words contain plays an important role in determining the syntactic aspects of the construction containing those complex words: to type infinitivals or small clause type infinitivals. We have seen that this INFL difference yields some difference in the scope of adverbials and in binding (cf. -i- versus sase causative constructions).

In the next Section, we discuss additional types of complex predicate, examine passive construction, and suggest that it is universally bi-

clausal and that passive predicates may also instantiate either M/R-, M- or R-complex words cross-linguistically.

#### APPENDIX: V-to-V RR and change in Case realization

Consider the following data, in which the matrix verbs ci- (1) and ha- (2) are Vx's (cf. Chapter 3).

- (1) a. Chelswu-ka ttokki-{lul/\*ka} cap-ass-ta  
       -sub rabbit-{obj/sub} take-past-em  
       "Chelswu took a rabbit."  
   b. Chelswu-ka ttokki-{ka/\*lul} cap-a(-lul) ci-ess-ta  
       -sub rabbit-{sub/obj} take-Inf-obj become-past-em  
       "Chelswu became to take a rabbit."
- (2) a. Chelswu-ka tokse-{ka/\*lul} culkep-0-ta  
       -sub reading-{sub/obj} pleasant-pres-em  
       "Chelswu delights in reading."  
   b. Chelswu-ka tokse-{lul/\*ka} culkew-e ha-n-ta  
       -sub reading-{obj/sub} pleasant-Inf do-pres-em  
   c. tokse-ka Chelswu-{lul/\*ka} culkep-0-key ha-n-ta  
       reading-sub -{obj/sub} pleasant-Inf-comp do-pres-em  
       "Reading caused Chelswu to delight in reading." or  
       "Reading amuses Chelswu."

When ci- (Vx) is a matrix verb, an embedded predicate, which assigns -lul (1a) (ACC), assigns -ka (ACC), as shown in (1b).<sup>63</sup> With ha- (2b) or ha- of -key ha- (2c) in a matrix clause, an embedded predicate, which assigns -ka (ACC) (2a), assigns -lul. Given that ha- and ci- are vx's (cf. Sections 4.2. and 4.3.), it seems clear that change in Case realization is a side effect of RR; we attribute this change in Case realization to the feature

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<sup>63</sup> The same effect in Japanese was discussed by Miyagawa (to appear). Miyagawa notes that purpose clauses are optionally 'restructured' with a matrix clause in Japanese and that the Case realization of an embedded object is optionally changed from -o to -ga; he argues that when see and go are 'restructured,' -ga is selected while when they are not, -o is selected.

(ii) Taroo-ga Sinzyuku-ni eiga-{o/ga} mi ni ik-(rar)e-ru  
       -nom -to movie-{acc/nom} see go-can  
       "Taro can go to Shinjuku to see a movie." ((cf. (15a) in Miyagawa (to appear))

percolation from Vx to Vk or from Vk to Vx, when Vx-Vk forms an R-complex word.

Suppose that ACC assigned by [-N,+V] is realized as -lul while ACC assigned by [+N,+V] is realized as -ka, given that a verbal predicate takes an NP--lul and an adjectival predicate NP--ka, as shown in (1-2a). Then, the change in the morphological realization of ACC is derived from the categorial feature change of an embedded predicate. Since Vx causes the change in Case realization in embedded clauses, let us suggest that in R-complex words, the categorial features of a non-s-head morpheme override those of the s-head morpheme. This suggestion amounts to saying that both overt and covert RR trigger categorial feature percolation in the following way; [+CD] X-heads are superior to [-CD] X-heads in determining the categorial features of both X-heads, behaving like the m-head (which determines the categorial features of complex words). If so, then case change in (1 and 2) derives from some formal change in the categorial features of complex predicates.<sup>64</sup> This suggestion also implies that percolation conventions work in the same way both in R-complex words and in M/R-complex words with respect to feature percolation, since in M/R-complex words, [+CD] X-heads acting as the m-heads, take priority in determining the categorial features of complex words.

To summarize, the categorial features of R-complex words are determined by those of [+CD] categories, which means that [+CD] heads are m-heads in that they take priority with respect to the categorial feature

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<sup>64</sup> One puzzling aspect of the change in Case realization (1b) is that ci-, which triggers the change from -lul to -ka in the embedded clause, assigns -lul (ACC) to its CP complement (instead of -ka), as shown in (1b). We shall leave this question open for further research.

percolation convention discussed in Chapter 3 (= the CFPC). Thus, we arrive at the following paradigm, filling the gap in (b3):

| (3)         | M-complex (1)      | M/R-complex (2) | R-complex (3) |
|-------------|--------------------|-----------------|---------------|
| a. the GFPC | <u>s-head[-MD]</u> | s-head[-CD]     | s-head[-CD]   |
| b. the CFPC | m-head[-MD]        | [-MD,+CD]       | <u>[+CD]</u>  |

(a2 and a3) and (b1 and b2) are predicted by the feature system which we are assuming (and we discussed empirical data for those four cases):

[-MD] heads are m-heads and [-CD] heads are s-heads. The grammatical features of [-CD] categories take priority over those of [+CD] categories with respect to feature percolation conventions (a2 and a3), while the categorial features of [-MD] categories in the case of R- or M/R-complex words take priority over those of [-CD] categories with respect to the grammatical feature percolation convention (the GFPC) (cf. b1 and b2). Based on the noun-incorporation data in Mohawk or in Tuscarora, we suggested in Section 3.3. that in the case of M-complex words, [-MD] heads are s-heads (a1). Finally, the Korean data in (1-2) provide the m-headness of an R-complex word (b3). If the Korean data given in (1-2) and our discussions on them are on the right track, then we have shown that R- and M/R-complex words behave in the same way with respect to both the GFPC and the CFPC, consistent with our thesis that M/R-complex words and R-complex words share the same properties except that M/R-complex words are morphologically words while R-complex words are not. Even though M//R- and R-complex words behave in the same way with respect to grammatical/categorial feature percolation, the difference between M/R-complex words and R-complex words is significant with respect to configurational structure and word order, as we saw in Section 4.1. and in this Section (cf. also Section 4.4.).

### 4.3. Passive construction

#### 4.3.0. Introduction

The passive -- and the relationship between passive and active sentences -- has been much discussed since the advent of transformational grammar (cf. Chomsky (1957)). Consider the following active and passive sentences.

- (1) a. John killed Bill.  
b. Bill was killed (by John).

The predicate kill in (1a) 'indirectly' s-selects an agent (John) but it is realized in the by phrase in the passive sentence in (1b); it also (directly) s-selects a patient (Bill) but the patient argument appears in the subject position in (1b). On the other hand, the change in argument structure is accompanied by passive morphology be...-en.

In this Section, under the syntactic position proposed in Section 3.1., we suggest the hypothesis that -en is base-generated as an ergative predicate; we show that the hypothesis makes it possible to give theoretically-plausible explanations of the morphological aspects of the passive complex predicate be killed and of the change in argument structure shown in (1b). We also show that the notions of RR and head-movement give deep insight into cross-linguistically significant relationship between passive morphology and change in argument structure.

#### 4.3.1. A bi-clausal approach to the passive process and head-movement

Studies on the passive have focused on the change in the argument structure of the passive construction since Chomsky (1965;1970).<sup>1</sup> It is

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<sup>1</sup> In Chomsky (1955;1975a), the passive is suggested to be both passive



widely assumed that the change in argument structure in the (verbal) passive construction is derived by A-movement (called NP-preposing or move-NP in the literature), as shown in (2b).<sup>2</sup>

- (2) a. kill : (Agent, Patient); S kill O  
       b. (i) e kill-en O by S --->  
          (ii) O<sub>i</sub> kill-en t<sub>i</sub> by S

Under the notion of A-chain, A-movement in the passive construction is triggered by the two properties of passive morphology -- absorption of the external theta-role (logical subject theta-role here)<sup>3</sup> and absorption of ACC (cf. Chomsky (1981;1986a); Burzio (1981/86)). Given that -en affixation is productive, under the lexicalist position (cf. Chomsky (1970)), the affixation of the passive morpheme is not considered as lexical.<sup>4</sup> There

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morphology and change in argument structure that are introduced by a transformation of representations in the following way.

- (i) NP1 V NP2 ---> NP2 be V-en by NP1

Chomsky (1970;203) (cf. Chomsky (1965)) also argues that the passive is an amalgam of two operations: NP-preposing and agent-postposing, which are independent operations from each other. Since the trace theory eliminates the agent-postposing process (cf. Fiengo (1977)), the current theory focuses on the status of NP-preposing in terms of A-movement (cf. Chomsky (1981;1986a)).

<sup>2</sup> Many pieces of evidence show that there are two types of passive in English: adjective (lexical) and verbal (syntactic) passives, which differ from each other in various ways (cf. Wasow (1977)). Verbal passives involve syntactic A-movement, as in subject-to-subject raising, but adjectival passives do not. As we noted in fn. 52 in Section 4.2., other languages, such as Italian (and Hebrew), also employ two types of passive: syntactic and lexical; the syntactic passive in those languages triggers A-movement (see Rizzi (1986b); Belletti and Rizzi (1986) for the Italian syntactic passive and Borer and Grodzinsky (1986) for the Hebrew syntactic passive).

<sup>3</sup> There are other recent attempts at explaining this property of passive morphology. For example, Jaeggli (1986) suggests that -en functions as the receiver of the logical subject of a predicate so that [NP,S] is thematically open. See also Roberts (1987) who suggest that -en absorbs the external theta-role. As we will see, our analysis will dispense with these special functions of -en.

<sup>4</sup> Lexical affixation is not considered as productive (cf. Chomsky (1970); Wasow (1977)). But see also Roeper and Siegel (1978) and Di Sciullo and Williams (1987).

are thus some theoretical tensions between the projection principle/theta-theory and the fact that passive morphology triggers a syntactic process (A-movement of an argument from the object position to the subject position); the projection principle leads to a theoretical tension, which is caused by the two properties of passive morphology, given that passive morphology is not lexical. A question raised by this tension is when passive affixation applies. In Chomsky (1981; 1986), the passive morpheme is affixed to the predicate kill in (2bi) at D-structure, and the argument structure is rearranged at D-structure, as in (2bi). The vacating of a logical subject and the addition of the by phrase are thus not considered as violating the projection principle.<sup>5</sup> In this approach to passive morphology, the passive morpheme -en is a morphological entity but not a syntactic entity since it does not project an X-head. Nevertheless, the passive morpheme -en does affect syntactic objects: it absorbs Case (feature) and a certain theta-role of the main predicate.

The passive process as stated above assumes that: affixation can change the properties of syntactic objects, and morphology and syntax interact as long as the projection principle is not violated. The problem is that the notion of D-structure becomes rather heterogeneous; D-structure is the combination of representation of theta-structure and affixation. The affixation of -en not only rearranges D-structure but also changes semantics in nontrivial ways; there are some well-known semantic differences between passive and active sentences. First, as Chomsky (1957) notices, in sentences with quantificational expressions, meaning or truth conditions of passive and active versions differ.

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<sup>5</sup> See also Borer (1984) for a discussion on passive morphology along these lines; she suggests 'anywhere morphology' that is constrained by the projection principle under certain assumptions.

- (3) a. Beavers build dams  
       b. Dams are built by beavers.  
 (4) a. Everyone in this room knows two languages.  
       b. Two languages are known by everyone in this room. (cf. Chomsky (1957;100-101))

Sentence (3a) states something about the generic nature of beavers; sentence (3b) does not. Likewise, in (4a), everyone in this room has scope over two languages (the normal interpretation of (4a)); in (4b), two languages has scope over everyone in this room (the strong interpretation of (4b)).<sup>6</sup> Second, in active sentences, agents are never allowed to be 'implicit arguments' with the arbitrary reading (which we may call *pro<sub>ARB</sub>*, (cf. Rizzi (1986a))),<sup>7</sup> while agents may be implicit in their passive counterparts (cf. Roeper (1987)).

- (5) a. One loves John.  
       b. John is loved.

(Also even if the semantics of one in (5a) correspond to those of an implicit argument in (5b), the semantics between (5a) and (5b) clearly differ.)

<sup>6</sup> It has been suggested that passive sentences have the stative meaning but that their active counterparts do not (cf. Keenan (1975; 1981); Langacker and Munro (1975)). Noam Chomsky (p.c.) has pointed out that passive verbs can take the be...-ing auxiliary (progressive tense).

(i) John is being killed.

In general, adjectives (1a and b) and stative verbs such as know (1c and d) do not take be...-ing:

(ii) a. \*I am being happy.  
       b. \*This is being untouched.  
       c. \*Everyone is knowing John.  
       d. \*John is being known {to/by} everybody.

If a stative predicate is not compatible with progressive tense, a passive complex predicate is not stative, contrary to what has been claimed.

<sup>7</sup> The notion of 'implicit argument' in Roeper's sense (1987;274) roughly corresponds to Rizzi's (1986a) objective/dative *pro<sub>OBJ</sub>* in Italian, which is syntactically and thematically active in that it can bind and control:

(i) a. Questo conduce *pro<sub>i</sub>* a [ *PRO<sub>i</sub>* concludere quanto segue].

"This leads *pro* [ *PRO* to conclude what follows.]

b. La buona musica riconcilia *pro<sub>i</sub>* con se stessi<sub>i</sub>.

"Good music reconciles *pro<sub>i</sub>* with oneself<sub>i</sub>." ((8d) and (11a) in Rizzi (1986a))

If all the semantics and syntax (the change in argument structure) in passive sentences derive from passive morphemes, then from the point of view of our syntactic position, the functions of the passive morpheme undoubtedly have effects too rich for us to assume that the passive morpheme -en is a morphological object that lacks its own syntactic position or its own theta-grid/semantics.<sup>a</sup> If we adopt the autonomy thesis of syntax with respect to morphology then we would not allow such semantically-rich (and grammatically/functionally-rich) morphological processes in syntax.

To capture the semantic and syntactic effects that passive morphology triggers, let us suggest, under the syntactic position, that -en is a syntactically-real object, i.e., an X-head and that it is a predicate, which triggers all those semantic and syntactic properties of the passive construction. V-en is, therefore, obtained through a head-to-head operation in syntax as long as the head-to-head operation does not violate the principles of UG. The properties of V-en, which triggers the passive-like change in argument structure, are then determined by the way V and -en amalgamate and by the ergativity/transitivity (i.e., Case-transitivity) of predicates V and -en.

Given the first property of passive morphology -- absorption of the logical subject theta-role, the passive predicate -en must be ergative; the absorption of theta role is thus explained, given that ergative predicates

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<sup>a</sup> The strong lexicalist position would suggest that the semantics of -en are obtained in the Lexicon with its own theta-grid (cf. Williams (1981b)). Roeper (1987) and Di Sciullo and Williams (1987), for example, suggest that -en has a theta-grid, like other lexical items, and that the theta-grid and semantics of V-en are obtained by lexical processes in the Lexicon. Below, we will share their view in that -en has a theta-structure but we will differ from them in that V and -en are amalgamated in syntax. See also Freidin (1975) and Wasow (1977) for some lexical approaches to the passive.

do not assign theta-roles to subject positions. Under the notion of RR, we suggest the following structure of the passive construction.<sup>9, 10, 11</sup>

<sup>9</sup> The behavior of be with respect to Aux-inversion suggests that be lies in INFL at S-structure, like any other auxiliary verbs. As for the reason why it must be accompanied by -en, we may suggest that be is assigned as an auxiliary verb, which is obtained by rules of auxiliary assignment in English, as in Italian (cf. Burzio (1986)). (Given rich Italian auxiliary assignment processes, it seems that the rules of auxiliary assignment in Italian apply more generally than those in English.) Along these lines, in the case of have V-en, one may suggest, based on morpheme order, that V-en is an M-complex word and that nonpassive -en (the s-head of the V-en M-complex word) is not ergative and therefore V-en takes auxiliary have. (If -ing is considered as an INFL element, as we assumed in Section 4.1., it may be that be...-ing is not derived in the same way as be...-en or have...-en; we leave open its nature for further research.)

Consider also the following in which been is the combination of auxiliary be and predicate -en:

(i) John has been killed.

(i) suggests that be also acts as a predicate at a certain level of representation. If, as we speculated in Section 3.3., be and have of be...-en and have...-en are predicates, then rules of auxiliary assignment can be reunderstood as V-V selectional restrictions: for example, predicate be ([+CD]) selects ergative predicate -en and predicate have ([+CD]) selects nonergative predicate -en, and so on. Note also that these V-V selectional restrictions hold among be...-en, be...-ing, and have...-en (cf. Chomsky (1957)).

(ii) a. John is being killed.

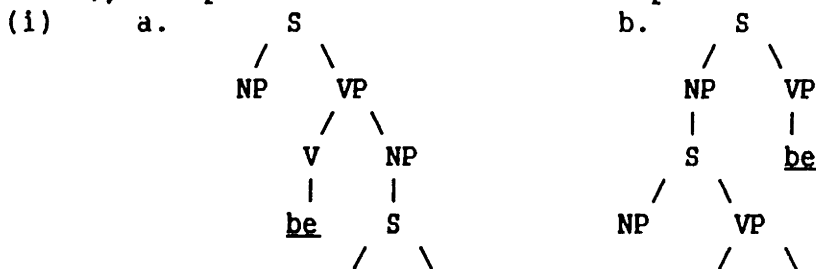
b. John has been killed.

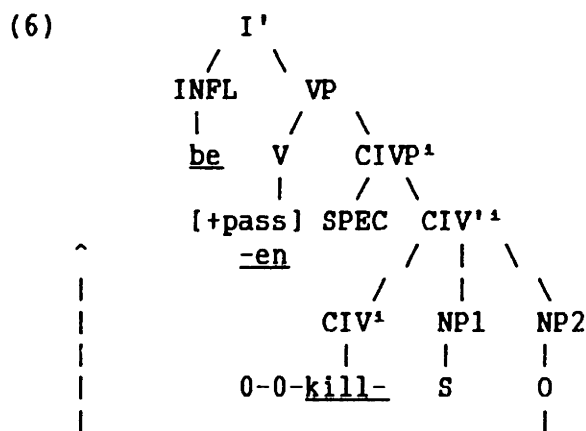
c. John has been being watched. ...

d. \*John is had killed. ...

In this approach, certain limited selection restrictions of predicates -en (ergative and nonergative), have, and be explain their restricted distribution. They are also auxiliary predicates taking CP complements that contain poorer functional categories than the usual Vx's or even than small clauses predicates for some reason.

<sup>10</sup> A bi-clausal approach to passive is not new. The bi-clausal structure in (6) can be compared with Hasegawa's (1968) passive structure in (ia) and G. Lakoff's or Lakoff-Ross-Postal's (cited in Langacker and Munro (1975) and in R. Lakoff (1971)) passive structure in (ib). Although (ia and b) are both bi-clausal, they crucially differ from (6) in that V-en is taken as a predicate (note that if be is also base-generated as a predicate (cf. fn. 9), the passive construction is triple-clausal in (6)).





In (6), the predicate -en selects a small clause whose INFL is [-Tense, -Agr-A] since I is not overtly realized and does not license adverbials (i.e., the passive construction does not have two sentential adverbials). Since complex predicate V-en is a complex word, C-to-V RR should apply in the embedded clause so that C does not induce the MC.<sup>12</sup> In terms of CFC structure (cf. Section 4.2.), the change in argument structure in the passive construction is represented, as in (7a); on the other hand, (7b) may be obtained in a monoclausal or lexical approach to the passive.



See R. Lakoff (1971) for some reasonable criticisms about (ia) and see Langacker and Munro (1975) for a similar proposal to (ib). The current framework simply cannot adapt (ib) because (too) many rules (including theoretically unmotivated rules) would be required to derive the passive construction from (ib).

<sup>11</sup> Keenan (1981:187) suggests that passive should be phrasal but not clausal; passives are VPs derived from transitive VPs (also cf. Dowty (1978)). Our bi-clausal approach shares the same spirit as the phrasal approach except that the bi-clausal approach under the syntactic position theoretically anticipates the existence of (null) functional categories such as C and I, given V.

<sup>12</sup> Whether C-to-I RR is covert or overt is an empirical question. For expository purposes, we have the structure in (6) in which deep-overt C-to-I RR has applied.

- (7) a.  $(e, (\underline{w}, z)_Y) \text{ ----> } (z_1, (\underline{w}, t_1)_Y)$   
 b.  $(\underline{w}, z) \text{ ----> } (z, \underline{w})$  (through a lexical rule)

In short, we propose that the passive is obtained through bi-clausal structure whose matrix predicate is thematically/syntactically ergative (deep ergative) so that an A-position is open in order that A-movement is possible.

The question at this point is how -en and V are amalgamated in English. There are two decisive indications that killed is derived by head-movement in English. First, the morpheme order simply suggests that killed is obtained by head-movement since kill- is affixed leftward (kill-en does not overtly show the string-preserving property of RR). Second, neither John nor Bill is assigned ACC, which means that ergative -en, instead of kill-, is the s-head and therefore the passive complex predicate killed does not assign ACC either to the subject position or to the object position. One of the two arguments of an embedded clause thus moves to receive NOM from a matrix INFL. As we see in (6), a logical object argument moves to the matrix subject position for reasons we will discuss shortly, and a logical subject argument is left Caseless. Therefore, either a Case marker is employed<sup>13</sup> or the subject becomes pro<sub>sub</sub> (in Rizzi's (1986a)) sense or becomes an implicit argument.<sup>14</sup>

The present bi-clausal analysis of the passive construction has a number of advantages: First, since -en is an ergative passive predicate,

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<sup>13</sup> We will suggest shortly that the by preposition in passive construction is a dummy Case marker due to V-to-V RR effects, like the dative marker in causative construction (cf. Section 4.2.).

<sup>14</sup> Note that the by subject cannot be 'lexically-saturated' in Rizzi's (1986a) sense but it could be syntactically-saturated since it behaves like an implicit argument in Roeper's (1987) sense, or since it is syntactically active (cf. 17 below). See Higginbotham (1985b) for the notion of saturation.

and V-en is an M-complex word (given the morpheme order), another property of -en -- absorption of Case -- follows: kill-en is derived by kill--to--en head-movement and therefore it cannot assign ACC, because ergative -en is the s-head of the kill-en predicate. Second, we avoid postulating morphemes that can affect properties of syntactic objects. This analysis thus eliminates D-structure affixation with rich semantic and syntactic effects. By doing so, it also eliminates some theoretical tensions caused by the projection principle and by the -en morphology that changes argument structure. In the bi-clausal analysis, the theta absorption of -en derives from its ergativity and the Case absorption derives from the formal property of a passive complex predicate. Third, the bi-clausal analysis leads to deep insight into some different semantics between active and passive sentences. For example, the scope interpretation in (4b) can be attributed to the fact that the passive construction is bi-clausal and that the scope of the by subject tends to be confined within the embedded clause.<sup>15</sup>

We can also eliminate a problem caused by some restrictions on verbal passives. For example, as Chomsky (1965:103) (also cf. Chomsky (1965; fn.28)) notes, verbs which do not take manner adverbials (resemble, cost, marry) are not passivized.<sup>16</sup> If the passive (head-movement and A-movement) is syntactic and if morphology and semantics are independent of each other,

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<sup>15</sup> C-to-V RR may be (optionally or obligatorily) covert in syntax so that an embedded IP is available as an adjunction site of QR. If that is so, then V-en is not CIV<sup>1</sup>-en; and C<sup>1</sup> and I<sup>1</sup>, both of which are always null, are left behind in the embedded clause when V moves to -en (but see Chapter 5 for our formulation of the HMC that excludes V-to---en movement when C-to-V is covert).

<sup>16</sup> See also Fiengo (1977), who suggests that the relation of asymmetry between the two arguments selected by a transitive predicate may determine passivizability.



these restrictions are likely to be problematic under a mono-clausal approach. Under the present bi-clausal analysis, they are not: Given a certain notion of the transitivity of selectional restrictions in an RR domain,<sup>17</sup> -en selects a small clause with a predicate that allows a manner adverbial.

In addition to the advantages discussed above, the bi-clausal analysis leads to a plausible understanding of various aspects of passive construction: It has been noted that the readings of certain types of adverbs may or may not differ in active and passive sentences. For instance, some adverbs McConnell-Ginet (1982) calls agent-oriented adverbs<sup>18</sup> do not change their meaning in active and passive sentences. Agent-oriented adverbs are signified by their string positions; they lie to the immediate left of a main verb (8a) or in the sentence final position (8a/b) (cf. Jackendoff (1972;49-51); McConnell-Ginet (1982)); in the passive construction, they may lie to the right of a main verb (8c):

- (8) a. (\*expertly) John (\*expertly) has (expertly) instructed Mary (expertly).  
       b. Mary was instructed (by John) expertly.  
       c. Mary was instructed expertly by John.

In (8a), the adverb expertly indicates the way John instructed Mary; and in its passive versions (8b and c), the same meaning of the adverb is obtained.

Adopting the notion of secondary or adjunct theta-role (cf. Zubizarreta (1982)), we suggest that agent-oriented adverbs are strongly linked

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<sup>17</sup> Remember that the transitivity of selectional restrictions is an RR effect, as we discussed in Chapter 3 (especially cf. fn. 27 in Section 3.3.).

<sup>18</sup> These are: thoroughly, gently, expertly, brilliantly (cf. McConnell-Ginet (1982)).



sense (cf. subject-oriented adverbs in Jackendoff (1972; 82-83))<sup>21</sup> exhibit the change in the meaning of adverbs in active and passive sentences according to the positions of adverbs. A passive-sensitive adverb appears ubiquitously, as shown in (10).

(10) (Cleverly,)1 the doctor (cleverly)2 has (cleverly)3 examined John (cleverly)4.

- (11) a. John cleverly has been examined by the doctor.  
 b. John was examined cleverly (by the doctor).  
 c. John was cleverly examined by the doctor. (cf. Jackendoff (1972; 49))

When a passive-sensitive adverb appears in a passive sentence, the semantics of the adverb differ. The meaning of the adverb cleverly in (11a) and that of the adverb cleverly in (11b) differ from each other. On the other hand, (11c) is ambiguous.

Jackendoff, in fact, notices that the passive-sensitive or subject-oriented adverbs have different meanings depending on their positions in clauses: When these adverbs appear on the left side of V, as shown in (12) (or appear between auxiliaries and main verbs, as shown in (11c)), the sentences are ambiguous, having the readings in (13).

(12) John cleverly dropped his cup of coffee.

- (13) a. The manner in which John dropped his cup of coffee was clever.  
 b. It was clever of John to drop his cup of coffee.

(11a) has the meaning of (13b) and (11b) the meaning of (13a). Adopting Higginbotham (1986)'s terminology, let us call the (13a) and (13b) readings the manner reading and the stative reading, respectively. These two readings are also signified by the possible string positions of adverbs shown in (10). Depending on the positions of the adverb, its semantics in (10) differ: the adverb in positions 1 and 2 tends have the stative reading

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<sup>21</sup> carefully, cleverly, carelessly, intentionally, wisely, unwillingly, obediently, knowingly (cf. Jackendoff (1972); McConnell-Ginet (1982)).

(cf. 11a) while the adverb in positions 3 and 4 tend to have the manner reading (cf. 11b).

We suggest, under the present bi-clausal approach, and based on the distribution of the adverb in (11), that the semantic differences of passive-sensitive adverbs derive from different governors of adverbs in the following way. In order to have the manner reading, the adverb should be governed/licensed by V (like an agent-oriented adverb, which has the manner reading); in order to have the stative reading, the adverb should be governed or licensed by INFL.<sup>22</sup> This approach suggests that passive-sensitive adverbs are ambiguous in that they are base-generated either under the licensing domain of INFL (having the stative meaning) or under the domain of V (having the manner reading) (cf. McConnell-Ginet (1982)). Given that the passive construction contains a small clause, this approach predicts that when a passive sensitive adverb has the stative meaning, it can be associated only with the matrix clause because the matrix INFL but not the embedded INFL can license an adverb given that -en selects a small clause complement; this prediction seems to be borne out. On the other hand, when a passive-sensitive adverb has the manner reading, if it is agent-oriented, it may be associated only with an embedded verb since -en does not select an agent.<sup>23</sup>

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<sup>22</sup> Jackendoff (1972;50) notices that adverbials occurring only in the initial position of the sentence and on the right side of an auxiliary have the meaning of (1b).

(i) a. (Evidently,) Horatio has (evidently) lost his mind (\*evidently).

b. It is evident that Horatio has lost his mind. (cf. 3.6-9) in Jackendoff (1972;50); ' in (1a) is ours)

Semantically speaking, the semantics of (1b) slightly differ from those of (13b). (1b) does not have the meaning of (13a) or of (13b) but rather the adverb in (i) is associated with the event described in (i). We suggest that this type of adverb is associated with INFL but does not assign a secondary theta-role to the subject position.

<sup>23</sup> We predict that if a passive-sensitive adverb can be licensed by the

To summarize, we suggest that the agent-oriented reading of agent-oriented adverbs and the manner reading of passive-sensitive adverbs are obtained when agent-oriented or passive-sensitive adverbs are generated within VP so that adverbs are agent-oriented, like predicates, while the stative reading of passive-sensitive adverbs is obtained when those adverbs lie under the licensing domain of INFL. In the passive construction, the matrix V (-en) does not tend to license agent-oriented adverbs while the embedded INFL, being [-A], cannot license adverbs. Hence, the different semantics of (11a) and (11b) are observed.

In a mono-clausal approach to passive, an account of the semantics of passive sensitive adverbs can be obtained, but the account would have to assume that (secondary) theta-roles are assigned by referring to agent theta-roles in the following way. When adverbs are licensed by V, they assign secondary theta-roles to agent arguments in by phrases in passive sentences, while they assign secondary theta-roles to the subject positions in active sentences. In short, a mono-clausal approach should necessarily refer to the agent position to explain the manner reading of a passive-sensitive adverb, while it should also refer to the subject position to explain the stative meaning of a passive-sensitive adverb. On the other hand, in our bi-clausal approach, theta-roles are assigned configurationally without referring to the notion of an agent position or to the by phrase. Thus it seems that the bi-clausal analysis leads to a plausible

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passive predicate, then the adverb may have the manner reading:

(1) the manner in which John was examined by the doctor is clever.

Whether (11c) can have the reading (1) may be determined by the semantics of an adverb and by those of the passive predicate; it seems that a possibility of having the manner reading of passive-sensitive or subject-oriented adverbs in the passive construction is very weak.

and systematic understanding of the semantics and the behavior of passive-sensitive (and agent-oriented) adverbs.

Given that the passive predicate -en triggers C-to-V RR (or selects a small clause complement), we also suggest that the by subject in passive construction is derived by the same mechanism as the dative subject in the causative construction. We suggested that a dummy Case marker for the embedded logical subject (in the causative construction in which an embedded CP is a small clause containing a transitive verb) is employed so that the subject does not lose the subjecthood since RR conventions preserve the subjecthood of the SPEC of IP in the case of C-to-V RR. Remember that a Case marker has to be employed to rescue the logical subject argument from the Case filter, since CIV assign ACC to the logical object argument but not to the logical subject argument.<sup>24</sup> Along these lines, we suggest that since passive construction also triggers C-to-V RR in an embedded clause in which the logical subject argument lacks Case, the by in the passive construction is also a dummy Case marker that is employed to preserve the subjecthood of the logical subject argument. In short, both dative subjects and by subjects in causative and passive constructions derive from C-to-V RR effects.<sup>25</sup>

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<sup>24</sup> When a causative verb and an embedded V are not morphologically-amalgamated, two instantiations of causative sentences are possible, given that causative verbs select small clauses. In languages which allow small clause ECM (cf. English), no dative subject is observed since an embedded subject is assigned Case by a causative verb through ECM. In languages that do not allow small clause ECM (cf. Romance languages), dative subjects are observed even if no morphologically-complex predicates are observed (cf. Section 4.1.).

<sup>25</sup> This RR effect we are suggesting is strictly derived by C-to-V RR in embedded clauses; Thus, whether V-to-V RR applies (French) or not (Italian), dative subjects are obtained whenever an embedded subject lacks Case (when an embedded V is transitive) because of C-to-V RR. The notion of 'clause union' effects that is discussed in Aissen and Perlmutter (1983) (based on the Spanish causative construction in the relational grammar

In some languages, by subjects and dative subjects are morphologically the same. For example, in languages such as Korean and Japanese, embedded logical subjects in passive and causative constructions usually take the same dative case marker, -eykey and ni, respectively.<sup>26</sup>

(14) Korean:

- a. totwuk-ka kyengchal-eykey cap-hi-ess-ta  
bugler-sub policeman-dat catch-pass-past-em  
"A bugler was caught by a policeman."
- b. emeni-ka ai-eykey os-lul ip-hi-ess-ta  
mother-sub child-dat clothes-obj wear-caus-past-em  
"Mother made the child put on his clothes."

(15) Japanese:

- a. John-wa Mary-ni hon-o yom-(s)ase-ru  
-to book read-caus "John lets Mary read books."
- b. Mary-ga John-ni koros-(r)are-ta  
-by kill-pass "Mary was killed by John." (cf. Kuno

(1973))

However, in Romance languages, and in Turkish, passive and causative constructions employ different Case markers:<sup>27</sup>

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framework) differ from this notion of C-to-V RR effect; roughly speaking, the existence of dative subjects indicates 'clause union' (see Aissen and Perlmutter (1983)). These two notions have different empirical predictions: Note that Spanish causativization must be derived by V-to-V RR, as in French, since the passive of causative verbs is not possible in Spanish, as Zubizarreta (1985) notes (cf. Section 4.2.). The Italian causative construction includes a dative subject, like its Spanish counterpart. On the other hand, Italian causativization differs from Spanish causativization in that it involves no actual clause-union (no 'restructuring') (cf. Sections 3.3. and 4.1.). In short, Aissen and Perlmutter would not differentiate Spanish and French causative constructions that are V-to-V RRed from the Italian causative construction that are not V-to-V RRed.

<sup>26</sup> In Korean passive construction, when a logical subject is nonanimate, -ey (instead of -eykey) is used (cf. Martin (1974)); when a logical object is inanimate, -eyuyhayse is used (cf. Choi (1935)). Semantically speaking, it seems that NP-{eykey/ey/eyuyhayse} in the passive construction has the by meaning, regardless of its overt variations. On the other hand, NP-eykey in the causative construction has dative to meaning. This difference in meaning definitely seems to derive from matrix predicates: passive versus causative.

<sup>27</sup> cf. Kayne (1975); Burzio (1986); Aissen and Perlmutter (1983); and Aissen (1974a and b). Eskimo languages also employ different Case markers in passive and causative constructions.

(i) a. nutara-up arna-mut angut aktuq-ti-taa  
child-erg woman-all man(abs) touch-caus-3sg/3sg

|      |         |                   |           |
|------|---------|-------------------|-----------|
| (16) |         | passive           | causative |
|      | French  | <u>par</u>        | <u>a</u>  |
|      | Italian | <u>da</u>         | <u>a</u>  |
|      | Spanish | <u>por</u>        | <u>a</u>  |
|      | Turkish | <u>tarafından</u> | <u>-a</u> |

We suggest that the employment of different Case markers derives from the semantics of passive and causative constructions but does not indicate that they differ in a fundamental way. In fact, there are some similarities between these two Case markers.

It is well-known that the by subject in the passive construction can be unspecified, receiving the implicit argument ( $pro_{arb}$ ) reading. The following control facts suggest that the by subject in the passive construction is syntactically present but phonetically null (like the Italian object  $pro$  (cf. Rizzi (1986a))).<sup>28</sup>

- (17) a. They<sub>i</sub> decreased the price [  $PRO_i$  to help the poor].  
 b. The price was decreased (by them<sub>i</sub>/ $pro_i$ ) [<sub>arb</sub>  $PRO_i$  to help the poor].  
 Chomsky (1981;143) (originally from Manzini (1983a)).

The meaning in (17b) is predicted if the category <sub>arb</sub> in (17b) is base-generated under the domain of V (decrease); since the by subject is syntac-

"The child made a woman touch the man."

- b. arnaq angum-mik kunik-tau-vuq  
 man(abs) woman-abl kiss-pass-3sg

"The man was kissed by the woman." (data drawn from Jensen and Johns (in press))

<sup>28</sup> Italian data also show that  $PRO$  is bound by the by subject ( $pro_j$  in (ib)) but not by the derived subject ( $pro_i$  in (ib)).

- (i) a. Gianni fotografa -- nudi.

"Gianni photographs [ $PRO$  nude]."

- b.  $pro_i$  vengono fotografati ( $pro_j$ ) [ $PRO_j$  nudi].

"(They<sub>i</sub>) are photographed ( $pro_j$ ) [ $PRO_j$ /\*<sub>i</sub> nude]." (<sub>j</sub> = arb)

According to Rizzi (1986a;523),  $PRO$  is bound by a null by phrase but not by a derived subject. Given that (ib) is triple-clausal (since the passive is bi-clausal), the interpretation of  $PRO$  in (ib) and (17b) would not be surprising since the by subject lies in its theta-position of the embedded clause and since arb interpretation is licensed only through theta-marking (also cf. Belletti and Rizzi (1986;12)).



tically present in the form of *pro* in the subject position of the clause higher than the clause containing PRO, *pro* can control PRO.<sup>29</sup>

This property of an implicit argument is also found in causative construction, as discussed in Aissen (1974a; ch. 5) who observes that in French (18a), Spanish (18b), and Turkish (18c), the embedded subject of the causative construction can be unspecified or implicit<sup>30</sup> (when an embedded V is transitive).

(18) a. Je ferai porter les valises dans les chambres.

"I'll have *pro*<sub>NP</sub> bring the suitcases to the rooms." or

"I'll have the suitcase brought to the rooms."

b. Haré cocinar los frijoles.

"I'll have *pro*<sub>NP</sub> cook the beans." or "I'll have the beans cooked."

c. Hasan et-i pis-irt-ti

meat-acc cook-cause-past

"Hasan had *pro*<sub>NP</sub> cook the meat." or "Hasan had the meat cooked."

(cf. (1, 3, and 5) in Aissen (1974a;245))

These implicit arguments in the causative construction resemble implicit arguments in the passive construction (cf. Aissen (1974a;258)).<sup>31</sup> Those implicit arguments are also found in the Korean causative construction. In Korean, the -eykey subject in the causative construction can be understood

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<sup>29</sup> Consider the following data from Howard Lasnik (p.c.).

(i) a. John<sub>1</sub> was hit by Mary<sub>2</sub> after PRO<sub>1</sub>/\*<sub>2</sub> singing.

b. \*Mary was promised by John<sub>1</sub> PRO<sub>1</sub> to see a doctor.

The interpretation of (ia) is explained if the after phrase is base-generated in the -en clause so that Mary cannot be available as a controller of PRO (i.e., the after phrase is too deeply embedded). As for (ib), we suggest that some other factors play a role in the ungrammaticality of (ib), given that the predicate promise thematically selects a controller.

<sup>30</sup> Rizzi (1986a) notes that certain causative constructions in Italian allow *pro*<sub>NP</sub> in the embedded subject position.

(i) questo esercizio mantiene [*pro*<sub>NP</sub> sano].

"This exercise keeps healthy." ((65b) in Rizzi (1986;533))

Note also that even in English, perception verbs such as hear (but not the causative verb make) can allow *pro*<sub>NP</sub> in the embedded subject position:

(ii) I've never heard *pro*<sub>NP</sub> tell about him.

<sup>31</sup> Aissen (1974a) also observes that in Turkish passive and causative constructions, different Case markers are used: tarafından and dative marker -a. Nevertheless, both tarafından and -a subjects can be unspecified (implicit).

as implicit arguments with the  $pro_{arb}$  reading (19a) (although  $pro_{arb}$  appears in somewhat limited environments), like the -eykey subject in passive construction (19b).<sup>32</sup>

- (19) a. cey-ka cwuin-lul pwul-le o-0-key \_\_\_\_\_ ha-ci-yo  
 I-sub host-sub call-to come-Inf-comp do-will-emH  
 "I will cause  $pro_{arb}$  to call the host to come."  
 b. totwuk-ka cap-hi-ess-yo  
 thief-sub catch-pass-past-em "The thief was caught ( $pro_{arb}$ )."

Finally, it is well-known that theta-roles assigned to logical subjects are not changed even when they appear in by phrases.

- (20) a. Bill was attacked by John. (agent)  
 b. The movie was enjoyed by Mary. (experiencer)  
 c. The package was received by Susan. (goal)  
 d. The door was opened by the skeleton key. (instrument) (from Lasnik (1986a); also cf. Jaggli (1986) with a similar set of examples)  
 e. John was helped/thanked by Bill (?) (from Wasow (1977;342))

This is what we expect if the preposition by in passive construction is a dummy Case marker, since a dummy Case marker would not affect the theta-role of its Case assignee. The syntactic and semantic similarities between by subjects and dative subjects in passive and causative constructions discussed above empirically confirm that like dative subjects, by subjects are assigned Case by a dummy Case marker because of the C-to-V RR effect,<sup>33</sup> although dummy Case markers may differ in passive and causative constructions for semantic reasons.

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<sup>32</sup> The semantics of null arguments in (19a) are the same as implicit arguments in (19b) with the arbitrary reading; they are not instantiations of null arguments in Korean, which have specific reference.

<sup>33</sup> Also, in certain matrix environments, which are called 'inversion' environments in the relational grammar, dative -eykey subjects appear without losing their subjecthood:

(i) sensaynim-kkeyse caki-man-lul wihan sikan-ka philyoha-si-0-ta  
 teacherH-dath self-only-obj for time-sub need-H-pres-em  
 "The teacher<sub>i</sub> needs time just for himself<sub>i</sub>."

As in (i), the dative subject can bind an anaphor and can trigger subject-verb agreement. Thus it seems that languages also employ dummy Case markers for subjects in some environments other than C-to-I RR environments.

There is, however, apparent empirical evidence that by subjects in English passive construction are not assigned Case by a dummy Case marker, but may form PPs. For example, they cannot bind anaphors: They<sub>i</sub> were caught by policemen<sub>j</sub> at each other's<sub>i/\*j</sub> houses. Likewise, in both Korean and Japanese, dative NP's do not bind in passive sentences, which might indicate that neither -eykey nor ni in passive construction is a dummy Case-marker:

- (21) a. totwuk<sub>i</sub>-ka han kyengchal<sub>j</sub>-eykey cak<sub>i/\*j</sub> cip-eyse cap-hi-ess-ta  
 burglar-sub a policeman-by self house-at catch-pass-past-em  
 "The burglar<sub>i</sub> was caught by a policeman<sub>j</sub>, at self's<sub>i/\*j</sub> house."  
 b. Mary-wa John-ni zibun no ie de koros-are-ta  
 "Mary was killed by John at {her/\*his} house." (cf. in Miyagawa (1984))

However, the binding facts in (21) seem apparent. Given that a passive predicate selects a small clause complement in which INFL cannot license adverbs, (locative) sentential adverbs are not licensed by an embedded INFL[-A], and can be linked only with the matrix INFL[+A]. It thus follows that by subjects in embedded clauses are not available as binders of anaphors in locative phrases, which lie in matrix clauses. If this logic is right, as Richard Kayne (p.c.) has pointed out, when a phrase containing an anaphor lies under the licensing domain of the embedded V, then the anaphor could be bound by the by subject. In fact, the data given in (22), which are due to Richard Kayne, precisely show that by subjects do not form PPs.

- (22) a. (?) The book was bought by John<sub>i</sub> for himself<sub>i</sub>.  
 b. The book was bought by John and Mary<sub>i</sub> for each other<sub>i</sub>.  
 c. The evidence is not usually said pro<sub>max</sub> about oneself.

(As shown in (22c), an implicit argument can also bind an anaphor.) This aspect of by subjects seems to be cross-linguistically true; Korean also shows the same binding facts as (22), as shown in (23):

- (23) a. i casecen-nun                      ku-eyuyhayse caki-casin-lul  
           this autobiography-TOP he-by                      self-one-obj  
           phenhoha-n-ta-nun      mengmok-haey ssu-i-e                      ci-ess-ta  
           defend-pres-em-comp name-under      write-pass-Inf become-past-em  
           "This autobiography was written by him, under the name of self,  
           defense."  
       b. ku tali-nun      kutul-eyuyhayse selo-uy                      iik-lul                      wihayse  
           the bridge-TOP they-by                      each other-gen benefit-obj for  
           kensel                      toy-e                      ci-ess-ta  
           construction become-Inf pass-past-em  
           "This bridge was constructed by them, for each other's, benefits.

The binding facts in (22-23) seem to clearly suggest that -eykey or by in passive construction is a dummy Case marker,<sup>34</sup> supporting the theoretically-motivated assumption that by subjects and dative subjects are assigned Case by dummy Case markers.

The present bi-clausal analysis itself, however, cannot capture the universal generalization that ergative verbs cannot be passivized (cf. Burzio (1986)): \*John was arrived, while ergative verbs can be embedded by other ergative verbs, as we see in (23) below.

(24) The man was not likely to be killed inside the train.

There are two possible explanations for this aspect of passive construction. First, one can suggest that the passive predicate -en (but not other usual ergative predicates) indirectly selects a non-ergative predicate,<sup>35</sup> or more generally that an ergative predicate does not (indirectly) select another ergative predicate. Note that V-to-V selectional restrictions may

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<sup>34</sup> One similarity between the by in the by phrase in the passive construction and a dummy Case marker is found in English. In English, like the dummy Case marker of (cf. of-insertion; Stowell (1981), but also cf. Chomsky (1986a)), the Case marker by in the passive construction can be stranded, as shown in (ia) and (ib) (cf. (ic)):

- (i) a. Who are you fond of?  
       b. Who was John killed by?  
       c. \*What reason did you buy it for?

<sup>35</sup> Then, we should attribute this as cross-linguistic selectional properties of passive predicates. Note that semantically-divided ECM and control predicates behave differently cross-linguistically, having their own properties.

not be obtained between be likely and -en since the predicate be likely does not select a small clause (CIV<sup>1</sup>), unlike -en.<sup>36</sup> Thus, the verb be likely would allow any predicates in an embedded clause. Second, one may also suggest that ergative predicates have properties for absorbing Case features of non-s-heads when those ergative predicates are the s-heads of M-complex words so that -en cannot be amalgamated with other ergative predicates. Here we assume the first explanation, because, as we will see, passive complex predicates in other languages may fail to absorb Case because they are not derived by head-movement but by RR. Note also that the present framework suggests that there is no notion of such as Case-absorption in passive construction.

Another aspect of the passive that we should consider is that in passive construction objects but not subjects move (whether or not CIV can assign ACC; cf. the ergative psych-causative construction in Section 4.2.). To explain this aspect, we suggest that there are selectional restrictions on grammatical relations to hold at a level of interpretation. In fact, there seems to be a semantic linking between a predicate and the subject position. In the sentence John was killed, John is not simply assigned a patient role as in the active counterpart Bill killed John, but it has a mixed role as well -- a role assigned by the predicate kill (patient) and a role assigned by the complex predicate be killed (perhaps a secondary theta-role in Zubizarreta's sense).<sup>37</sup>

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<sup>36</sup> The predicate be likely triggers C-to-I RR, like ECM verbs, since it triggers raising (cf. Section 4.1.). The predicate, which does not trigger V-to-V RR, fails to indirectly select an embedded predicate, unlike passive predicate -en.

<sup>37</sup> If that is so, the semantic differences between active and passive sentences in (3) may also be attributed to the secondary theta-roles that are assigned to derived subjects in (3b).

let us suggest that at the level of LF, subject and object positions are assigned secondary theta-roles imposed on primary theta-roles; we call these secondary theta-roles subject and object theta-roles. Given these notions, John in the active sentence is assigned a primary theta-role (patient role) and a secondary theta role by virtue of being in the object position of the predicate kill. On the other hand, John in the passive construction is assigned a primary theta-role (patient role) and a secondary theta-role by virtue of being in the subject of be killed. Note that we do not contradict ourselves in assuming that an ergative (passive) predicate can assign a secondary theta role since a secondary theta-role is assigned to grammatical relations at the level of LF (by analogy with Zubizarreta (1982)), and since secondary theta-roles are not visible with respect to the theta-criterion or to the projection principle.<sup>38</sup> Let us further suggest that the secondary theta-roles assigned to grammatical relations (subject/object theta-roles) or by adverbs (e.g., adverbs that have manner or stative readings) are determined by the semantics of secondary theta-role assigners or by some selectional restrictions between logical subject/objects and grammatical subject/objects.<sup>39</sup> Assuming that

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<sup>38</sup> There are two more aspects of secondary theta-roles. First, secondary theta-roles are cumulative. Second, a secondary theta-role can be assigned to part of an idiom chunk or to an expletive element.

(i) a. There is believed to be a man in the garden.

b. Advantage was taken of Bill.

We may, however, assume that expletive elements are neither primary nor secondary theta-role recipients while parts of idioms can receive secondary theta-roles.

<sup>39</sup> In fact, some selectional restrictions between adverbs and theta-role recipients also hold between adverbs and a subject theta-role.

(i) a. #John thoroughly received the parcel.

b. John thoroughly mastered mountain-climbing.

(ii) a. John gratefully received the parcel.

b. #John gratefully mastered mountain-climbing.

The theta-role assigned by thoroughly does not go with the primary theta-role assigned by predicate receive; the secondary theta-role assigned by

there are some selectional restrictions between primary and secondary theta-roles, we suggest the following restriction:<sup>40</sup>

(25) logical subject theta-roles are in general incompatible with a secondary theta role assigned by -en.

(25) can block sentence (26a) deriving from (26b).

- (26) a. John was killed by Bill.  
b. e was -en [John kill Bill]

Given (25), we correctly expect objects but not subjects to move to matrix subject positions.

One advantage of this suggestion is that we predict the existence of impersonal passives whose CFC structure is as follows: (e, (w)y) ---->  
(e, (w)<sub>y</sub>).<sup>41</sup>

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gratefully does not go with the primary theta-role assigned by predicate master. See also Zubizarreta (1982;43) for selectional restrictions of adverbs on subjects.

<sup>40</sup> It has been pointed out that John in (i) is assigned a theta-role from complex verb believe-be smart (cf. Chomsky (1986a;91)).

(i) Everybody believes John to be smart.  
Without motivating such a complex verb, one may suggest that John is assigned a primary theta-role from be smart but assigned a secondary theta-role (object theta-role) by virtue of being assigned ACC from a matrix verb (or by virtue of being in the object position of a matrix verb (cf. syntactic adjunction discussed in Section 4.1.)).

Consider now the following, which contradicts (25):

(ii) John is believed to have hit Bill.  
In (iii) John is assigned a logical subject theta-role, but it lies in the subject position of -en. Given the notion of secondary object theta-role in an ECM environment, at the LF level of representation, John in (ii) is interpreted as having secondary theta-roles from believe and -en, which are probably obtained through A-chains -- abstract representations of arguments --, in addition to primary theta-roles assigned by hit. Since John in (ii), which can be assigned a secondary theta-role from -en, is assigned an object theta-role by virtue of being assigned ACC from believe, we may have the following generalization, instead of (25).

(iii) only an A-chain with an object theta-role is compatible with a role assigned by be...(-en)  
Under (iii), but not under (25), John can move to the matrix subject position because it is assigned an object theta-role from believe in (ii).

<sup>41</sup> The lack of impersonal passive in English can now be attributed to selectional restriction of the -en predicate in English.

- (27) a. De jongens floten. "The boys whistled."  
 b. Er werd door de jongens gefloten. "It was whistled by the boy."  
 (cf. Dutch data drawn from Marantz (1984;138-9))

In (27), an embedded subject does not move and an expletive subject appears instead. This is what we expect: an embedded subject cannot move to the subject position of -en for the semantic reason sketched above or because of LF restrictions on secondary theta-roles. Therefore the embedded subject is assigned Case by the dummy Case marker employed in passive construction, which is independently motivated to rescue the subject in C-to-V RR (small clause) environments. Consequently, the matrix subject position is filled by an expletive element in matrix environments (cf. Safir (1985) for the distribution of overt expletives in German).

One might also suggest that object arguments move in the passive construction because subjects but not objects have the option of taking dummy Case markers in the environment of C-to-V RR. This logic does not apply to the impersonal passive sentences found in languages such as German and Icelandic since sentence (28) is not found in those languages that allow the impersonal passive; under this logic, nothing blocks John from moving to the matrix subject position, as in (28), instead of taking a dummy Case marker.

- (28) \*John was whistled.

One might thus suggest that by insertion is obligatory in the passive construction (unless it is assigned Case in-situ). However, as we will see in the following subsections, even when a passive complex predicate can assign Case, object arguments but not subject arguments move to matrix subject positions. Whether complex predicates are Case-transitive, logical object arguments, instead of logical subject arguments, move to receive Case from INFL (cf. the psych-causative construction in Section 4.2.),



while logical subjects are assigned ACC from passive complex predicates. Thus we maintain the first semantic solution to explain why logical object arguments should move in the passive construction.

#### 4.3.2. The RR passive and the null passive predicate [+pass]

The present bi-clausal analysis of passive construction predicts that when the morpheme order of V-en reflects the D-structure string order in head-initial languages, the argument structure of the passive construction differs accordingly: If V[+pass]-to-CIV RR applies, then the morpheme order should be V[+pass]-CIV, instead of CIV-V[+pass]. Since CIV is the s-head, the complex word V[+pass]-CIV is formally Case-transitive and therefore assigns ACC.

Such cases are found in Bahasa Indonesian, as described by Chung (1976). In Bahasa Indonesian, a head-initial language, the passive morpheme is a prefix,<sup>42</sup> as we see in the passive versions in (30) of the active sentences in (29).

- (29) a. Ali mem-batja buku itu.  
           trans-read book the                    "Ali read the book."  
       b. Orang itu me-mukul Ali  
           man the trans-hit                    "The man hit Ali."  
 (30) a. Buku itu di-batja (oleh) Ali  
           book the pass-read by                    "The book was read by Ali."  
       b. Ali di-pukul (oleh) orang itu  
           pass-hit by man the                    "Ali was hit by the man." ((1-2) in Chung (1976;59); originally from MacDonald and Dardjowidjojo (1976) and Kwee (1965))

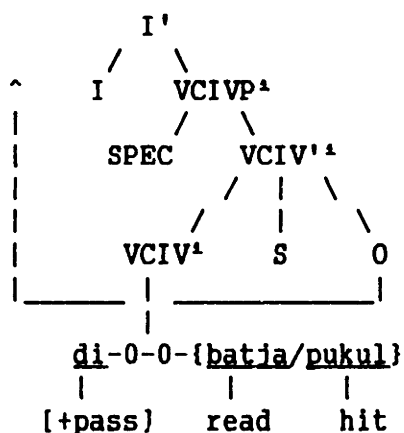
This morpheme order suggests that the passive is constructed as follows in this language.

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<sup>42</sup> Prefixation is not a general aspect in this language. Some affixation and cliticization occur rightward.

(i) di-dapat-kan-nja  
       pass-find-ben-(by) him (cf. (35c) in Chung (1976;70))

(31)



Although di- (V[+pass]) is an ergative predicate since the matrix subject position can be filled by an embedded argument, the passive complex predicates can assign Case because di- is not the s-head and the s-head (CIV') is (Case-)transitive. Thus, the passive complex predicate in this language is able to assign Case, and therefore one of the two embedded NP's is assigned ACC. We predict that the two arguments are assigned structural Case because one of the two arguments (i.e., the logical object argument) can move to the matrix subject position to receive NOM. This prediction seems to be borne out. According to Chung (1976:59-60), while a logical object argument appears in the matrix subject position, a logical subject argument can appear without the preposition oleh (by), if it immediately follows a verb. The possibility of a bare logical subject argument in the passive construction suggests that the logical subject argument is assigned ACC by di-V.<sup>43</sup> The examples in (30) thus confirm that the di-V order and the appearance of a bare logical subject argument are not coincidental.

Chung (1976) also shows that this language employs the second type of passive construction.

<sup>43</sup> The optional appearance of oleh in (30) suggests that ACC is optionally realized as oleh for some semantic reason, perhaps to clarify the non-logical object status of the logical subject argument. The crucial point is that oleh subjects can appear in bare forms, which suggests that they are assigned Case.

- (32) a. Buku itu saja batja  
           book the I read                   "The book was read by me."  
       b. Ali saja pukul  
           I hit                               "Ali was hit by me." (cf. (3a and b) in Chung (1976))

In (32), no transitive prefix or affix appears but a logical subject argument appears on the left side of the embedded V, and a logical object argument appears in the first position in the sentence. Crucially, in (32a and b), the transitive marker mem- does not appear on the verbal morphology, in contrast to what happens in the active counterparts of (32a and b) shown in (29).

Chung shows that the 'preposed object' in (32) does not behave like a topicalized or focused object, but rather lies in the subject position. One argument shows that preposed objects can be ECMed (Subject-to-Object raising in Chung (1976)), like arguments in subject positions (33a) but unlike arguments in object positions (33b).

- (33) a. Perempuan itu di-kara ((oleh) mereka) sudah mem-batja buku itu  
           woman the pass-believe by them perf trans-read book the  
           "The woman was thought (by them) to have read the book."  
       b. \*Buku ini di-anggap (oleh) mereka perempuan itu sudah (men)-batja  
           book this pass-believe by them woman the perf trans-read  
           "This book is believed by them for the woman to have read."  
       c. buku ini di-anggap (oleh) mereka sudah saja batja  
           book this pass-believe by them perf I read  
           "This book is believed by them to have been read by me."  
       (cf. (14b) (18) and (20) in Chung (1976;65))

The passivization of an ECMed logical subject, but not of an embedded logical object, is possible, as shown in (33a and b). When object preposing has applied, as in (33c), a preposed object can be further passivized,

like an EMed object in (33a).<sup>44</sup> In addition, object preposing can occur in restrictive relatives (unlike topicalization or left-dislocation).

- (34) Ini-lah rumah di mana buku tersebut saja tinggal-kan  
 this-Emp house in which book that I leave-ben<sup>45</sup>  
 "This is the house in which that book was left by me." (cf. (55a) in Chung (1976))

The possibility of subject-to-object raising in the 'object-preposed' sentence in (33c) indicates that 'object-preposing' is A-movement, as in the passive construction. If 'object preposing' is one type of passive construction, as Chung argues, then the data suggest that there must be a null passive predicate, and therefore we postulate a null passive predicate [+pass]. We attribute this type of passive to RR between V and [+pass] since the two embedded arguments appear in bare forms. Given the word order between the embedded subject and V in (32), the null passive predicate [+pass] and the embedded V must be covertly RRed in this language.<sup>46</sup>

In fact, another example of the null passive predicate that triggers RR is found in Swahili.

- (35) a. maji, ya, -meenea nchi,  
 water it-cover land "Water covers the land."  
 b. nchi, i, -meenea maji,

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<sup>44</sup> One more convincing argument Chung gives shows that as in passive sentence (i), selectional restrictions are observed in the object-preposing sentence in (ii).

- (i) \*Ibu-mu di-mirip (oleh) kamu  
 mother-your pass-resemble by you "Your mother is resembled by you."  
 (ii) \*Itu-mu kamu mirip  
 mother-your you resemble (cf. (59-60b) in Chung (1976))

<sup>45</sup> kan is glossed as a causative morpheme in Chung; but cf. (i) fn. 42.

<sup>46</sup> The embedded subject may also appear between an auxiliary (modal) and a main verb.

- (i) Mobil itu dapat kita perbaiki  
 car the can we repair "The car was repaired by us." (cf. (4) in Chung (1987;60))  
 We may assume that C-to-I overt RR triggers can we V order in (i), as in Aux-inversion in English.

land it-cover water "The land is covered (by) water." (cf. (11) in Keenan (1975); originally from Givon (1972:274))

In (35), a logical subject argument appears in the object position with a bare form and a logical object argument appears in the subject position triggering subject-object agreement.<sup>47</sup> We suggest that Swahili passivization instantiates an RR passive, as in the second type of passive in Bahasa Indonesian. (The word order in (35b) suggests that V-to-V RR is overt, as in the Bahasa Indonesian data in (32).) If (35b) were not derived by the passive, the process governing the seemingly simple change from (35a) to (35b) would become complicated when we consider (35b) as mono-clausal under the current theoretical framework with the projection principle and theta theory.

One advantage of postulating null passive predicate [+pass] comes from Romance par/da causative construction: We have suggested that the by Case marker that is obtained as a C-to-V RR effect in the passive construction is a dummy Case marker so that by subjects behave like grammatical subjects. There are apparent exceptions in Romance languages to the hypothesis that dative subjects and by subjects in causative and passive constructions are assigned by dummy Case markers: In French and Italian par or da causative construction, par/da subjects do not behave like grammatical subjects; as Kayne and Burzio discuss, par/da subjects do not

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<sup>47</sup> One more language whose passive construction is like the Swahili passive construction is Malecite-Passamaquoddy. In that language, a specific agreement system for 'transitive animate' verbs is organized in terms of a ranking of nouns and pronouns on the basis of some principles in 'direct' forms (cf. LeSourd (1977)). However, in forms called 'invert' forms, a subject and an object appear in bare forms but the ranking system of agreement is inverse as if a logical object is a logical subject (LeSourd (p.c.; 1977)). We consider the inverse construction in Malecite-Passamaquoddy is a passive construction derived by overt -oku--to-CIV RR where an invert marking -oku- is a passive predicate; the complex predicate assigns ACC to its logical subject just as a transitive predicate assigns ACC to its logical object.

trigger SSC effects. Those apparent exceptions are explained if Romance languages employ the null passive predicate [+pass] in certain environments, as we will discuss below.

In fact, there is evidence that par/da constructions differ from a constructions: there is much evidence that prepositions par and da are obtained because the passive applies in the par/da causative construction. First, the prepositions par/da in the causative construction correspond to by in passive constructions in these languages. In addition, Kayne (1975; 235-242) illustrates some significant relationship between passivization and par causativization in French. Kayne notices that passivizable clauses can appear in the par causative construction and nonpassivizable clauses may appear in the a causative construction but not in the par causative construction.<sup>48</sup> The following illustrate one example of Kayne's observation:

- (36) a. Sa famille a cassé la crouûte.  
           "His family had a snack."  
       b. \*La crouûte a été cassee par sa famille. (passive)  
           "A snack was had by his family."  
       c. \*Il fera casser la crouûte par sa famille. (par causative)  
           "He will make his family have a snack."  
       d. Il a fait casser la crouûte à sa famille. (a causative)  
           "He made his family have a snack." ((91), (93), and (94) in Kayne (1975;235-6))

Burzio (1986) also shows that the Italian da causative construction

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<sup>48</sup> Kayne (1957;244) also notes that some nonpassivizable intransitive verbs may be embedded under the par construction, as shown below.

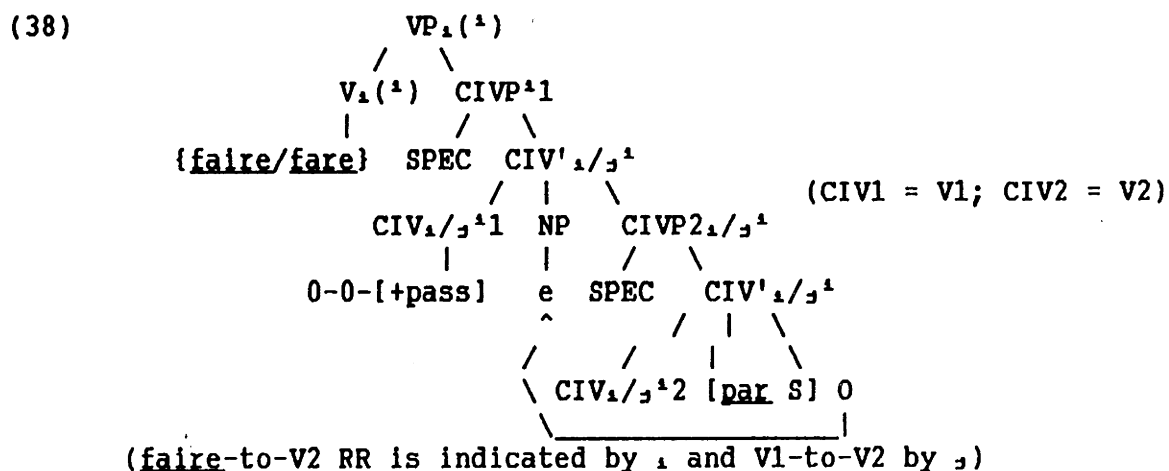
- (i) a. \*Monsieur Dupont a été fait entrer par son fils.  
           Monsieur Dupont was made to enter by his son  
       b. ?II a fait faire entrer Monsieur Dupont par son fils  
           "He had his son have Monsieur Dupont enter." ((30-1a) in Kayne (1975;244))

In the passive sentence in (ib) is grammatical but the causative counterpart of (ib) is not, as shown in (ia). The examples in (i) are restricted to contain the passive of intransitive verbs; we thus assume other factors may be involved in the grammaticality of (i).



In (37), the subject position of the [+pass] predicate (cf. RR conventions) is available as a landing site. After V2-to-V1 head-movement applies, an embedded object argument moves to the e-position to receive Case from faire and to receive a secondary theta-role from the [+pass] predicate. (Note that the V2-V1 M-complex word would not assign Case since V1, the s-head, is ergative.) However, there is a problem with Italian. In French, faire could assign Case to the 0 in the e position in the structure in (37) because CIV<sup>1</sup>, which is RRed with faire, does not trigger the MC so that faire can govern the e position. On the other hand, in Italian, CIV would trigger the MC since fare and CIV2 are not RRed. Therefore, ACC must be assigned to 0 by CIV2, which has the Case feature. However, in (37) CIV2 is not available as a Case-assigner since it is a segment that dominates a trace.

There is one more option to explain the par/da construction. [+pass]-(CIV1)-to-CIV2 covert RR, instead of CIV2-to-CIV1 head-movement, could also apply in the following way:





from faire/fare: In Italian, CIV1 would trigger the MC, since there is no RR link between fare and CIV1; in French, CIV1 would also trigger the MC since the RR passive link between CIV1 and CIV2 would cut the RR link between faire and CIV2, so that faire cannot govern 0 across CIV1 (cf. the ACC-ing construction). Thus CIV2 assigns Case to 0 in Italian and French. If structure (38) is correct one for Romance par/da causativization, unlike the usual passive predicate Romance -en, the Romance [+pass], which is selected only by a causative predicate, triggers RR, instead of head-movement.

In the configuration of (38), the logical subject lies in the CIVP2 clause while the logical object is in the CIVP1 clause. It follows that SSC effects do not appear in par/da causativization since par/da subjects appear in the most embedded clause; the lack of SSC effects is interpreted in terms of the triple-clausal aspects of par/da causativization. To be specific, we can explain the following contrast in Italian for example (see also Chapter 3, for SSC effects of par/da causativization with respect to reflexive cliticization).<sup>52</sup>

- (39) a. [Maria<sub>i</sub> si<sub>i</sub> 'è fatta [ [e<sub>i</sub>] accusare [ t<sub>i</sub> da Giovanni ]]]. (cf. 38)  
 "Maria had herself accused by Giovanni."  
 b. \*[Maria<sub>i</sub> si<sub>i</sub> 'è fatta [accusare [e<sub>i</sub>] a Giovanni]]  
 "Maria had Giovanni accused herself." (cf. (46) in Burzio (1986:249))

(39b) is bi-clausal and a is obtained by causativization; (39a) is triple-clausal and da is obtained by passivization in the most embedded clause. Since Giovanni in (39b) represents an intervening subject with a dummy Case marker, a Giovanni intervenes between reflexive clitic si and [e],<sup>53</sup>

<sup>52</sup> See Burzio (1986) for further arguments for the VP complement and SSC effects with respect to cliticization (cf. Kayne (1975)), which can also be explained in terms of the triple-clausal structure of (37/38).

<sup>53</sup> Burzio (1986) suggests that the reflexive clitic si and [e] are linked

violating SSC and therefore makes the sentence ungrammatical. As for (39a), we suggest that da Giovanni does not intervene between the reflexive clitic si and [e] since [e], the head of an A-chain obtained by A-movement of [e], lies in the subject position of the second most embedded clause and since Giovanni lies in the subject position of the most embedded clause.<sup>54</sup>

Burzio (1986; cf. 228-9), on the other hand, suggests that da subjects are base-generated within VP complements, while a subjects are base-generated in the subject positions of IP clauses. Burzio (1986;262-268) argues that the da causative construction behaves as if it contained a VP complement with respect to a number of phenomena. Two of them have to do with the interpretation of PRO and the anaphoric characteristics of possessives in certain idioms.

- (40) a. Ho fatto affermare di PRO<sub>i</sub> averla vista a Giovanni.  
 (I) have made claim of to have seen her to Giovanni  
 "I made Giovanni claim to have seen her."  
 b. ?\*Ho fatto [<sub>A</sub> affermare di PRO<sub>i</sub> averla vista (da Giovanni<sub>i</sub>)]  
 (I) have made claim of to have seen her (by Giovanni)  
 "I had it claimed to have seen her (by Giovanni)."
- (41) a. Cercherò di fare fare il suo<sub>i</sub> mestiere a Giovanni.  
 (I) will try to make do his job to Giovanni  
 "I will try to have Giovanni do his job."  
 b. \*Cercherò di fare [<sub>A</sub> fare il suo mestiere (da Giovanni)]  
 (I) will try to make do his job (by Giovanni)  
 "I will try to have his job done (by Giovanni)." ((73 and 77) in Burzio (1986;263-4 and 265))

Burzio attributes the ungrammaticality of (40b) and (41b) to the VP complement (<sub>A</sub> in (40-41b)), whose subject is base-generated within VP since Giovanni does not bind PRO or an anaphoric pronoun. The present analysis has exactly the same effect without invoking the VP complement. In (40b), PRO appears in the second matrix clause, and its antecedent in the most

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at D-structure, obeying certain conditions.

<sup>54</sup> The analysis suggests that the link between si and the head of an A-chain derived by A-movement of [e] is sensitive to SSC (cf. fn. 53).

embedded clause and therefore control is not possible; in (40a), Giovanni can control PRO since it lies in the higher clause (a complement of make) than the clause containing PRO (a complement of claim). The effect of VP complementation in (41b) is also obtained since the da subject appears in the most embedded clause, while the object (his job) appears in the second embedded clause in the da causativization (cf. also Kayne (1975));<sup>55</sup> in (41a), a Giovanni can bind its object. To conclude, by postulating the null passive predicate [+pass], we can both explain the relationship between passive and par/da causative constructions (under an empirically- and theoretically-motivated assumption that par/da are dummy Case markers obtained in the passive construction, like a in the causative construction) and avoid postulating VP complements.

So far we have shown that the passive is driven not only by head-movement but also by RR, and that there are instantiations of passive predicates that are phonetically null. Some languages employ null passive predicates whether they are selected by certain predicates (Romance languages) or not (Bahasa Indonesian and Swahili). Below we examine the Korean passive and the Vietnamese passive to show that the bi-clausal analysis of the passive construction offers theoretically- and empirically-plausible explanations of peculiar passives in Korean and Vietnamese; we show that the null passive predicate [+pass] is operative in Korean in a restricted way (it can be selected only by certain Vx's) and that RR also plays a role in passive sentences in Korean and in Vietnamese.

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<sup>55</sup> One might point out that the 'elsewhere principle of condition A' would rule in (41b) wrongly. But see fn. 47 in Section 4.2..

### 3.3. Passivization in Korean and in other languages

We have seen in Section 4.2. that Korean apparently employs three types of causativization (cf. Choi (1935); Section 2). It apparently also employs three types of passivization: -hi- passivization, N-toy- passivization and -e ci- passivization. We will show that Korean employs only one type of passivization: -hi- passivization derived by head-movement; we will show that Korean also employs the null passive predicate [+pass], which is selected by auxiliary predicates such as toy- (become) and ci- (become/get to be), forming the second and third passivizations: N-toy- and -e ci- passivizations. We will also discuss passives in other languages, which instantiate various types of passive, which are predicted from our analysis of passive discussed in the previous subsections.

#### 4.3.3.1. -hi- passivization and M-complex words

The first instantiation of passivization in Korean is derived from the morphological affixation of -hi-.<sup>57</sup>

- (42) a. kyengchal-ka totwuk-lul cap-ass-ta  
           policeman-sub thief-obj catch-past-em  
           "A policeman caught a thief."  
       b. totwuk-ka kyengchal-eykey cap-hi-ess-ta  
           thief-sub policeman-by catch-past-em  
           "A thief was caught by a policeman."

One unique property of the -hi- passivization in Korean is that the passive -hi- is morphologically identical to the causative -i-.<sup>58</sup> However, unlike

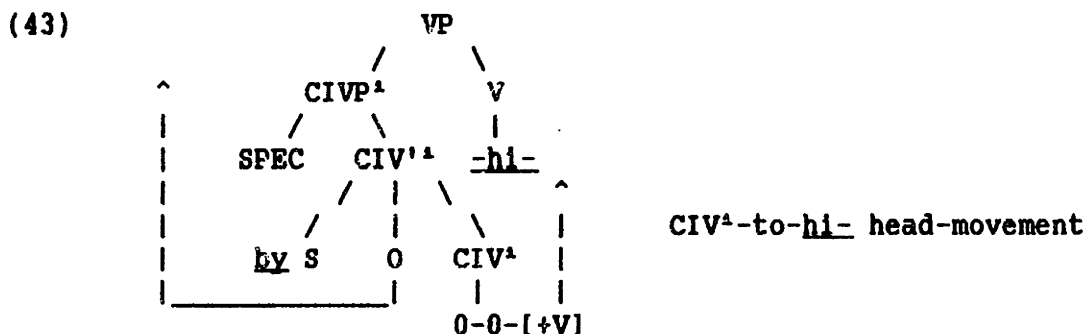
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<sup>57</sup> Like the causative predicate -i-, depending on phonetic environments, the passive predicate has almost the same phonetic variants [{i/hi/li/-ki...}] as the causative predicate -i- (cf. Choi (1935)). To differentiate these two predicates, we will postulate -hi- as the passive predicate. In most cases, V takes identical allomorphemes for both the passive complex word V-hi- and the causative complex word V-i-.

<sup>58</sup> There have been some attempts at unifying these two morphemes as having a lexical entry (cf. H.-K. Kim (1982); K. Park (1986)). However, the two morphemes syntactically and semantically differ from each other. K. Park

-i- causativization, the -i- passivization in Korean is restricted to transitive verbals. Like -i- causativization, it is not totally productive:<sup>59</sup> -hi- does not appear with the ha- verb or N-ha- verbs<sup>60</sup> or with transitive psych-adjectives.

We suggest that -hi- passivization involves a bi-clausal structure as follows, in which -hi- is an ergative passive predicate.



An embedded INFL must be [-Tense, -Agr, -A] since no honorific or tense elements appear between -hi- and V: \*V-usi-hi- (V-H-pass-) or \*V-ess-hi- (V-past-pass-) and since no two (sentential) adverbs appear in the -hi- passive construction. In addition, no overt C elements appear between V and -hi-. (Remember the syntactic position that V is minimally projected

(1986) notes that they differ with respect to the notion of transitivity and that they also differ semantically. He suggests that because they are morphologically identical and cannot cooccur, they form one lexical entry. We do not see any theoretical advantages in motivating one lexical item which is ambiguous in transitivity and in meaning as well. We will assume that the passive -hi- and the causative -i-, which happen to be morphologically identical, have different lexical entries. As for the fact that -i- and -hi- cannot cooccur, we attribute it to the selectional restrictions of -hi- and of -i-. Note that selectional restrictions between predicates are possible since both -i- and -hi- select CIVP<sup>1</sup>'s (small clauses).

<sup>59</sup> In addition, the set of verbs that can be -i- causativized is not identical to the set of verbs that can be -hi- passivized (cf. Choi (1935)).

<sup>60</sup> Choi (1935;431) notes that like the causative -i-, which cannot appear with the verb N-ha- in standard Korean, N-ha- once used to be passivized by -hi- affixation, and that some dialects have such instantiations (cf. fn. 36 in Section 4.2.).

(1) ku il-ka cal ha-hi-n-ta  
the business-sub well do-pass-pres-em "The business is done well."

up to CP.) If V (CIV<sup>1</sup> here) is amalgamated with -hi- by RR, then V is the s-head so that V-hi- can assign ACC to S or O. However, no ACC is assigned in the -hi- passive construction. Thus, as in English, V moves to -hi- by head-movement in Korean: Since ergative -hi- is the s-head, V-hi- does not assign ACC. Thus, the embedded object (O) moves to the matrix subject position to receive NOM and the subject (S) is assigned Case by the dummy Case marker -eykey (and therefore the -eykey subject may be implicit).

There are some motivations for this bi-clausal approach. First, although the morphological identity does not indicate its categorial identity,<sup>21</sup> the same morphological shape suggests that like the causative -i-, the passive -hi- is a predicate. Second, the adverb ppalli (fast) or swipkey (easily), which can be called agent-oriented, assigns a secondary theta-role to an agent, yielding the manner reading.

- (44) a. ku totwuk-lul ppalli cap-ass-ta  
           the thief-obj fast catch-past-em  
           "[O] caught the thief quickly."  
       b. ku totwuk-ka ppalli cap-hi-ess-umyen coh-keyss-ta  
           the thief-sub fast catch-pass-past-if good-will-em  
           "It would be good if the thief were caught quickly."  
       c. totwuk-ka ppalli cap-hi-ess-ta  
           the thief-sub fast catch-pass-past-em  
           "The thief was caught quickly."  
 (45) a. holangi-ka ttokki-lul swipkey cap-ass-ta  
           -sub rabbit-obj easily take-past-em  
           "The tiger caught the rabbit easily."  
       b. ttokki-ka holangi-eykey swipkey cap-ass-ta  
           rabbit-sub tiger-by easily take-past-em  
           "The rabbit was caught easily by the tiger."

(44b/c) can mean that I wish somebody would catch the thief quickly or that somebody caught the thief quickly (agent-oriented manner reading), but not that I wish the thief would quickly give up, to be caught by someone (subject-oriented manner reading) or not that it is quick of the thief to

<sup>21</sup> For example, that in English is used either as a determiner or as a complementizer, and for as either a complementizer or a preposition.

be caught by someone (subject-oriented stative reading). In (45), the adverb easily can assign a secondary theta-role only to an agent, but not to a patient argument in both passive and active sentences. In both (44a) and (45b/c), only the manner reading is observed. The (agent-oriented) manner reading of an agent-oriented adverb (e.g., covertly) becomes clear when a patient is inanimate and adverbials can assign a secondary theta-role to an animate logical subject, as in (46).<sup>62</sup>

- (46) a. sain-ka sangphwum-lul pimilliey phal-ass-ta  
seller-sub goods-obj covertly sell-past-em  
 "The seller sells the goods covertly."  
 b. ku sangphwum-ka pimilliey phal-li-ess-ta  
the goods-sub covertly sell-past-em-em  
 "The goods were sold covertly."

The agent-oriented reading of adverbs in (44-45) arguably suggest that passive construction contains two predicates and that the two predicates are morphologically amalgamated.

In addition, in Korean, as in English, there is scope ambiguity of certain adverbs, which we call passive-sensitive adverbs.

- (47) a. kyengchal-ka totwuk-lul paposulepkey cap-ass-ta  
policeman-sub thief-obj foolishly catch-pass-em  
 "The policeman foolishly caught the thief."  
 b. totwuk-ka kyengchal-eykey paposulepkey cap-hi-ess-ta  
thief-sub policeman-dat foolishly catch-pass-past-em  
 "The thief was foolishly caught by the policeman."

In (47a), the adverb foolishly has either the manner or the stative reading,<sup>63</sup> which suggests that the adverb foolishly in (47b) can assign a

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<sup>62</sup> The same is true of passive-sensitive adverbs in English, as shown in (i) drawn from McConnell-Ginet (1982;148):

(i) a. The rock will be unwillingly thrown by the hostages.  
 b. #The rock unwillingly will be thrown by the hostages.

The position of adverbials indicates that unwillingly in (ia) is agent-oriented but unwillingly in (ib) subject-oriented. In (ib), the rock and unwillingly are incompatible with each other because of their semantics.

<sup>63</sup> When the adverb foolishly lies in the sentence initial position, the stative reading is easily obtained, while when it appears to the left side of a main verb, as in (47a), the manner reading is easily obtained (cf. 10-

secondary theta-role either to the agent argument or to the derived subject, yielding the manner reading or the stative reading. (Therefore, as we suggested in subsection 4.3.2., a passive-sensitive verb may be licensed either by a matrix INFL or by an embedded V.) When the passive-sensitive assigns a secondary theta-role to the derived subject or when it is licensed by INFL, the stative readings are obtained (while the manner reading is weak); when the passive-sensitive adverb can assign a secondary theta-role to the agent (the -eykey subject) or when it is licensed by V, it has only the manner reading, as we predicted. The existence of passive-sensitive adverbs also arguably suggests that the -hi- passive construction is bi-clausal.

#### 4.3.3.2. N-toy- passivization and combinations of M- and M/R-complex words

Like N-ha- --> N-sikhi- causativization (cf. Section 4.2.), N-ha- can also passivized by replacing ha- with a certain verb that has inchoative, benefactive, or adversative meaning: N-ha- verbs are passivized in the form of N-toy (N-become/turn out), N-pat- (N-receive/be given; benefactive), and N-tangha- (N-suffer/undergo; adversative). Examples of N-toy- passivization are illustrated below.<sup>44</sup>

- (48) a. iket-ka seyin-ka cwumok-ha-0-nun kulim-i-0-pnita  
           this-sub people-sub attention-do-pres-comp picture-be-pres-emH  
           "This is the picture that people give attention to."

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11).

<sup>44</sup> With some rich semantic implications, toy- (become) in (48) can be replaced with either pat- (benefactive) or tangha- (adverse).

- (i) iket-ka seyin-eykey cwumok-pat-0-nun kulim-i-0-pnita  
       this-sub people-by attention-become-pres-comp picture-be-pres-emH  
       "This is the picture which receives public attention".  
 (ii) iket-ka seyin-eykey cwumok-tangha-0-nun kulim-i-0-pnita  
       this-sub people-by attention-become-pres-comp picture-be-emH  
       "This is the picture which suffers public attention."

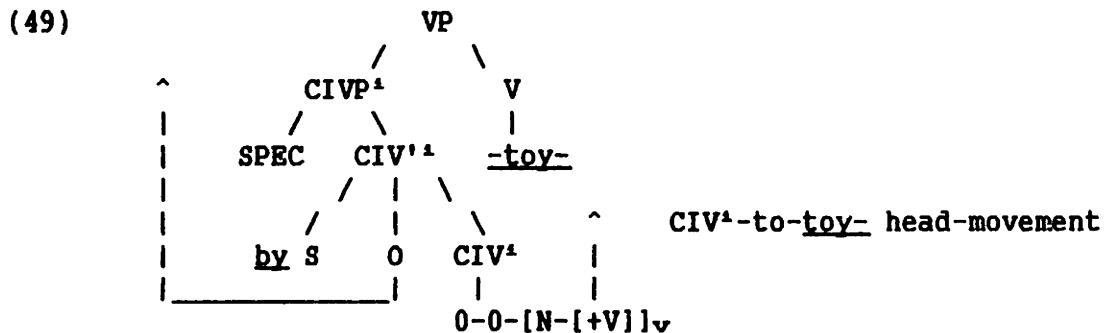
The unerlined verbs in (i-ii) have aspectual meanings.



- b. *iket-ka seyin-eykey cwumok-toy-0-nun kulim-i-0-pnita*  
 this-sub people-by attention-become-comp picture-be-emH  
 "This is the picture which is given attention to by people most."

As we suggested in Section 4.2., if N-ha- is the result of N insertion to V category (cf. Chomsky (1970)), then N-ha- is represented as  $[N-[+V]]_{\downarrow}$  when ha- is not inserted (or realized). At a certain level, the dummy auxiliary ha- is inserted (or realized). However, when  $[N-[+V]]_{\downarrow}$  is amalgamated with a matrix verb V1, it is realized as N-V1-.<sup>65</sup>

Thus one possible analysis suggests that the N-toy- passive construction has the following structure and that head-movement applies in the following way (not RR for the same reasons as in -hi- passivization).



-ha- is not inserted or realized when  $[N-[+V]]_{\downarrow}$  is amalgamated with toy-. However, one problem with this idea is that toy- (become) is semantically weak and has an aspectual meaning, as auxiliary predicates do, and that it is, in fact, one of the Vx verbs in Korean that obligatorily trigger RR (cf. Section 3.4.). Then the question becomes: why does it not trigger RR, if toy- is Vx?

<sup>65</sup> This is in fact what Choi (1935) suggests, when he says that N-toy- can be assumed to be derived from N-ha-toy- (N-do-become) by deletion of the auxiliary ha-. On the other hand, K.-D. Lee (1985a) and K. Park (1986) suggest that N-sikhi- and N-toy- are derived by compound causativization (N-sikhi-) and by compound passivization (N-toy-). We suggest that compounding is not a source for this passivization and causativization, but rather the same type of -i- causativization and -hi- passivization that are derived by head-movement.

There is evidence that verb -toy- does not trigger (head-movement) passivization. First, -toy- seems to assign Case to its CP complement since an overt case marker can appear, as shown below.

- (50) a. cwumok-ka      toy-0-nun      kulim  
          attention-obj become-pres-comp picture  
          "A picture that is attracted."  
       b. pilting-ka    kensel-ka      toy-0-ta  
          bilding-sub construction-obj become-pres-em  
          "A building is constructed."

If the ergativity of verbs indicates a verb's capacity to assign structural Case, toy- is not ergative. Second, it is used as a matrix verb (as an auxiliary predicate) in a non-passive environment, as in (51).<sup>66</sup>

- (51) Chelswu-ka    san-lul      coh-a      ha-0-key-lul      toy-ess-ta  
          -sub mountain-obj like-Inf do-Inf-comp-obj become-past-em  
          "Chelswe becomes to like mountains."

If toy- semantically has an inchoative aspectual meaning and behaves like an auxiliary predicate, then the argument structure would not be 0-ka 8-eykey...N-toy-. An embedded subject would be PRO overlapping with a matrix subject to form the structure [ S<sub>i</sub> O [ PRO<sub>i</sub> [N-[+V]<sub>v</sub>] ] -toy- ].

If the verb toy- does not trigger the passive but rather plays the role of an auxiliary predicate, what triggers the passive-like change in argument structure? A plausible answer is to assume a null counterpart of the passive -hi-. In fact, according to Choi (1935), the passive -hi- was

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<sup>66</sup> In this case, toy- assigns -lul, in contrast to its role in (50).

- (i) Chelswu-ka    san-lul      coh-a      ha-0-key-{lul/\*ka}      toe-ess-ta  
          -sub mountain-obj like-Inf do-Inf-comp-{obj/sub} become-past-em  
          "Chelswe becomes to like mountains."

One might suggest that the Vx, when it is used as a passive predicate, assigns -ka. The idea that ergative predicates might assign -ka can be easily discarded since in tangha- (suffer) or pat- (receive) passivization, tangha- or pat- -- the same type of verb as toe- (Vx) -- assigns -lul even when the passive-like change in argument structure appears.

- (ii) i kulim-ka    seyin-eykey    cwumok-lul    {tangha/pat}-n-ta  
          this picture-sub people-to attention-obj receive{adverse/ben}-pres-em  
          "This picture is attracted by people's attentions."

Thus, we should attribute the -ka realization of ACC in (50) to other causes that we will not consider here.

once used for N-ha verbs (cf. fn. 60). We may thus reason that ha-hi- loses its phonetic value in the N-ha-hi- phrase in Modern Standard Korean, as auxiliary predicates such as -toy (nonergative) are frequently used with ha-hi- and as they compensate for the passive meaning. Then the surface N-(lul)-toy- in (51) form actually has the structure of [N-[+pass]l<sub>v</sub>-0-0-(lul) toy- (N-pass-Inf-C(-obj) become-)].

In certain ways, the -hi- passive and the N-toy- passive correspond to the English be-en passive and the get-en passive in English in which get has the inchoative meaning. R. Lakoff (1971) discusses some semantic differences between the be...-en passive and the get...-en passive<sup>67</sup> and notices that the get passive requires a subject that can be assigned theta-roles (by get). Thus, parts of idiom chunks cannot appear as derived subjects in the get-en passive construction, as they can in the be...-en passive construction.

- (52) a. Advantage {was/\*got} taken of Bill by Harry.  
 b. Tabs {was/\*got} kept on those radicals. (cf. (9) in R. Lakoff (1971))

Based on the contrasts shown in (52), Lakoff suggests that the get in the get-en passive is base-generated as a nonergative matrix verb so that the matrix subject is not derived but rather base-generated.<sup>68</sup>

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<sup>67</sup> R. Lakoff (1971) notices the following contrast, for example.

- (i) a. A cache of marijauna was found by Fido, the police dog.  
 b. My cache of marijauna got found by Fido, the police dog. (cf. R. Lakoff (1971;154))

In (ib), the sense of the speaker's involvement is observed, and the get passive often suggests the active involvement, emotional or otherwise, of the subject, while be passive does not (cf. ia).

<sup>68</sup> As Howard Lasnik (p.c.) has pointed out to us, raising is not tolerated with the get passive.

- (i) \*John got believed to be smart.

Under the present approach, (i) is not syntactically problematic since the subject argument of get and PRO in the subject position of believed can overlap. One approach to rule out (i) is a semantic approach. Remember that arguments that can be assigned the object secondary theta-role can

Given these Lakoff's observation, the present analysis suggests that get is an auxiliary predicate, which selects the passive predicate -en. In other words, we suggest that the get-en inchoative passive derives from the combination of the auxiliary predicate get and the passive predicates -en, as in N-toy- passivization in Korean in which -toy- is Vx.\*\* The only difference between the get-en passive and the N-toy- passive is that the latter contains the null passive predicate selected by -toy- (Vx), while -en is selected by get (Vx) in the former. Below, we discuss one more case of passivization triggered by a Vx and by the null passive predicate in Korean.

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move to the matrix subject position in the passive construction. In (1), there seems a semantic conflict between the object theta-role that is assigned to PRO by believe and the primary theta-role that get assigns to its subject position. If this semantic conflict is real, then RR convention (c) (overlapping convention) may also be subject to some semantic restrictions.

\*\* Lakoff also notices that an agent-oriented adverb does not go with the get-en passive.

(1) a. Radicals must be exterminated ruthlessly.

b. \*Radicals must get exterminated ruthlessly. ((19c and d) in R. Lakoff (1971))

Interestingly, in Korean, when agent-oriented adverbs such as ppalli occur in the passive construction with an auxiliary predicate in a matrix clause, the agent-oriented reading becomes very deviant unless ppalli is interpreted as if it were cayppallukey (quickly), which is a passive-sensitive adverb.

(ii) ???ku totwuk-ka ppalli cheypho-toe-ess-ta  
       the thief-sub fast arrest(N)-become-past-em  
       "The thief was arrested quickly."

Agent-oriented adverbs do not go with the -e ci- passivization in Korean, either.

(iii) ??\*totwu-ka ppalli cap-hi-e ci-ess-ta  
       -sub fast catch-pass-Inf get-past-em  
       "The thief got caught quickly."

We have no explanation of this aspect at this point.

#### 4.3.3.3. -e ci- passivization and combinations of M- and R-complex words

The third instantiation of the passive in Korean is -e ci- passivization, in which -e is a realization of INFL (with null C)<sup>70</sup> and ci- a matrix predicate, which has an inchoative meaning (get to be/become). Especially, when V cannot be -hi- passivized, V is -e ci- passivized.<sup>71</sup>

- (53) a. cwu-in-ka sanawun kay-lul changko-ey katwu-ess-ta (\*katwu-hi-)  
 host-sub wild dog-obj storehouse-in lock up-past-em  
 "The host locked the wild dog up in a storehouse."  
 b. sanawun kay-ka cwu-in-eyuyhayse changko-ey katwu-e ci-ess-ta  
 wild dog-sub host-by storehouse-in lock up-Inf become-past-em  
 "The wild dog was locked up in a storehouse by the host."
- (54) a. phikhaso-ka kulim-lul kuli-ess-ta (\*kuli-hi-)  
 Picasso-sub picture-obj paint-past-em  
 "Picasso painted a picture."  
 b. kulim-ka phikhaso-eyuyhayse kuli-e ci-ess-ta  
 picture-sub Picasso-by paint-Inf become-past-em  
 "A picture is painted by Picasso."

Since the passive-like change in argument structure is obtained in the domain of -e ci- without the passive -hi-, in the Korean literature, ci- is a passive morpheme.

There is, however, evidence that ci- is an auxiliary predicate, like the toy- in N-toy- passivization. For example, the same two aspects as N-toy- passivization that indicate that toy- is not a passive predicate are observed. First, as in toy- passivization, any predicates can be embedded

<sup>70</sup> Or it is a realization of C with null INFL (cf. B.-S. Park (1974)).

<sup>71</sup> Some more such instantiations are: cwu-e ci- (give-Inf get; \*cwu-(h)i-); kaluchi-e ci- (teach-Inf get; \*kaluchi-(h)i-); mak-a ci- (defend-Inf get; mak-(h)i-); kk-e ci- (extinguish-Inf get; \*kku-i-);... and psych-A-e ci- (\*psych-A-i-).

by -e ci-, which means that ci- can be used as an auxiliary predicate.<sup>72,73</sup>

Even passivized V-hi- (V-pass) can be accompanied by -e ci-.

- (55) ku mwun-ka tat-hi-e ci-0-ni?  
 the door-sub close-pass-Inf become-pres-Q  
 "The door got closed."

Second, whether -e ci- governs passive clauses (56a) or not (56b), ci- can assign -lul (ACC), which suggests that ci- is not ergative.

- (56) a. [sanawun kay-ka changko-ey katwu-e]-lul ci-ess-ta  
 wild dog-sub storehouse-at lock-Inf-obj become-past-em  
 "The wild dog got locked up in the storehouse."  
 b. [Chelswu-ka san-ka joh-al]-lul ci-ess-ta  
 -sub mountain-sub fond-Inf-obj become-past-em  
 "Chelswu got fond of mountains."

Thus we conclude that ci- is not a passive predicate.

We suggest that in (53-54), the null passive predicate [+pass] is selected by the auxiliary predicate ci- and triggers the change in argument structure. There are in fact cases in which ci- obligatorily selects

<sup>72</sup> In the V-e ci- phrase, V may also be intransitive or adjectival.

(i) Yenghi-ka elkwul-ka cemcem yepp-e ci-ess-ta (Adj)  
 -sub face-sub more and more pretty-Inf become-past-em  
 "Yenghi became prettier and prettier."

(ii) ani-ka-lye-ko ha-y-to cakku ka-0 ci-n-ta (Vi)  
 not-go-will-comp do-Inf-although constantly go-Inf become-pres-em  
 "Although I decided not to go, I ended up going (there) constantly."

V can be either a transitive psych-adjective (iia) or a nonpassivizable verb (iiib).

(iii) a. Chelswu-ka i kay-ka twulye-we ci-ess-ta  
 -sub this dog-sub afraid-Inf become-past-em  
 "Chelswu becomes afraid of this dog."  
 b. apeci-wa atul-ka cemcem talm-a ci-e ka-n-ta  
 father-and son-sub step by step resemble-Inf become-Inf go-pres-em  
 "The son is getting to resemble his father slowly."

In cases (i-iii), ci- has some aspectual meaning (without triggering the passive meaning).

<sup>73</sup> Some instantiations of V-e ci- are also lexicalized. mem-e-ci- (fall down); pwul-e-ci- (broken); ttel-e-ci- (fall); (\*mem-; \*pwul-; \*ttel-) (cf. Choi (1935;434)). Choi (1935) calls these lexicalization verbs 'set-back' or 'restoration' verbs, which means that the meaning is not compositional. This is a rather typical aspect of Vx verbs in Korean; Vx is lexicalized with another V (cf. il-e-na- (ascend-Inf-come out = get up; cf. Section 3.4.)).

[+pass]. When some verbs cannot be -hi- passivized, as in (53-54), -e ci- with an active argument structure is deviant or ungrammatical.<sup>74</sup>

- (57) a. \*Chelsuw-ka pwul-ka kk-e ci-ess-ta (\*kku-hi-)  
           -sub fire-obj put out-Inf become-past-em  
           "Chelswu got to extinguish the fire."  
       b. \*cwuin-ka kay-ka katwu-e ci-ess-ta (\*katwu-hi-)  
           -sub dog-obj lock-Inf become-past-em  
           "The host got to lock up the dog."

Thus when a V cannot be -hi- passivized, [+pass] that is obligatorily selected by -ci- is employed. In other words, when ci- indirectly selects a predicate that cannot be -hi- passivized, ci- obligatorily indirectly selects [+pass]. Therefore, ci- indirectly triggers the passive by selecting the null passive predicate [+pass] for that V. In short, ci- is not used as the passive predicate but rather as a passive triggering predicate.

ci- optionally selects the null passive predicate [+pass] in other environments. In the case in which the embedded clause contains a V that can be passivized by -hi-, -e ci- triggers the change in argument structure whether the passive -hi- appears or not:

- (58) a. i mwun-ka yel-(li-)e ci-0-ta  
           this door-sub open-pass-Inf become-pres-em  
           "This door got opened easily."  
       b. kwumeng-ka swipkey mak-(hi-)e ci-n-ta  
           hole-sub easily stop up-pass-Inf become-pres-em  
           "The hole gets stopped up easily."  
       c. i sasil-ka Chelswu-eykey mit-(ki-)e ci-ci an-ass-ta  
           this fact-sub -dat believe-pass-Inf become-to not-past-em  
           "This fact did not get believed by Chelswu."

As shown in (58) without -hi-, ci- is compatible with active argument structure.

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<sup>74</sup> The -ka (ACC) marker does not make the sentence (57) ungrammatical (cf. 53-54a). See the Appendix of Section 4.2., for the -lul → -ka change in the realization of ACC in the domain of the auxiliary predicate ci-.

- (59) a. ?Chelswu-ka mwun-ka yel-e ci-ess-ta  
           -sub door-obj open-Inf become-pass-em  
           "Chelswu got to open the door."  
       b. ?Chelswu-ka kwumeng-ka mak-a ci-ess-ta  
           -sub hole-obj stop up-Inf become-pass-em  
           "Chelswu got to stop up the hole."  
       c. Chelswu-ka i sasil-ka mit-e ci-ass-ta  
           -sub this fact-obj believe-to become-past-em  
           "Chelswu got to believe this fact."

However, whether V is -hi- passivizable (cf. 59) or not (cf. 53-54), the passive-like change in argument structure is not obtained without ci- when -hi- does not appear:

- (60) a. \*i mwun-ka (Chelswu-eyuyhayse) yel-0-ta  
           this door-sub -by open-pres-em  
           \*"This door opens (by Chelswu)."  
       b. \*pwul-ka (Chelswu-eyuyhayse) kku-0-ta  
           fire-sub -by extinguish-pres-em  
           \*"The fire extinguishes (by Chelswu)."

The contrast between (59) and (60) suggests that [+pass] is not used independently but can be accompanied only by an auxiliary predicate in Korean. Alternatively, when ci- indirectly selects a predicate that can be -hi- passivized, it optionally selects [+pass]. Thus in (59) with -hi- or without -hi-, ci- is used as Vx; in (59) without -hi- and in (53-54), ci- is used as Vx, selecting the null passive predicate.

One apparent problem with this suggestion, however, is that there is some slight difference in meaning between -hi-e ci- and -e ci- passive constructions:

- (61) a. i mwun-ka (Chelswu-eyuyhayse) yel-li-e ci-ess-ta  
           this door-sub -by open-pass-Inf become-past-em  
           "The door got opened easily (by Chelswu)."  
       b. i mwun-ka (Chelswu-eyuyhayse) swipkey yel-li-ess-ta  
           this door-sub -by easily open-pass-past-em  
           "This door was easily open (by Chelswu)."  
       c. i mwun-ka (\*Chelswu-eyuyhayse) swipkey yel-e ci-ess-ta  
           this door-sub -by easily open-Inf become-past-em  
           "This door came to open (\*by Chelswu)."

(61a and b) with -hi- implies that the door is opened by a certain agent. On the other hand, in the case of (61c) without -hi-, no implicit agent is



involved.<sup>7a</sup> Thus the by subject in (61c) is very deviant, unlike (61a and b). Like the predicate open in English sentence the door opens easily, yel-e ci- in (61c) is a middle verb in that no agentivity is implied. In fact, in Korean, middle verbs are not obtained without being accompanied by ci-, as shown in (60a) and (61c). If so, then the difference in meaning between the two versions (61a and b) and (61c) can be attributed to the difference in meaning between passive and middle sentences.<sup>7a</sup> If ci- triggers the middle reading, we predict that when V, which can be a middle verb, cannot be -hi- passivized, the -e ci- construction with that V is ambiguous: it is a passive or a middle sentence. In fact, an -e ci- sentence with a non--hi- passivizable V is ambiguous: the sentence may be nonagentive or it may contain an implicit agentive argument, if V can be a middle verb (cf. Keyser and Roeper (1984)).

- (62) a. i tak-ka swipkey cwuk-i-e ci-n-ta  
 this chicken easily die-caus-Inf become-pres-em  
 "This chicken kills easily." or "This chicken is killed easily."  
 b. i mwun-ka swipkey chilha-ye ci-n-ta  
 this door-sub easily paint-Inf become-pres-em  
 "This door paints easily." or "This door is painted easily."

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<sup>7a</sup> There are some cases which have the same surface patterns as (61a and c), both of which have only the nonagentive meaning, unlike (61a and c):

- (1) a. i kil-ka nelp-hi-e ci-ess-ta. (caus + -e ci- pass)  
 this road-sub broad-caus-Inf become-past-em  
 "This road became broadened."  
 b. i kil-ka nelp-e ci-ess-ta. (no caus + no pass)  
 this road-sub broad-Inf become-past-em  
 "This road became broad."

With or without -(hi)-, the sentences in (1) have the nonagentive meaning. (1a), unlike (61a), strongly implies that the breadth of the road is widened by impersonal forces or of itself. We attribute the readings of (1a) to the fact that -(hi)- in (1a) is the causative predicate but not the passive predicate.

<sup>7a</sup> We will not discuss in detail the middle construction in Korean, whose specific property we leave open for further research. For some discussion on Middle verbs in English, see Keyser and Roeper (1984); Hale and Keyser (1986); Roberts (1987).

Given that the verb ci- in Korean selects the null passive predicate [+pass], we suggest that [+pass], which is accompanied by ci-, optionally triggers the nonagentive meaning, depending on the most embedded predicate. In fact, there is evidence that passive morphology may be responsible for the reading of the implicit argument in the passive construction. Languages like Chichewa have two types of passive morpheme to indicate whether agents in the passive construction have the specific agentive reading or the impersonal agentive or nonagentive meaning.<sup>77</sup> To explain the nonagentive middle meaning of certain passive predicates, we suggest that the nonagentive middle reading derives from the [+pass] affixation in the Lexicon; in both English and Korean, the predicate [+pass] can be amalgamated with certain verbs (middle verbs) in the Lexicon but not in syntax since they are not agentive in syntax. The difference between English and Korean middle construction is then that a lexically derived V-[+pass] that triggers the middle reading can appear independently in English, while in Korean, it is always selected by ci-. Also, in Korean, V-[+pass] can also be syntactically derived, because as shown in (62), both the agentive and the nonagentive reading are possible when no by subjects appear.

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<sup>77</sup> In Chichewa, the agentive passive morpheme -(d)w- is the suffix and the by phrase does not appear (cf. Watkins (1937;76-80)).

(i) wanipa.nda                      napweteke.wa.

you-have-me-beaten I-have-become-hurt

Watkins (1937) reports that Chichewa also has the nonagentive passive morpheme -k- (suffix). Watkins (1937;76) notes that the nonagentive passive is used when the specific agency of the action is completely excluded.

(ii) sinidziba tcifukwa' napweteke'.ka

not-I-know reason I-have-become-hurt

"I do not know why I am hurt." (Watkins (1937;80))

This nonagentive passive morpheme is also affixed to nontransitive verbs, as shown in (ii), while the agentive passive morpheme is strictly restricted to transitive verbs.

(iii) dziko' li.no mtcendjeré.ka

in country herein it-is-possible-to-be-clever

"It is possible to be clever in this country." (Watkins (1937;79))

To summarize, we have seen that in Korean, there is only one process of passivization: -hi- passivization with -hi- or with its null variant [+pass]. Certain auxiliary predicates (-toy or -e ci-) may be employed to give -hi- passive sentences rich additional meanings such as inchoative meaning. They also obligatorily select the null passive predicate [+pass], when it indirectly selects a non--hi-passivizable V. The null passive predicate cannot appear independently without ci- in Korean, in contrast to a non-null passive predicate in Bahasa Indonesian and Swahili. This condition, we suspect, explains the seemingly limited productivity of the -hi- passivization in Korean: Non--hi- passivizable V's, in fact, can be passivized by a -hi- type of passivization, employing the null passive predicate [+pass], which is selected by Vx. The reinterpreted productivity of the -hi- passivization is consistent with the idea of the transformational and syntactic approaches to -hi- passivization. Note also that since -hi- passivization involves a bi-clausal structure, -e ci- or N-toy- passivization involve triple-clausal structure.<sup>7\*</sup> Given that Korean

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<sup>7\*</sup> We may assume that RR and head-movement in -e ci- or toy- passives are independent of each other. One piece of supporting evidence comes from Italian. In (i), passivization and 'restructuring' apply. Although their domains overlap, Rizzi notes that the passive essere (be) does not trigger auxiliary change.

(i) Mario gli {ha/\*è} voluto essere presentato da Gianni

"Mario to him has wanted to be introduced by Gianni." ((i) in Rizzi (1982;45; fn 27))

We suggest that the target of V-to-V RR is the most embedded V (nonergative) rather than an ergative passive predicate, explaining the auxiliary avere in (i). The argument structure of the passive clause shows that a (null) passive predicate and the most embedded V are amalgamated by head-movement independently of RR: the domain of head-movement is properly contained within the domain of RR but the complex word derived by head-movement is not an M/R-complex word but an M-complex word. On the other hand, V-V RR between Vx and passivized Vk forms a Vx-Vk R-complex word independently of a [+pass]-Vk M-complex word. Thus auxiliary assignment refers to Vk but not to the passive predicate. To conclude, it seems that both RR and head-movement have their own trigger-target relations to form R- or M/R and M-complex words, respectively, although the domains of these complex words overlap (cf. a discussion on the ACC-ing construction in

productively employs auxiliary predicates, to enrich aspectual meanings of sentences, the triple-clausal structure for toy- and -e ci- passivization is neither empirically surprising nor theoretically implausible.

### 3.3.4. Vietnamese passivization and R-complex words

While passive predicates may or may not be selected by Vx's in some languages (cf. English), passive sentences are always selected by Vx's in other languages, especially when passive predicates are null (cf. Korean). In some languages such as Vietnamese, the passive is always triggered by the null passive predicate [+pass], which is selected by certain Vx's. Below, we will show that the Vietnamese [+pass], which is selected by certain Vx's, triggers the RR passive, instead of the head-movement passive that is found in English and Korean, explaining the peculiar word order in Vietnamese passive construction.

Consider the Vietnamese passive construction below.<sup>79</sup>

#### Section 4.1.).

<sup>79</sup> Tam (1976) suggests that (63) instantiates the passive in Vietnamese. The Vietnamese type of passive is by no means rare, as Tam (1976) demonstrates with examples from other languages:

- (1) a. Xiǎo-tōu bèi wǒ kànjiàn le. Chinese  
       burglar pass I see perf  
       "The burglar underwent adversely: I saw him."  
   b. mǔu khōi thyyk khacaw khāa. Lao  
       friend I pass they kill "My friend was killed by them."  
   c. kñom trew kee bombaek kbaal (kñom). Cambodian  
       I undergo they break head I "I underwent: they broke my head."  
       ((15) in Tam Duy Le (1976))  
   d. Mary thúuk (John) kóot Tai  
       touch embrace "Mary was embraced (by John)."  
       ((14) in Keenan (1975); originally from Needleman (1973))

Under our analysis of the Vietnamese passive, which will be discussed shortly, the verbs glossed as pass or as V are Vx's in these languages. The passive cooccurring with Vx can also be easily found in languages such as Germanic and Scandinavian languages: For example, Norwegian employs the following passive in which Vx appears (the get-en passive in English) (cf. Engh (1983; 5); (2) in Engh (1983)):

- (ii) a. Møtet blir holdt

- (63) Lan được Thông yêu  
pass love "Lan was loved by Thong." (la in Dang (1977))

The arguments of love appear in a peculiar way: the logical object argument appears on the left side of the pass verb and S appears between pass and love. Since we view a passive verb as an independent predicate, we expect (63) to be bi-clausal.

Tam (1976;443), in fact, gives evidence for the bi-clausal nature of Vietnamese passive construction: the scope of adverbials and that of negative markers can go with either of the two verbs.<sup>80</sup>

- (64) Hôm qua Mary được John thành thật hứa giúp tuần tới  
day past pass sincerely promise help week come  
"Yesterday Mary was sincerely promised by John that he would help her next week."  
(65) a. John bị Paul không mời bạn gái của nó  
pass not invite friend girl belong he  
"John suffered: Paul did not invite his girlfriend."  
b. John không bị Paul mời bạn gái của nó  
not pass invite friend girl belong he  
"John did not suffer Paul's inviting his girlfriend." ((18-9) in Tam (1976))

Given these bi-clausal aspects, the argument structure of (63) might be represented as follows:

- (66) a. [ e pass [ S<sub>j</sub> ..V..O<sub>i</sub> ] ]  
b. [ O<sub>i</sub> pass [ S<sub>j</sub> V t<sub>i</sub> ] ]

Both S and O appear to be bare forms, which suggest that they are assigned structural Case.<sup>81</sup> Thus one can suggest that the passive predicate and V

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the meeting is going to held "The meeting is (going to be) held." Engh (1983) classifies blir as an auxiliary verb. Notice that the word order suggests that the passive in (i) is derived by RR and the passive in (ii) by head-movement.

<sup>80</sup> Note that the agent-oriented adverb (sincerely) appears in the embedded clause, consistent with the analysis of agent-oriented adverbs given in subsection 3.4.1.. Note also that the negative marker can appear in an embedded clause, like any other small clauses (cf. I made John not study.)

<sup>81</sup> Vietnamese NOM or ACC NP's appear in bare or neutral forms even in their pronominal forms, while NP's with OBL appear with prepositions (cf. Nguyen (1975)).

are covertly RRed. V can assign Case to the subject since V, which is the s-head, is Case-transitive but the logical object argument moves to the e position to receive Case.

There are some reasons to believe that the predicates glossed as pass in (63) (and (1) in fn. 79)) are actually auxiliary predicates: First, if matrix predicates are ergative passive predicates, then we would not find selectional restrictions. However, there are some selectional restrictions in the Vietnamese passive construction. Dang (1977) reports that there are three passive predicates in Vietnamese: được (happily experienced); bị (be adversely affected) with an adversative or a benefactive connotation; and do (be affected by)). She also reports that predicates được and bị require animate subjects in the passive construction. When the matrix subject is inanimate in the passive construction, the predicate do is used.

- (67) a. Nai {được/bị/\*do} (Châu) thăm  
           Nai pass                      Chau visit                      "Nai was visited by Chau."  
       b. Cái bàn {do/\*được/\*bị} \*(Ti) sơn  
           the table pass                      paint                      "The table was painted by Ti."  
           ((5-10) in Dang (1977;2))

These selectional restrictions suggest that the matrix predicates are not ergative, but rather that their semantics indicate that they are auxiliary predicates. Second, Nguyen (1975; 37) classifies these verbs as [+transitive], in opposition to the properties of passive verbs [-transitive].<sup>22</sup>

Based on the evidence discussed above, we suggest that {được/bị/do} in Vietnamese are Vx's but not passive predicates. In fact, they can be also used as auxiliary predicates, like the Korean ci- or toy- auxiliary predicates that can also be used in passive construction, selecting the null passive predicate [+pass]. Compare (68-69a) and (68-69b). The bị and được

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<sup>22</sup> Note that 'restructuring' verbs are [+transitive] or Case-transitive unless they are ergative.

in (68-69a) are used as auxiliary predicates and those in (68-69) are used to trigger the passive-like change in argument structure.

- (68) a. Ông ấy bị đi "He was forced to go."  
           he was adversely affected go  
       b. Ông ấy bị họ đánh "He was beaten by them."  
           he was adversely affected they beat  
 (69) a. Ông ấy được đi "He was allowed to go."  
           he happily experienced go  
       b. Ông ấy được họ khen "He was praised by them."  
           he happily experienced they praise  
       (Nguyen (1975;40-41))

In order to explain the change in argument structure in (68-69b), we suggest that Vietnamese, like Korean, employs the null passive predicate [+pass], which can be selected only by certain auxiliary predicates. Since V and S do not change their positions (unlike small clauses in Romance languages), C-to-V RR must be overt (70a); since both the logical subject and object arguments are in bare forms, we suggest that an embedded verb and the null passive morpheme are amalgamated by RR as in the derivation from (70a) to (70b) with được in a matrix clause.

- (70) a. [ NP<sub>1</sub> {được/b/đi} [ e [+pass] [C<sup>1</sup> [x<sup>1</sup> [V<sup>1</sup> S V O<sub>2</sub> ]]] ] ]  
       b. [ NP<sub>1</sub> {được/b/đi} [ e [+pass]<sup>1</sup> [C<sup>1</sup> [x<sup>1</sup> [V<sup>1</sup> S V<sup>1</sup> O<sub>2</sub> ]]] ] ]  
       c. [ NP<sub>1</sub> {được/b/đi} [ O<sub>2</sub> [+pass]<sup>1</sup> [ S V<sup>1</sup> t<sub>2</sub> ] ] ] (i = 2)  
       d. [ NP<sub>1</sub> {được/b/đi}<sup>1</sup> [ O<sub>2</sub> [+pass]<sup>1</sup> [ S V<sup>1</sup> t<sub>2</sub> ] ] ] (i = 2)  
       (cf. Chapter 3 for discussion of the derivations in (70))

Given word order, we suggest that the RR between [+pass] and V is covert (70b). In (70c), O, which is PRO, moves to the e position to receive a secondary theta-role from [+pass]. được and [+pass]-V R-complex words are covertly RRed (the usual 'restructuring') because được is Vx triggering V-to-V RR.

There is an interesting piece of evidence that the sentence in (63) is in fact a passive sentence and that the analysis given in (70) is on the right track. Nguyen (1975;15) reports that in journalistic style and translations, the following version of a passive sentence with the by

phrase is found (although it is not generally acceptable in spoken language):

- (71) Sách này được viết bởi Ông Hai.  
 book this receive write by Mr. Hai  
 "This book was written by Mr. Hai."

In (71), the logical subject argument appears on the left side of V with the preposition by, instead of appearing on the left side of V with the bare form. From our point of view, the passive sentence in (71) is obtained by a single change in parameterization: in (71), instead of [+pass]-to-V RR, V-to-[+pass] head-movement has applied. After V-to-[+pass] head-movement applies, the embedded logical subject argument appears on the right side of V instead of on the left side of V, as given in (71).<sup>23</sup> Since V-[+pass], whose s-head is ergative [+pass], does not assign Case, a logical subject argument is assigned Case by a dative dummy Case marker. Note that this is exactly what happens in the English get-en and Korean -e ci- passive construction. In short, the present analysis shows that a single change of parameterization may trigger a seemingly marked word order and it also shows that the Vietnamese word order in the passive construction is a core phenomenon predicted by UG.

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<sup>23</sup> Nguyen (1975;15) also reports the following version of a passive sentence in which a Vx is not selected

(i) Sách này do Ông Hai viết  
 book this by Mr. Hai write  
 "This book was written by Mr. Hai."

Given the by subject, V-[+pass] amalgamation should be attributed to head-movement. but given the word order, (i) should be derived by covert [+pass]-to-V RR. We suggest that (i) is derived by [+pass]-to-write covert RR but that by is employed for the same reason that Bahasa Indonesian optionally employs a dummy Case marker in some passive sentences, in which [+pass]-to-V RR applies (cf. fn. 43).



#### 4.3.4. Summary

In this Section, we have proposed that -en is a syntactic entity in that it is syntactically an X-head, which is semantically a predicate, claiming that the passive construction is bi-clausal. We have shown how the bi-clausal analysis is not only theoretically plausible but also empirically adequate, explaining and predicting cross-linguistic variations of the passive construction. Cross-linguistic data show that the two properties of passive constructions (Case/theta-role absorption) do not exactly characterize passive construction universally even though they correctly characterize one instantiation of possible passive complex predicates (i.e., English type passive). Absorption of theta-role does not explain Korean toy- and -e ci- passive constructions, the Vietnamese passive construction, or the get passive in English; absorption of Case also does not explain Swahili or Bahasa Indonesian passive constructions and Vietnamese type of passives in which a logical subject argument appears in a bare form. In short, our discussion has shown that passive construction can be characterized as having an ergative passive predicate, which triggers either head-movement or overt or covert RR; absorption of Case and theta-role is an instantiation of passive variants but does not characterize the universal core of passive construction. Whether ACC is assigned in passive construction and how an embedded logical subject argument is realized are determined by the way two predicates amalgamate. Notice that our analysis maximizes variants of passive, but still eliminates other possibilities once a transformation is chosen.

To summarize, we have shown that the passive is universally governed by the same mechanism that also governs the English passive, i.e., the ergative nature of passive predicates that selects small clause comple-

ments. Given the notions of RR and head-movement, the different combinations of the following three different parameterizations determine cross-linguistic surface realizations of passive construction:

- (72) a. null or overt version of a passive predicate
- b. RR or head-movement passive
- c. Vx passive or nonVx passive

Since Chomsky (1975b;1981), the existence of empty categories has been important in understanding the syntactic and logical or semantic universals of linguistic representation. In fact, the syntax and semantics of empty categories lead to deep understanding of the subtheories of UG and some universal aspects of certain phenomena such as operator-movement and binding (and control). Here, we equally emphasize the significance of (phonetically-)null X-head categories (null INFL or null predicate), consistent with the syntactic position we proposed in Section 3.1.. We predict the existence of null X-heads through the assumption given in (73) (following the syntactic position discussed in Chapter 3) and through changes in argument structures of complex predicates or even through changes in argument structures of seemingly morphologically-simple predicates (cf. Sections 3.1. and 4.1.).

- (73) A predicate (A or V) is minimally projected up to CP and CP closes a projection of V.

(Remember also that as we saw in Sections 4.1. and 4.2., INFL, phonetically realized or not, is also syntactically active.)

Cross-linguistic passive data, in fact, suggest that we should ignore any bias which we might have from morphological/phonetic aspects of predicates. By doing so, we have shown that instantiations of passive such as Swahili and Vietnamese passives are predicted by principles of UG and are no longer 'peculiar' or 'exceptional/peripheral' phenomena. We have also shown that certain unusual word orders (such as those in Vietnamese)

are explained by covert [+pass]-to-V RR: Since overt RR may change word order while covert RR does not, we also explain certain peculiar word order (cf. Swahili and Vietnamese) when RR derives passive complex predicates.<sup>84</sup>

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<sup>84</sup> Citing various types of passive, Keenan (1975) argues that structural explanations of the passive (A-movement and by phrase) are not on the right track and that relational approaches may explain various instantiations of the passive. We have disproven Keenan's argument by showing that passive variations can be well-discussed in terms of configurational operations.

#### 4.4. Deep and surface nonconfigurationality

##### 4.0. Introduction

In this Section, we discuss a certain linguistic phenomenon triggered by overt RR -- scrambling as a nonconfigurational phenomenon. We show that scrambling in Korean and Hungarian is triggered by certain instantiations of overt RR that trigger 'flat' structures in which arguments in simple clauses are read as sisters. We also show that the parameterization on the levels of application leads to some cross-linguistic differences in the nature of a nonconfigurational phenomenon, given that syntactic configuration differs depending on the level of overt RR application.

In Chapter 3 we showed that in Korean, although C and I elements appear on verbal morphology, IP and VP nodes are active in syntax. Given the discussion in Section 4.1., the complex verbal morphology in Korean is obtained by surface-overt C-to-V RR. If the overt RR that triggers complex verbal morphology is deep-overt, the complex verbal morphology results in the lack of VP in syntax. In fact, such a case is instantiated in Hungarian, as we will discuss below. On the other hand, both Hungarian and Korean allow scrambling -- a nonconfigurational phenomenon --. We thus suggest that the parameterization of the levels of RR application plays a role in the configurationality issue involving scrambling. Consequently, our proposal will lead to new understanding of how languages with scrambling differ. In the discussion, we also propose the existence of functional categories, such as F, that explain Hungarian nonconfigurationality and cross-linguistic designated A-bar positions, such as Focus positions.

#### 4.4.1. Scrambling and configurationality

In her paper, Kiss (1985) denies the universal status of a VP node and convincingly argues that Hungarian employs a flat clausal structure, having a Focus position above the flat clausal structure and iterative Topic positions above the Focus position. That Hungarian employs flat structure seems to be justified by the Hungarian verbal morphology in which no INFL elements appear independently. In addition to this aspect of verbal morphology, Kiss shows that Hungarian has no syntactic motivations for postulating a VP node:<sup>1</sup> Hungarian employs scrambling, no VP rules, few VP idioms, no WCO effects, no subject-object asymmetry with respect to binding condition C, and no (syntactic) passive<sup>2</sup> (see Kiss (1985)).<sup>3</sup> For example, Kiss shows that Hungarian shows no WCO effects and no subject-object asymmetry with respect to binding. Kiss (1985) attributes the ungrammaticality of (1a) to flat structure and binding condition C.<sup>4</sup>

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<sup>1</sup> Horvath (1986) argues that Hungarian employs a configurational structure with a 'small VP.' Although Kiss's evidence undermines Horvath's arguments, the latter do not affect the former.

<sup>2</sup> According to Marácz (1986b), Hungarian has a passive process, which links (ii) with (i):

(i) Az ellenség megver-t-e a sereg-et  
       the enemy-nom beat-past-3sg the army-acc  
 (ii) A sereg megver-et-ett az ellenség-től/által  
       the army-nom beat-pass-past-3sg the enemy-abl/by  
       "The army was being beaten by the enemy." (cf. (16) in Marácz (1986b))

Marácz (p.c.), however, agrees that the Hungarian passive process is not syntactic since Hungarian does not exhibit long-distance passive (cf. Korean long-distance passive in (15)).

<sup>3</sup> Kiss also argues that Hungarian shows no subject-object asymmetry with respect to the ECP. The same is true of Korean. If Korean is syntactically configurational in syntax, as we discussed in Section 3.1. and as we will discuss below, we need to account for the lack of the asymmetry; we may attribute it to a property of INFL: INFL is a proper governor in Korean. We, in fact, suggest in Choe (1987b) that INFL is 'strong' in Korean so that it L-marks the subject position.

<sup>4</sup> Kiss (1985) assumes that topicalized NP's are reconstructed and that

- (1) a. \*János<sub>i</sub> anyja szereti {t<sub>i</sub>/pro<sub>i</sub>} (SV0)  
 John's mother loves him "John<sub>i</sub>'s mother loves him<sub>i</sub>."  
 b. \*{t<sub>i</sub>/pro<sub>i</sub>} szereti János<sub>i</sub> anyját (SV0)  
 he loves John's mother-acc "He<sub>i</sub> loves John<sub>i</sub>'s mother."  
 ((56) in Kiss (1985))

In contrast to Hungarian, Korean shows subject-object asymmetry with respect to binding, as shown in (2):

- (2) a. Chelswu<sub>i</sub>-uy emeni-ka ku<sub>i</sub>-lul sarangha-n-ta  
 -gen mother-sub he-obj love-pres-em  
 "Chelswu<sub>i</sub>'s mother loves him<sub>i</sub>."  
 b. \*ku<sub>i</sub>-ka Chelswu<sub>i</sub>-uy emeni-lul sarangha-n-ta  
 he-sub -gen mother-obj love-pres-em  
 "He<sub>i</sub> loves Chelswu<sub>i</sub>'s mother."

Hungarian shows no weak cross-over effects (cf. 3b) but Korean does, as shown in (4b).<sup>5</sup> (In (3) and (4), the underlined S or O indicates that it is a wh-phrase.)

(3) Hungarian:

- a. Ki<sub>i</sub> szereti az pro<sub>i</sub> anyját? (cf. Kiss (1985); Marác (1985))  
 who loves the mother-his-acc (SVO)  
 "Who<sub>i</sub> loves his<sub>i</sub> mother?"  
 b. Kit<sub>i</sub> szeret az pro<sub>i</sub> anyja?  
 whom loves the mother-his-nom (OVS)  
 "Who<sub>i</sub> does his<sub>i</sub> mother love?"

(4) Korean:

- a. nwukwu<sub>i</sub>-ka {pro<sub>i</sub>/caki<sub>i</sub>} emeni-lul sarangha-0-pnikka (SOV)  
 who-sub mother-obj love-pres-Q  
 "Who<sub>i</sub> loves his<sub>i</sub> mother?"  
 b. \*{pro<sub>i</sub>/caki<sub>i</sub>} emeni-ka nwukwu<sub>i</sub>-lul sarangha-0-pnikka (SOV)  
 mother-sub who-obj love-pres-Q  
 "Who<sub>i</sub> does his<sub>i</sub> mother love?"

binding condition C applies after the application of reconstruction (cf. ii).

- (i) 
$$\begin{array}{c} S' \\ / \quad \backslash \\ NP_1 \quad S \\ \quad / \quad | \quad \backslash \\ \quad V \quad t_i \quad NP_2 \end{array}$$
 (ii) 
$$\begin{array}{c} S' \\ | \\ S \\ / \quad | \quad \backslash \\ V \quad NP_1 \quad NP_2 \end{array}$$
 (the order between NP<sub>1</sub> and NP<sub>2</sub> is irrelevant)

<sup>5</sup> QR and Focus movement behave like wh-movement in showing weak cross-over effects in Hungarian (cf. Kiss (1985)) and Korean.

<sup>6</sup> Remember that in Korean, null pronominals or anaphor caki, but not pronouns (e.g., ku (= he)), can be bound by quantifiers or wh-phrases at S-structure.

Hungarian *wh*-phrases in (3) move to the immediate left side of *V*, while Korean ones in (4) are *wh*-in-situ and move in LF (cf. Huang (1982)).

Despite the fact that both Hungarian and Korean employ complex verbal morphology (cf. (3-4) for example), it seems that syntactic configurations differ in these languages. Nevertheless, the two languages exhibit fairly free displacement of arguments. Korean shows clause-bounded displacement of arguments with neutral intonation. Unlike rightward displacement of arguments (cf. Appendix II of Chapter 3), leftward displacement of arguments in Korean may not affect binding and variable binding, as we see in the leftward dislocated versions of (2) and (4) in (5-6).

- (5) a.  $ku_1$ -lul Chelswu $_1$ -uy emeni-ka sarangha-n-ta  
       b. \*Chelswu $_1$ -uy emeni-lul  $ku_1$ -ka sarangha-n-ta  
 (6) a. { $pro_1/caki_1$ } emeni-lul nwukwu $_1$ -ka sarangha-0-pnikka  
       b. \*nwukwu $_1$ -lul { $pro_1/caki_1$ } emeni-ka sarangha-0-mnikka

The sentences in (5) and (6) with displaced arguments have the same grammaticality as the corresponding sentences in (2) and (4) do, provided that the former has neutral intonations.<sup>7</sup> If displacement of arguments affects binding and derived by a syntactic process (cf. fn. 7), then the grammaticality of (5) (and (6)) would be reversed. Nevertheless, the grammaticality of (5 and 6) is not changed unless other (pragmatic) factors are added.<sup>8</sup> Let us call displacement of arguments that does not affect binding scrambling, following traditional terminology. Scrambling must apply in the PF component since it does not affect syntactic binding. As in Korean, the

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<sup>7</sup> Remember that with Focus or stress on dislocated elements, leftward dislocation of arguments is derived by operator-movement or by left-dislocation (cf. Appendix II of Chapter 3).

<sup>8</sup> Judgments on (5 and 6) (but not on (2 and 4)) vary from speaker to speaker. Thus Choe (1985b) suggests that sentences with displaced arguments are more likely to be vulnerable to some pragmatic factors than sentences without displaced arguments. But see Appendix II in Chapter 3 and fn. 7.

word order VSO/OS (and SVO/OVS) in Hungarian does not change binding in simple clauses, according to Anna Szabolcsi's judgments (p.c.; cf. fn. 9). Thus the scrambled counterparts of (1), for example, do not change their grammaticality.\*

- (7) a. \*{ $\delta t_1$ /pro<sub>1</sub>} szereti János<sub>1</sub> anyja. (OVS)  
 b. \*János<sub>1</sub> anyját szereti { $\delta_1$ /pro<sub>1</sub>}.  
 c. \*szereti János<sub>1</sub> anyja { $\delta t_1$ /pro<sub>1</sub>}. (VSO)  
 d. \*szereti { $\delta_1$ /pro<sub>1</sub>} János<sub>1</sub> anyját. ...

It has been argued that displacement of arguments is (unambiguously) derived by a syntactic transformation and affects binding.<sup>10</sup> Saito and Hoji (1983) argue that the displacement of arguments in Japanese affects binding, as shown in (8) and therefore that the displacement of arguments instantiates move-alpha (displaced arguments are underlined hereafter).

- (8) a. \*Kare<sub>1</sub>-ga mada [ Mary-ga John<sub>1</sub>-ni okutta tegami]-o yonde inai (koto)  
 he-sub yet -sub -to sent letter-obj read have-not fact  
 \*'He<sub>1</sub> has not read the letter Mary sent to John<sub>1</sub>.'  
 b. [Mary-ga John<sub>1</sub>-ni okutta tegami]-o kare<sub>1</sub>-ga mada yonde inai (koto)  
 \*'He<sub>1</sub> has not read the letter Mary sent to John<sub>1</sub>.'

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\* Marácz (1985) notes that word order may affect pronominal anaphor (variable) binding in Hungarian, giving the following data:

- (i) Az pro anyját ki szereti  
 the mother-his-acc who loves "Who loves his mother?" (OSV)  
 (ii) \*Az pro anyja kit szeret  
 the mother-his-nom loves "Who does his mother love?" (SQV)

While scrambling does not affect binding in Hungarian, scrambling (displacement of arguments) may affect variable binding, as we see in the ungrammaticality of (ii), which contrasts with (3b). We may assume that word order SVO/OVS is derived by scrambling, without affecting binding, as in word order VSO/VOS (or by Kiss's topicalization), but that the word order SQV/OSV in (i-ii), in which S or O crosses the wh-position, is derived only by topicalization (since S/O crosses wh-phrases Q/S), causing a change in binding. However, see Marácz (1985) for an argument that the contrast in (i-ii) reflects LS configurationality (in Hale's sense) in Hungarian, provided that the notion of precedence is available for binding.

<sup>10</sup> Saito and Hoji (1983) and Saito (1985) suggest that displacement of arguments is derived by syntactic adjunction (to IP and presumably to VP also) in Japanese. Y.-S. Kang (1986) also suggests that in Korean displacement of arguments is derived by NP-substitution to the SPEC of CP.



The corresponding Korean sentence (9) to (8b) is, however, ambiguous; the coreferential reading is possible with stress on ku in (9) but it is not possible with a neutral intonation (cf. Choe (1985b)).

(9)\*O.K. [Mary-ka John<sub>1</sub>-eykey ponay-0-n phenci]-lul ku<sub>1</sub>-ka ilk-ci an-ass-ta  
 -sub -to send-past-comp letter-obj he-sub read-to not-past-em

This ambiguity sometimes disappears in another example in which an adjunct is displaced.

- (10) a. \*ku<sub>1</sub>-ka Mary-lul John<sub>1</sub>-uy cip-ulo ponay-ess-ea  
           he-sub       -obj       -gen house-to send-past-em  
           \*"He<sub>1</sub> sent Mary to John<sub>1</sub>'s house."  
       b. \*John<sub>1</sub>-uy cip-ulo ku<sub>1</sub>-ka Mary-lul ponay-ess-ta  
           John-gen house-to he-sub       -obj send-past-em  
           \*"He<sub>1</sub> sent Mary to John<sub>1</sub>'s house."

For some reason, sentence (10b) is not ambiguous: the normal interpretation of (10b) tends to be ungrammatical. If (10b) is derived only by a syntactic process that makes a preposed element bind the rest of the sentence (as Saito and Hoji (1983) suggest), (10b) should be grammatical. Given (9) on the one hand and (10) on the other hand, it seems safe to assume that dislocation of arguments within simple clauses is ambiguous: It may be derived by scrambling with no change in binding (cf. 9/10), or by some syntactic process, which changes binding and which is usually accompanied by a special intonation or stress (cf. 8/9).

Unlike clause-bounded scrambling, so-called long-distance 'scrambling' always gives rise to stress or Focus on 'scrambled' elements and it affects binding, as shown in (11), which is repeated from Appendix II of Chapter 2.

- (11) a. caki{<sub>1</sub>/<sub>3</sub>}-lul Chelswu<sub>1</sub>-ka [Yenghi<sub>3</sub>-ka cohaha-n-ta-ka]  
           self-obj                               -sub                               -sub like-pres-em-comp  
           sayngkakha-ess-ta  
           think-past-em  
           "Chelswu<sub>1</sub> think that Yenghi<sub>3</sub> likes self{<sub>1</sub>/<sub>3</sub>}.  
       b. caki{<sub>1</sub>/<sub>3</sub>}-uy tongsayng-lul Chelswu<sub>1</sub>-ka [Yenghi<sub>3</sub>-ka  
           self-gen       brother-obj                               -sub                               -sub  
           cohaha-n-ta-ka] sayngkakha-ess-ta  
           like-pres-em-comp think-past-em  
           "Chelswu<sub>1</sub> thinks that Yenghi<sub>3</sub> likes self{<sub>1</sub>/<sub>3</sub>}'s brother."

The same is not true when displacement of arguments takes place in simple clauses; in (12), as in (10), displacement of arguments may fail to affect binding (unless caki is heavily emphasized); (12b) represents the normal interpretation of the sentence.<sup>11</sup>

- (12) a. Chelswu<sub>1</sub>-ka Yenghi<sub>2</sub>-lul caki<sub>{1/2}</sub>-cip-ulo ponay-ess-ta  
           -sub                  -obj self-house-to      send-past-em  
           "Chelswu<sub>1</sub> send Yenghi<sub>2</sub> to self's<sub>{1/2}</sub> house."  
       b. caki<sub>{1/2}</sub>-cip-ulo Chelswu<sub>1</sub>-ka Yenghi<sub>2</sub>-lul ponay-ess-ta  
           self-house-to                  -sub                  -obj send-past-em  
           "Chelswu<sub>1</sub> send Yenghi<sub>2</sub> to self's<sub>{1/2}</sub> house."

The change in binding in (8/9) suggests that both clause-bounded and long-distance displacement of arguments may be derived by some syntactic process, which leads to a change in binding. On the other hand, clause-bounded displacement of arguments may also be a PF phenomenon, as the binding facts in (9-10 and 12) show.

The crucial point here is that both Hungarian and Korean employ nonsyntactic and clause-bounded scrambling that does not change binding. As for a syntactic mechanism governing (8/9) with a change in binding and (12), we suggest that they are also derived by left-dislocation given that the English left-dislocation counterparts of (8/9) and (12) in (13) also show the same binding facts as those in (8/9) and (12) (see also Appendix II of Chapter 3):

- (13) a. \*He<sub>1</sub> has not read the letter Mary sent to John<sub>1</sub>.  
       b. The letter Mary sent to John<sub>1</sub>, he<sub>1</sub> has not read.  
       c. We<sub>1</sub> sent them<sub>2</sub> to each other's<sub>{2/??1}</sub> offices.  
       d. To each other's<sub>{2/??1}</sub> offices, we<sub>1</sub> sent them<sub>2</sub> there.

To conclude, leftward dislocation of arguments is ambiguous; it is derived by a syntactic process (cf. 11) or it is an instantiation of scrambling. We also conclude, given the contrast between (11) and (12), that scrambling

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<sup>11</sup> This is one of the widely-accepted examples in which no subject-oriented property of caki is attested to.

is clause-bounded. (We will discuss later why it is clause-bounded and what causes the clause-boundedness.) Note that unlike (11), whether (12) is derived by left-dislocation or by scrambling, binding in (12) is not affected. The point is, however, that (11a and b), which instantiate long-distance dislocation, have no scrambling reading with respect to binding, which says that scrambling is clause-bounded.

So far, we have shown that regardless of syntactic configurationality, clause-bounded scrambling as a PF phenomenon is observed both in Hungarian and in Korean. We have also shown, based on Korean, that rightward displacement of arguments in simple clauses is ambiguous; it is either scrambling (as a clause-bounded PF phenomenon) or derived by a syntactic process that is not clause-bounded.

#### 4.4.2. Deep and surface configurationality

We have seen that a certain version of displacement of arguments in a simple clause (which we call scrambling) is a nonconfigurational phenomenon and fails to affect binding. If scrambling is a nonconfigurational phenomenon, the configurationality issue with respect to scrambling has nothing to do with whether a language employs a VP node in syntax, given the fact that in Korean, which employs scrambling, the VP node is active in syntax.

##### 4.4.2.1. Previous approaches to configurationality

One serious suggestion on configurationality is that of Hale's configurationality parameter in terms of the projection principle, which is stated below (but cf. Hale (1985)):

- (14) The configurationality parameter (CP) (Hale (1983;26))
- In configurational languages, the projection principle holds of the pair (LS,PS).
  - In non-configurational languages, the projection principle holds of LS alone.

This parameter implies that in both languages a and b, LS is configurational, but that in nonconfigurational languages, configurationality becomes loose at PS (PS roughly corresponds to S-structure (perhaps including LF and PF)) in the present framework). If scrambling means that a language is a b type language, the parameter (14) does not sufficiently explain scrambling in the two languages; Korean can not be a b type language, because Korean is syntactically configurational (PS-configurational in Hale's sense).

One might suggest that the level of rule application differs from language to language: In Korean, rules such as binding, passive, and the like, which are supposed to be linked with configurationality (cf. Hale (1983)), apply in the component of LS or they are not syntactic, while in Hungarian, they apply in the component of PS; scrambling applies in the component of PS in both languages. This suggestion, however, has some empirical shortcomings. For example, some instantiation of the passive construction in Korean is syntactic since the passive process may be nonlocal, as shown in (15). If the passive process in Korean were lexical, then the passive process would be local or would not be cyclic (cf. Wasow (1977)).<sup>12</sup>

- (15) ku-ka (horangi-eykey) mek-hi-ess-ta-ko (mit-e ci-n-  
 he-sub tiger-by eat-pass-past-em-comp (believe-Inf pass-pres-  
 ta-ko) mit-e ci-n-ta  
 em-comp) believe-Inf pass-pres-em

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<sup>12</sup> Assuming that ci- is a combination of ci- (Vx) and null passive predicate [+pass], for the sake of convenience, we gloss ci- as pass; remember that the null passive predicate is selected by ci- (get to be/become) in Korean (cf. Section 4.3.).

"He is believed (by someone to be believed by someone) to have been eaten (by a tiger)."

It seems that the passive process in Korean is syntactic, as we also argued in Section 4.3.) and therefore that the assumption about the level of rule application (i.e., that the passive process applies in the component of LS in Korean, while it applies in the PS component in Hungarian) is in error. We would need a further division of b type languages under the parameter in (14), which may be undesirable.

Another approach to scrambling argues that certain languages employ different instantiations of X-bar theory or complex X-heads at D-structure, showing varying degrees of configurationality (cf. Kiss (1985) and Whitman (1984)). However, such an approach implies (conceptually and/or technically) different notions of grammatical relations, X-bar theory, or Case theory from those widely assumed. A question one can raise is whether fundamental varieties of the principles of grammar should be motivated. In addition, as we discussed above, the configurationality issue with respect to scrambling has nothing to do with syntactic configurationality. Scrambling in Korean does not represent the fact that Korean syntactic configurationality differs from syntactic configurationality in other languages, such as English. Even Kiss's framework that adopts 'flat' structure at a certain level should, in fact, allow the hierarchical structure (LS) in order to explain some hierarchical phenomena such as Case assignment<sup>1,2</sup> and anaphor binding in Hungarian. If Hungarian employs a configurational structure at a certain syntactic level, it is presumably a universal one where a VP node is present

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<sup>1,2</sup> Kiss suggests that Hungarian employs a Case-hierarchy associated with a theta-hierarchy.

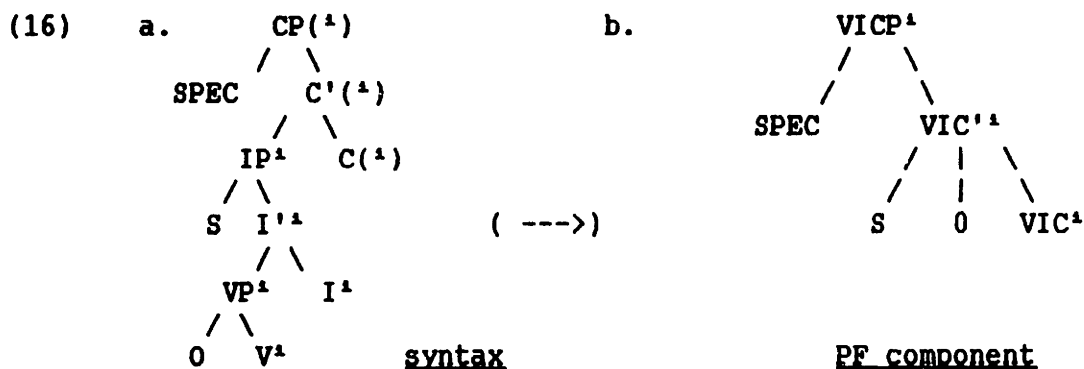
#### 4.4.2.2. An RR approach to configurationality

If configurational structure can be 'flattened' in the PF component or in syntax by an independently motivated transformational RR, as we suggested in Section 3.3., we need not motivate a X-bar theory that allows a projection of a combined category even at D-structure in certain languages. We also do not need parameters with respect to the projection principle since RR does not affect the projection principle. We suggest that there is a configurational structure, say, D-structure, in which every X-head (V or INFL, for example) is independently projected (cf. the syntactic position with the universality of configurational D-structure in Chapter 3).<sup>14</sup> Overt RR is, then, motivated to make configurational structure 'flat' at different levels in Korean and Hungarian. An advantage of this suggestion is that the notions of grammatical relations, Case theory, and theta-theory remain unique and universal, as is desirable from the perspective of learnability. The other advantage is that the suggestion correctly implies that syntactic configuration would differ among languages with scrambling because of different parameters on the level of rule application.

If scrambling is possible only between sister nodes, Korean clauses should have structure (16b) in the PF component, given that Korean allows (clause-bounded) scrambling.

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<sup>14</sup> Remember that we are assuming here that the existence of the INFL node is universal; VP should be selected by I so that its logical subject argument is syntactically present (see also Williams (1984b) and Rothstein (1983) for the universal nature of VP). Since Tense elements of INFL also complete (root) clauses semantically, both semantics and some conceptual adequacy advocating the unique universal nature of principles of UG, such as the notions of grammatical relations or Case theory, lead to the universality of an independent INFL node at a certain level.



In Korean, in which VP is syntactically active, C-to-V surface-overt RR applies in matrix clauses, forming VIC complex X-head projections at PF. Remember that C-to-I RR and I-to-V RR are independently-motivated: In syntax, I-to-V (covert) RR applies independently because of the properties of I and C-to-I RR should also apply in the case of matrix clauses because a matrix CP is open, being ungoverned (cf. Section 4.1.). Given that C and I are always amalgamated with V in Korean, in the PF component, overt categorial amalgamation applies (surface-overt RR), as in (16b). After the application of surface-overt RR, S (subject) and O (object) are read as sister nodes within the VIC projection, preserving the peripheral nature of an X-head. The assumption that scrambling is possible only between sister nodes guarantees that scrambling among S and O is possible in the structure in (16b). Since a VIC is not morphologically amalgamated to another VIC (unless one of them projects a small clause), scrambling is clause-bounded.

In Korean, in every clause, C and I elements are both amalgamated on verbal morphology. Since V-to-I or I-to-C head-movement is not an option, VIC amalgamation always implies categorial amalgamation at PF, which suggests that every clause in Korean is a domain of scrambling.<sup>15</sup> Suppose

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<sup>15</sup> While VIC amalgamation triggers clause-bounded scrambling, if VIC and V are overtly RRed, scrambling would not be clause-bounded: In fact, in the -i- causative construction, in which two predicates are morphologically amalgamated, a causer, a causee, and an embedded object are freely scrambled, as shown in (1):

that C-to-V surface-overt RR (not deep-overt) applies in any clause in Korean. Then, given the notion of open/closed projections (cf. Section 4.1.), we would naturally expect that in syntax any CP's, including embedded CPs, are open in Korean. However, that is simply not true. Consider the following three constructions, which contain embedded VIC morphological amalgams: V-to-V RR (17a), ECM (17b), and control (17c) constructions (Note that in these constructions embedded complementizers are all overtly realized.)

- (17) a. Chelswu-ka pwumonim-lul mosi-e-ya ha-n-ta  
           -sub parentsH-obj serve-Inf-comp(should) do-pres-em  
           "Chelswu should serve (his) parents." 'restructuring'
- b. Chelswu-ka Yenghi-lul khu-0-ta-ko mit-nun-ta  
           -sub -obj tall-Inf-em-comp believe-pres-em  
           "Chelswu believes Yenghi to be tall." ECM
- c. Chelswu-ka pwumonim-lul mosi-lye-ko keylsimha-ess-ta  
           -sub parentH-obj serve-Inf-comp decide-past-em  
           "Chelswu decided to serve (his) parents." control

As we saw in Chapter 3 and in Section 4.1., Vx-to-Vk (covert) RR applies to the 'restructuring' construction (17a); C-to-I (deep-overt) RR applies to the ECM construction (17b); and neither V-to-V nor C-to-I RR applies to the control construction (17c). In (17a), Vx-to-Vk covert RR takes place in syntax and C-to-Vk amalgamation in the PF component (C-to-Vk surface-overt RR). In (17b), C-to-I (deep-overt) and I-to-V (surface-overt) RR apply, forming IC<sub>1</sub> and IV<sub>2</sub> M/R-complex words at PF. In both cases, the C-I-V amalgam is obtained at the surface. Thus scrambling in the embedded clause

- 
- (1) a. Chelswu-ka ai-{lul/eykey} kulimchayk-lul po-i-n-ta  
           -sub child-obj/dat picture-book-obj see-cause-pres-em  
           "Chelswu made the child see a picture-book."  
       b. kulimchayk-lul ai-{lul/eykey} Chelswu-ka po-i-n-ta  
       c. ai-{lul/eykey} Chelswu-ka kulimchayk-lul po-i-n-ta .. etc.

In Section 4.2., we suggested that V-i- is an M-complex word. However, the fact that scrambling is possible in (1) suggest that V-i- may also be an M/R-complex word (this assumption does not affect the argument given in Section 4.2.): po-i-n-ta (V-caus-pres-em) is RRed through VIC-to-VIC overt RR in the PF component. If so, scrambling is not clause-bounded and is possible whenever overt RR makes arguments sisters.



is guaranteed in (17a and b). On the other hand, (c) does not employ C-to-I or C-to-V RR in syntax. Thus the C-to-V overt RR that causes morphological amalgamation should apply in the PF component (but not in syntax) so that the C-to-V RR effects do not appear in syntax. Let us call this type of RR surface RR.<sup>16</sup> We suggest that surface RR explains the C-I-V amalgam in the control construction in Korean.

In fact, scrambling seems to be an option not only for main clauses but also for embedded clauses in Korean. Although judgments are delicate, a displaced object in an embedded clause may have a focus reading, or may have the scrambling reading. Thus binding may fail to change when displacement of arguments is observed in embedded clauses, as shown below.

- (18) a. \*Yenghi-nun [ Chelswu<sub>1</sub>-cip-ulo ku<sub>1</sub>-ka phenci-lul  
           -TOP Chelswu-house-to he-sub letter-obj  
           ponay-ess-ta-kol mit-nun-ta  
           send-past-em-comp do-pres-em (cf. 10b)  
           "Yenghi believes that he<sub>1</sub> sent a letter to Chelswu's<sub>1</sub> house."  
   b. Yenghi<sub>1</sub>-nun [ caki<sub>1</sub>/, }-uy emeni-lul nwukwu<sub>1</sub>-ka salangha-0-nun-ci  
           -TOP self-gen mother-obj who-sub love-pres-comp-Q  
           kwungkumha-ers-ta  
           wonder-past-em  
           "Yenghi<sub>1</sub> wondered who<sub>1</sub> loves self<sub>1</sub>/, } mother." (cf. 6a)  
   c. ?Chelswu<sub>1</sub>-cip-ulo Yenghi-nun [ ku<sub>1</sub>-ka phenci-lul ponay-ess-ta-kol  
           Chelswu-house-to -TOP he-sub letter-obj send-past-em-comp  
           mit-nun-ta  
           believe-pres-em  
           "Yenghi believes that he<sub>1</sub> sent a letter to Chelswu's<sub>1</sub> house."

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<sup>16</sup> Remember that RR is triggered by the feature [+CD] and that RR can also be obtained by 'phonological' richness. In fact, nothing prevents RR from applying in the PF component; if the projection principle and X-bar constraints hold at a sublevel of PF (i.e., morphological structure, as we will suggest in Chapter 5), the rules affecting categories may be also available in (a subcomponent of) PF. However, unlike the RR that applies at D-structure/in syntax, the effects of surface RR cannot be read off at LF and therefore no overlapping effects are observed. Since surface RR is always accompanied by morphological amalgamation (or by head-movement) and since surface RR connects S-structure to a sublevel of PF, one may suggest that surface RR is a variant of overt RR devoid of all the semantic effects of RR, having effects that can be read off only at the sublevel of PF (morphological structure).

The binding fact in (18a) is the same as that in (10b). Crucially, when to Chelswu's house is dislocated to the sentence initial position (long-distance 'scrambling'), the coreferential reading between Chelswu and he is possible, as shown in (18c) (cf. 18a). The contrast between (18a) and (18c) is exactly what we predicted, showing that scrambling is clause-bounded. In (18b), no Weak Cross-Over effect is observed (i.e., the scrambled reading is obtained), as expected.

If Korean scrambling is triggered by surface-overt or surface RR, we suggest that a certain instantiation of RR, which makes subject and object arguments sisters, applies to Hungarian clauses at D-structure/in syntax, since they allow scrambling among arguments, as in Korean. In Hungarian, the RR that causes scrambling must be deep-overt (RR at D-structure and head-movement in syntax), given Kiss's evidence that Hungarian does not employ the VP node in syntax.<sup>17</sup> In fact, there is evidence that Hungarian I and V are 'deeply' related to each other; while Korean has the auxiliary verb do (ha-) and the copular verb (-i-), Hungarian does not employ any auxiliary system (no do verb; cf. Horvath (1986))<sup>18</sup> or copular verb (cf.

<sup>17</sup> Horvath (1986;55) argues that Hungarian employs a VP node since it shows VP deletion:

(i) Mari az asztalra tett néhány tányért, és Attila ugyancsak  
       the table-onto put a-couple-of plates-acc and likewise  
       (az asztalra tett néhány tányért)  
       the table-onto put a-couple-of plates-acc

"Mary put a couple of plates on the table, and Attila did too."

There are two reasons to suspect that (i) may not provide evidence in favor of the existence of an S-structure VP node. One is that ugyancsak is not an INFL element (no auxiliary verb in Hungarian) and the other is that, in contrast to VP movement, VP deletion may be base-generated at D-structure (before the application of RR), whose interpretation is read off at LF.

<sup>18</sup> Hungarian, however, employs auxiliary predicates (Vxs), which select infinitival complements. One instantiation is shown in (i), which is from Marác (1987).

(i) a. János találkozni akar Marival  
       John-Nom meet-Inf want-3sg Mary-Instr  
       "John wants to meet Mary."

Rochemont (1986)). It seems that Hungarian exhibits a 'tighter' relation between INFL and V than Korean does, as in V-2 languages, employing I-to-V deep-overt RR. (As we saw in Section 4.1., when I-to-V RR is deep-overt, do-support is not available.)

The situation in Hungarian is not as simple as that in Korean, because I-to-V deep-overt RR does not make subjects and objects sister arguments and because Hungarian clauses employ language-specific restrictions concerning the Focus position, which are described by Horvath (1986) in detail; Hungarian also differs from Korean RR since there is no CIV

- 
- b. János látni akar-ja/\*-0 Marit  
 John-Nom see-Inf want-3sgdef/indef Mary-Acc  
 "John wants to see Mary."
- c. Én látni akar-lak téged  
 I-Nom see-Inf want-1sg2sg you-Acc "I want to see you."
- (11) a. János találkozott Marival  
 John-Nom meet-past-3sg Mary-Instr "John met Mary."  
 b. János látta Marit  
 John-Nom see-past-3sg Mary-Acc "John saw Mary."
- Marác (1987) notes that akar agrees with the subject, as shown in (1a) and with the object of the infinitive, as shown in (1b and c): (1) verbs in Hungarian may conjugate depending on the definiteness of their objects; in (1b), akar agrees with the object of the embedded látni in definiteness (2) Hungarian has an agreement marker which expresses 1sg and 2sg at the same time; in (1c), we see that the verb agrees with the embedded object. In addition, scrambling is allowed in (1). Nevertheless, the kinds of Case which the object takes remains the same whether the verb is embedded, as in (1a and b), or not, as in (1ia and b). This monoclausal nature of the sentences in (1) reminds us of 'restructuring' (V-to-V RR). We, thus, suggest that covert RR applies to the matrix verbal akar and an embedded verbal, but that the Hungarian V-to-V RR produces different syntactic effects (cf. scrambling) due to its grammar system. Notice that the existence of auxiliary predicates does not contradict the lack of certain auxiliary systems in this language.

amalgamation at the surface. Hungarian, which is arguably head-initial,<sup>19</sup> has an independent complementizer on the right side of a wh-phrase.

(19) Az egyetlen ember, akit<sup>1</sup> nem tudom, hogy mikor láthat Mari t<sup>1</sup> János.  
 the only man whom not know-I that when can-see Mary-nom John  
 "The only man who<sup>1</sup> I don't know when Mary can see t<sup>1</sup> is John." (cf. 21b in Kiss (1985))

As we see in (19), the complementizer hogy precedes a wh-phrase mikor. This means that the wh-landing site is not the SPEC of CP in syntax. In fact, it has been argued that the Focus position and the wh-operator position are identical -- on the immediate left side of V -- in this language and that the complementizer also precedes Focus, as in wh-sentences.<sup>20</sup>

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<sup>19</sup> It may be controversial to say that Hungarian is head-initial. Marác (p.c.) informs us that Hungarian has historically been an SOV language. In addition, the structure of PP is also head-final. While finite clausal complements usually appear on the right side of V, as in head-initial languages (cf. 19), modal auxiliaries which take infinitival complements (cf. (1) in fn. 18) appear on the right side of V, as in head-final languages. Finally, according to Szabolcsi (1983), the functional head Komp of NP in Hungarian, which is equivalent to COMP in clauses, appears on the left side of its complement. This all suggests that Hungarian employs a 'mixed' head parameter, as in Chinese (cf. Huang (1982) and Travis (1984); also see Koopman (1984)). However, we assume here that Hungarian clauses have the head-initial properties, having the VO order within VP. Note also that if the discussion in fn. 54 in Section 3.3. is on the right track in saying that the head-parameter of [+CD] categories determines that of M/R-complex X-head projections, then as long as category IP is head-initial, I-to-V RR makes IVP head-initial whether VP is head-final or head-initial.

<sup>20</sup> In Horvath (1986), the subject János intervenes between hogy and a focused element or a wh-phrase. According to Kiss, the subject is a topicalized element. Given the topic nature of the subject, it is not so surprising that Horvath assumes that the Subject-Focus/wh-phrase-Verb is a neutral word order in Hungarian. Assuming that Kiss is right, we may suggest that in Hungarian T represents an X-head, like F, which we consider as an X-head, and that C selects a TP, and T an FP.

(1)

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      CP
     /  \
    ..  TP
       /  \
      ... FP ...
  
```

Below, we will ignore TP in the Hungarian clausal structure; whether we assume (1) or (21) below will not affect our discussion.

(20) (modified example of (18b) in Horvath (1986;99))

A szomszédok látták hogy MÁRIT csokolta János meg.  
 the neighbors saw that MARY-acc kissed perf.prt.  
 "The neighbors had seen that John kissed MARY."

To capture the restricted distribution of the Focus/wh-position, we propose that there is a Lexical item that can be categorized as F and that F represents a functional category in syntax. The function of F is: F assigns a feature [+Focus] to the SPEC position of FP based on the semantics of F and therefore an element in the SPEC of FP is assigned [+Focus].<sup>21</sup> We suggest that F is projected between C and INFL in Hungarian;<sup>22</sup> C takes an FP as its functional complement (cf. fns. 20 and 22) and F takes an IP. Because C is independent in Hungarian and because IV amalgamation alone does not trigger the 'flat' structure that allows scrambling of arguments, we arrive at the following overt RR process for Hungarian, which triggers FIV complex X-head projections: Given that a matrix CP should be

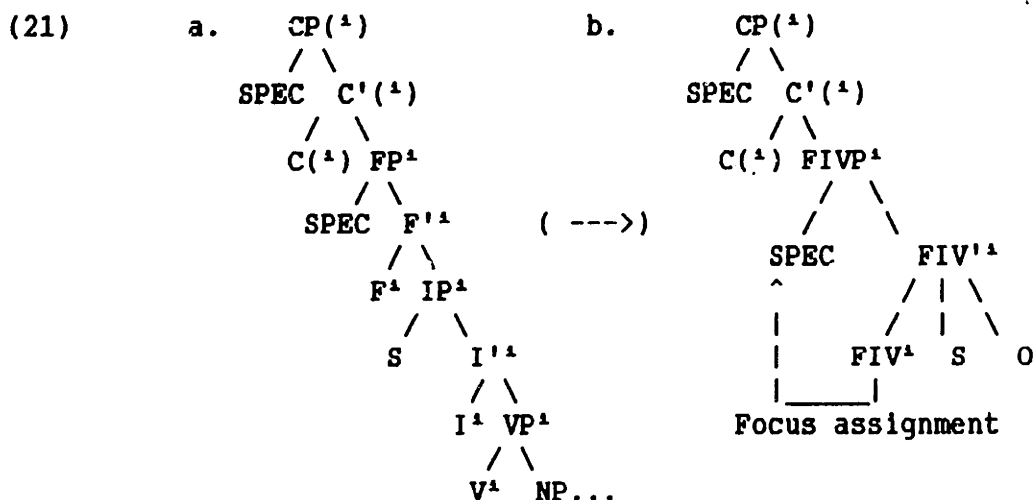
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<sup>21</sup> Horvath (1986) suggests that Focus is a grammaticalized feature of V in Hungarian so that V assigns [+Focus] (cf. Jackendoff (1972)). We suggest that [+Focus] is assigned by an F category that is categorially amalgamated with V (cf. 21).

<sup>22</sup> Given the notion of RR, it is conceivable that intermediate projections of functional categories appear between IP and VP. Pollock (1987) cited by Chomsky (class lectures; Fall, 1987) postulates categories such as AGRP or NEGP between IP and VP, citing the cross-linguistically different properties of these categories to explain certain differences in auxiliary and adverb positions (cf. also Emonds (1978)) in French and English. Under this approach, AGRP or NEGP should be RRed with IP since they would form inherent barriers. Remember also that we suggested in Section 4.1. that no head-movement to functional X-heads is possible (cf. the HMC reformulated in Chapter 5).

As we will see below, the position of functional categories such as FP may differ from language to language (the selectional properties of functional categories may differ cross-linguistically). It is thus possible to conceive that the selectional properties of AGR or NEG category differ cross-linguistically and that depending on their (language-specific) selectional properties or on the domain of RR, structure with AGRP or NEGP may differ. We leave open a specific analysis of the data Pollock (1987) (and Emonds (1978)) discusses for further research.

open, CP and FIVP should also be covertly RRed so that CP takes [+V] when CP is a matrix clause.



Since the SPEC of FIVP<sup>1</sup> is the Focus/*wh*-operator position in Hungarian, we suggest that *wh*-elements are also assigned [+Focus] by F and that therefore *wh*-elements should lie in the SPEC of FIVP to be assigned [+Focus] through the government of FIV<sup>1</sup>. By suggesting that [+Focus] is assigned by F, we implicitly suggest that [+Focus] obtains the same status as Case (as Horvath (1986) also suggests): [+Focus] is assigned under the government of a proper governor, like Case, and the semantics of [+Focus] are determined by the semantics of an F category. From the point of view of the licensing theory of transformation, Focus-movement is then motivated by the lack of [+Focus] in certain NP's that are base-generated in non-Focus position.<sup>23</sup>

<sup>23</sup> In Hungarian, it seems that the reason why *wh*-phrases move at S-structure is that a language may employ certain positions for the licensing of *wh*-phrases probably because *wh*-elements should be assigned [+Focus]; if the SPEC of CP is a scope position at LF universally, then *wh*-phrases in the SPEC of FP at S-structure should move to the SPEC of CP in LF. From our point of view, in English, the S-structure licensing position of *wh* phrases and the LF scope position of *wh*-phrases are identical so that they are licensed and receive scope in the SPEC of CP; perhaps *C<sub>wh</sub>* in English (cf. Section 4.1.) may be, in fact, a combination of F and C so that the SPEC of *C<sub>wh</sub>* is assigned [+Focus] by FC.

Languages (such as Chinese, Japanese, or Korean) that employ *wh*-in-situ, *wh*-phrases may be then syntactically licensed in-situ; but in LF, they should move to receive scope. This is, in fact, exactly consistent

I and V are overtly RRed in syntax in Hungarian, like V-2 languages, and F and IV should also be RRed. To explain F-IV overt RR in Hungarian, suppose that F alone cannot assign [+Focus] and that F should be [+V] to be a proper [+Focus] assigner. Then F-to-V overt RR should apply in Hungarian; F-to-IV RR has to be overt in syntax so that F can be a proper Focus assigner. F-to-IV RR makes subjects and objects in the sister relation, as shown in (21b), and consequently, (clause-bounded) scrambling is possible. If F and IV form an R-complex word, we would not expect scrambling in Hungarian since IV projections place the subject structurally higher than the object. In short, both the employment of the F category with a certain selectional property and the requirement that a [+Focus] assigner is lexical [+V], which trigger F-to-IV overt RR, make subjects and objects sister arguments in Hungarian. In this way, RR and the postulation of an F category explain Hungarian scrambling and the distribution of Focus as well.

The present RR approach to scrambling that employs an F category does not present any serious empirical problems. It has been argued that neither sentential nor nonsentential adverbials (nor any element(s)) come between Focus/wh-operators and verbs (see Horvath (1986) for the distribution of adverbials):<sup>24</sup>

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with the Focus parameters suggested by Horvath: wh-elements can be assigned [+Focus] either in-situ or in certain position. We may thus suggest that wh-operators or focused elements have to be licensed by being assigned [+Focus] at S-structure (being a 'Focus') and by being assigned scope at LF (being an operator), obeying different licensing conditions.

<sup>24</sup> Horvath (1986) notes that some classes of PPs must appear immediately to the left of V (the Focus position) without having a Focus meaning when there is no other Focused element:

- (i) Az asztalra tette Mari az edényeket (cf. Horvath (1986;64))  
 the table-onto put the dishes-acc  
 "Did Mary put the dishes on the table?"

- (ii) \*Tette Mari az asztalra az edényeket?

- (22) \*Mit/AZ EDÉNYEKET hirtelen tett Marie az asztalra  
 what-acc/THE DISHES-ACC suddenly put the table-onto  
 "What did Mary suddenly put on the table?/ It is THE DISHES that  
 Mary put on the table." (cf. Horvath (1986;70-1))

In the present analysis, we explain the ungrammaticality of (22) in terms of an independently-motivated adjacency requirement of [+Focus] assignment: Focus and a [+Focus]-assigning element are strictly adjacent (cf. Horvath (1986;131-3) for a locality condition on [+Focus] assignment).

There is also evidence that the level derived by deep-overt RR is empirically significant: In addition to Case assignment and binding condition A (which are assumed to apply at a certain configurational level in this language), Hungarian has a binding phenomenon which needs independently-motivated configurational and nonconfigurational syntactic levels. Consider the following Hungarian data:<sup>25</sup>

- |                                                                                  |                                                                           |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| (23) a. * <u>János</u> szereti <u>János</u> apját<br>"John loves John's father." | b. <u>János</u> apja szereti <u>Jánost</u><br>"John's father loves John." |
| (24) a. <u>János</u> szereti <u>magát</u> .<br>"John loves himself."             | b. * <u>Maga</u> szereti <u>Jánost</u><br>"Himself loves John."           |
| (25) a. <u>János</u> szereti az <u>ő/pro</u> apját<br>"John loves his father."   | b. Az <u>ő/pro</u> apja szereti <u>Jánost</u><br>"His father loves John." |
| (26) a. * <u>János</u> apja szereti <u>őt/pro</u><br>"John's father loves him."  | b. * <u>ő/pro</u> szereti <u>János</u> apját<br>"He loves John's father." |
| (27) a. * <u>János</u> szereti <u>őt/pro</u><br>"John loves him."                | b. * <u>ő/pro</u> szereti <u>Jánost</u><br>"He loves John."               |

The grammaticality of (25b) or (27a) does not say anything about the clausal configurationality, given binding condition B. The unacceptability of (26-27), however, shows that subjects and objects are sisters, as argued

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put the table-onto the dishes-acc  
 We have no systematic explanation of this fact; we simply assume that a certain class of PPs should move to the Focus position if the position is empty, without being assigned Focus in the Focus position. Horvath, on the other hand, considers (i) as deriving through movement of  $X^{max}+V$ , in which  $X^{max}$  is a Focus position; under her analysis,  $X^{max}+V$  forms a small VP, which has some serious theoretical problems which we will not discuss here.

<sup>25</sup> Judgments were provided by Anna Szabolcsi and Michael Brody (p.c.), who confirm that the contrast in (23) is clear. Maracz (1987) also provides similar data with the same grammaticality judgments as those in (23-27).



in Kiss (1985). However, in (23), we have an S-O asymmetry, like the anaphor binding in (24); the contrast between (23a) and (23b) is explained only if subjects are higher than objects (when condition C applies).

As Rizzi (p.c.) has pointed out, it seems necessary to motivate the notion of P(ronoun)-free (cf. Lasnik (1986b)) and to have two versions of binding condition C in Hungarian to explain the contrast between (23a) and (23b):<sup>26</sup>

- (28) (i) R-expressions are A-free.  
 (ii) R-expressions are P-free.

The Hungarian data suggest that (i) applies at the configurational level (21a), ruling out (23a), (24b), (26b), and (27b); condition (ii) applies at the nonconfigurational level (21b), ruling out (26a), and (27a). If we are right, the dichotomy of condition C, proposed by Lasnik, is also achieved in terms of the parameterization on the levels of rule application in

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<sup>26</sup> Lasnik (1986b) proposes, by examining binding in Thai and Vietnamese, that condition C is really two conditions, which involve reference to binders as well as bindees: one uses the notion of A-free (cf. Chomsky (1981)) and the other uses the notion of pronoun-free (cf. 28i and ii). The notion 'X-free' may be roughly stated as follows: A is X-free with respect to B when B has the property of X if B does not c-command A. Lasnik notes that while the condition in terms of A-free (28i) shows some variation cross-linguistically, the condition in terms of pronoun-free (28ii) is universal: English employs (28i); Vietnamese employs a version of (28i): An R-expression is free in its governing category; Thai does not employ (28i) at all. However, all three languages employ (28ii). Incidentally, Korean is like Thai; R-expressions in Korean may be bound by R-expressions but not by pronouns, as shown below:

- (i) {Chelswu<sub>1</sub>/\*ku<sub>1</sub>}-ka Chelswu<sub>1</sub>-ka ttokttokkha-0-ta-ko sayngkakha-n-ta  
           he-sub                   -sub intelligent-pres-em-comp think-pres-em  
       "{Chelswu<sub>1</sub>/He<sub>1</sub>} thinks that Chelswu<sub>1</sub> is intelligent."  
 (ii) {Chelswu<sub>1</sub>/\*ku<sub>1</sub>}-ka Chelswu<sub>1</sub>-lul cohaha-n-ta  
           he-sub                   -obj like-pres-em  
       "{Chelswu<sub>1</sub>/He<sub>1</sub>} likes Chelswu<sub>1</sub>." (cf. (20-23) in Lasnik (1986b))  
 (iii) {Chelswu<sub>1</sub>/\*ku<sub>1</sub>}-ka Chelswu<sub>1</sub>-uy tongsayng-lul cohaha-n-ta  
           he-sub                   -gen brother-obj like-pres-em  
       "{Chelswu<sub>1</sub>/He<sub>1</sub>} likes Chelswu<sub>1</sub>'s brother."

It seems that the sentences with he and the ones with Chelswu exhibit a clear contrast; it is an exaggeration to say that (i-iii) with Chelswu (instead of ku) are ungrammatical.

Hungarian. The binding phenomenon in Hungarian confirms the reality of the double structure -- configurational and nonconfigurational -- in Hungarian. Just as move-alpha links D-structure with S-structure, in which binding applies in English, deep-overt RR may link a level in which condition Ci applies with another level in which condition Cii applies in Hungarian.

#### 4.4.2.3. The two requirements of scrambling

It seems that whenever a language employs scrambling, a morphological mechanism (overt case marking systems (Korean/Hungarian) or rich verbal inflections is also employed. The morphological mechanism may be necessary for scrambling because we need to distinguish between subjects and objects. In a language with no morphological mechanisms, scrambling would block the way to distinguishing between subjects and objects, since only word order would reflect the configurational structure: when a subject precedes an object, then the subject is hierarchically higher than the object; when an object precedes a subject, then the object is higher than the subject. Since only word order gives information on the grammatical relations of arguments, change in word order would always be associated with change in grammatical relations of arguments.

Morphological mechanisms alone do not seem to cause scrambling. Hungarian NPs are argued as configurational and nonscrambled even though the elements within NPs have a way to avoid the ambiguity in their categorial or grammatical functions (cf. Szabolcsi (1983)). We thus suggest that overt RR does not apply to X-heads within NPs in Hungarian and that morphological mechanisms provide a necessary but not a sufficient condition for scrambling; what makes scrambling possible may be RR, which causes a 'flat' structure. In short, we suggest that both RR that causes nonconfi-

gurational structure and morphological mechanisms are necessary conditions for scrambling.<sup>27</sup>

In contrast to Hungarian NPs, scrambling within NPs is possible in Korean. Any instantiation of scrambling is possible among elements bracketed with [] in (29) except for the head book:<sup>28</sup>

- (29) [Chelswu-uy] [Yenghi-ka sa-cwu-0-n] [ku] [pissa-0-n] chayk  
           -gen -sub buy-ben-pres-comp the expensive(-be)-pres-comp book  
       "Chelswu's (the) book which is expensive, which Yenghi bought for him"

We simply assume that the scrambling in (29) is also triggered by RR. What the structure of NP in (29) is and how RR applies remain unanswered here. We need a specific analysis of NP structure in Korean, which is beyond the scope of the present study.

To summarize, we have shown that scrambling in Hungarian and Korean is triggered by the two factors: nonconfigurational structures obtained by RR and rich morphological systems. One correct consequence of the present RR approach to scrambling is that scrambling does not automatically imply D- or S-structure 'nonconfigurationality'; parameterization associated with the levels of RR application accounts for the fact that Hungarian 'nonconfigurationality' is 'deeper' than Korean surface 'nonconfigurationality.'

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<sup>27</sup> It has been noted that V-2 languages (especially the German and Icelandic languages with rich case-marking systems) which employ I-to-V deep-overt RR show relatively free word order, unlike non-V2-languages such as English. Seeming scrambling in V-2 languages may derive from a syntactic process. (See Holmberg (1986) for some analysis on object preposing in V-2 languages.) Given that the displacement of arguments in Korean is ambiguous, it is, however, possible that the displacement of arguments in V-2 languages is also ambiguous.

<sup>28</sup> In Korean, the determiner ku and genitive NP (Chelswu-uy) can appear at the same time; we may assume that there is more than one SPEC for nominals in Korean, as argued for Italian or Old English. In addition, all adjectives end with the morpheme -n, which is identical to the complementizer of relative clauses. Just as multiple adjectives are possible, multiple relative clauses are also possible in Korean.

#### 4.4.3. The position of FP

We have seen that in Hungarian, the Focus position is designated and that a F[+V] assigns [+Focus] to the SPEC of FP. Certain cross-linguistic data suggest that the Focus positions differ among languages that employ designated Focus positions. The designated Focus position found in Hungarian is also found in other languages such as Aghem and Basque;<sup>29</sup> the Focus positions in these languages, however, differ from that of Hungarian. In this subsection, we discuss the Focus positions in Basque and Aghem to show that F categories are cross-linguistically motivated; we also show that English employs F categories in certain constructions such as clefting construction.

##### 4.4.3.1. Basque

In Basque, there is a generalization on the distribution of Focus phrases proposed by De Rijk (1978) (cited by Horvath (1986;123)), as in (30) (the generalization in (30) is supported by the data given in (31)): In (31b), a Focused element is not adjacent to V and therefore (31b) is not grammatical.

(30) Whatever constituent is focused must immediately precede the verb.

- (31) a. Ardoa                JONEK        edaten        du  
          wine-the-abs John-erg drink-asp it-aux-he  
          "JOHN drinks wine."  
       b. \*JONEK        ardoa                edaten        du  
          John-erg wine-the-abs drink-asp it-aux-he (cf. (1) in Uriagereka (1987))

As in Hungarian, Focused elements and wh-elements appear in the same position (the immediate pre-V position); wh-elements should also be adjacent to V:

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<sup>29</sup> Horvath (1986;118-127) discusses Focus positions in these two languages.

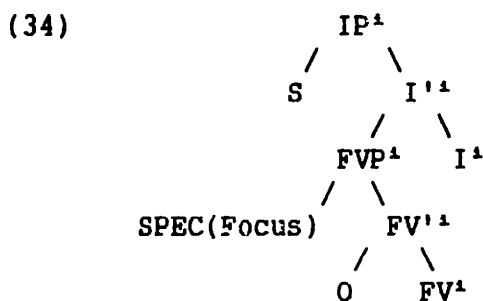
- (32) a. Zer            edango    duzu            zuk  
           what-abs drink-fut it-aux-you you-erg  
           "What will you drink?"  
       b. \*Zer            zuk            edango    duzu  
           what-abs you-erg drink-fut it-aux-you (cf. (5b and c) in Uriage-  
       reka (1987))

As in Hungarian, a Focused element and a wh-element cannot cooccur.

- (33) \*Nork        esan duzu            KANUTOA            lapurtu digula  
           who-erg say it-aux-you JOINT-THE-abs steal it-aux-us(dat)-he-comp  
           "Who have (you) said has stolen OUR JOINT?" ((9) in Uriagereka  
       (1987))

In short, in this language, a strict adjacency between a verb and a Focused/wh-element holds and the designated position for the two elements is one in every clause.

In Basque, the Focus position is immediately on the left side of V and I elements independently appear on the right side of V. By analogy with the Hungarian structure given in (21), we suggest that Basque employs an F category, which selects VP (and whose projection is selected by I) and that F is overtly RRed with V, while I and V are covertly RRed, resulting in the following structure. F and V are amalgamated because [+Focus] assigners should be verbal [+V].<sup>30</sup>



S or O moves to the Focus position in order to assign [+Focus]. Because of the locality condition of [+Focus] assignment, O should move

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<sup>30</sup> As the INFL element may independently appear on the right side of V, Basque is a head-final language.

either rightward or leftward<sup>21</sup> when S moves to the Focus position (the SPEC of FP). When S is Focused/wh-moved, S is lowered to be assigned [+Focus]. This lowering process is, however, apparently problematic. The lowering process yields a variable which is not bound by an operator. Since a variable should be bound by an operator at LF (strong binding (cf. Chomsky (1986a))), we suggest that in LF, elements of the Focus position should move to the SPEC of CP to be assigned scope (cf. fn. 23). This assumption<sup>22</sup> solves the dilemma: a variable in the subject position is bound by an operator in the SPEC of CP, which also binds an A-bar trace in the Focus position. If binding condition A applies only to A-chains, lowering to A-bar positions itself is not problematic as long as a variable is strongly bound at LF.

#### 4.4.3.2. Aghem

Aghem is a third language that employs a Focus position,<sup>23</sup> which can also be the position for a wh-element. Like Hungarian and Basque, a Focused element is strictly adjacent to V but in this language on the right side of V.<sup>24</sup>

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<sup>21</sup> We focus our attention on the position of a wh-element/Focused element; Basque word order except for the position of Focus/wh-elements is relatively free (Juan Uriagereka (p.c.)). The order of other non-Focused elements, we assume, is derived by some processes (cf. for some specific analysis of these Focus/wh-elements and some different types of Focused elements in Basque under different tree structure, see Uriagereka (1987)).

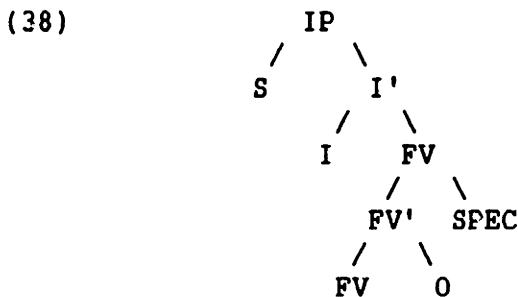
<sup>22</sup> which Horvath (1986) also suggests under her 'small' VP analysis.

<sup>23</sup> Watters (1979) discusses various types of Focus positions and the syntax and semantics of different types of Focus; Aghem can have more than one focus on the right or/and left side of V. We focus on the position for both a Focused element and a wh-element, which is on the right side of V.

<sup>24</sup> Notice that Focused elements phonetically differ from non-focused elements: kí-bé in (36b) and bé-kó in (37) for example. We suggest that kí-bé is a Focus-marked form of bé-kó (cf. Case-marking).

- (35) a. éná? mò ñǵg nô  
 Ihah P2 run FOC "Inah ran."  
 b. à mò ñǵg {éna/ndúghó}  
 DS P2 run {Inah/who} "INAH ran./who ran?."
- (36) a. fǵl á mò zǵ kwò  
 friends SM P2 eat what "What did the friends eat?"  
 b. fǵl á mò zǵ kǵ-bé  
 friends SM P2 eat fufu "The friends ate FUFU."
- (37) a. á mò zǵ ndúghó bé-kó  
 DS P2 eat who fufu "Who ate fufu?"  
 b. á mò zǵ á-fǵn bé-kó  
 DS P2 eat friends fufu "THE FRIENDS ate fufu." ((6a and b) and (15-6) in Watters (1979))

If we put aside the direction of the Focus position for the time being, the above data suggest that in Aghem (a head-initial language),<sup>35</sup> F selects V, V and F are amalgamated so that F can assign [+Focus] (a Focus assigner should be [+V]) and I and F/V are covertly RRed.



Two points we can draw from the data are easily explained under the present analysis. First, when no element appears in the immediate post-V position, as in (35a), a Focus marker is overtly realized, which suggests that F and V are covertly RRed.<sup>36</sup> Thus, Aghem supports the postulation of F as an X-head since, like I or C, it may dominate a terminal string, as shown in (35a). The example in (35a) supports the assumption that F should be overtly RRed with IV to be a proper [+Focus] assigner. Second, the

<sup>35</sup> Based on the basic order in this language S AUX V O ... (cf. Watters (1979)), we suggest that Aghem is head-initial.

<sup>36</sup> In (35a) in which no Focused XP appears, an entire sentence or just the verb is considered as Focused (cf. Watters (1979;145)). The same is true of Hungarian, according to Horvath (1986).

lowering process of a logical subject argument to the Focus position is also supported by the dummy subject (DS in (35b) and (37)) which appears when a subject is focused or wh-moved.<sup>37</sup>

The next question is that of why the Focus position lies on the right side of V in this language. If the SPEC of FP is the Focus position and the SPEC is always on the left side of its head, then we predict that the Focus position is on the left side of V, as in Hungarian and Basque. It seems that there is a reason to have a Focus position on the right side of V in this language: Aghem employs more than one designated Focus position: the immediate post-V position and the immediate pre-V position(s). Depending on the direction of Focus positions, the semantics of Focuses differ according to Watters (1979).<sup>38, 39</sup>

- (39) fɛl á mò bé-kɛ zɛ án 'sóm  
 friends SM P2 fufu eat in the farm (cf. (24) in Watters (1979))  
 "The friends ate fufu IN THE FARM (but not the house)."

We suggest that Aghem employs (at least)<sup>40</sup> two different types of F

<sup>37</sup> It seems plausible to suggest that the position of DS indicates the original position of the logical subject argument.

<sup>38</sup> Watters (1979;171) notes that the immediate post-V position has either an assertive Focus or a counter-assertive Focus meaning and the immediate pre-V position has a counter-assertive Focus meaning:

- (i) Assertive Focus: that information which the speaker believes, assumes or knows the hearer does not share with him or her.
- (ii) Counter-assertive Focus: that information which the speaker substitutes for information which the hearer asserted in a previous utterance. (cf. (28) in Watters (1979))

Assertive Focus can be called new information (to the hearer); Counter-assertive Focus old information. Thus it seems that wh-elements may appear in the post-V position but not in the pre-V position because of the semantics of Focus (ii) that are obtained in the pre-V position.

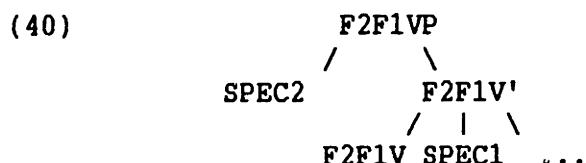
<sup>39</sup> Note also that the phonetic form of fufu is bé-kɛ in (39), which also differs from kɛ-bé (cf. 36b) and from the non-focused form bé-kó (cf. 37).

<sup>40</sup> In Aghem, INFL is also amalgamated with a certain type of F, yielding Focus on the verbal, as in John did sing.). One such example is given below.

- (i) fɛl á maa bé-kó án 'sóm zɛ



categories (let us call them F1 and F2), which assign two different types of Focus. Since F1 and F2 should be verbal in order to be [+Focus] assigners, both of them should be overtly RRed with V as follows:



Given RR convention (c) we proposed in Section 3.3., repeated below, one of the two nondeleted SPEC positions should be under F2F1V'.

(41) RR convention (c):

Attach all nonoverlapped elements in the domain of X-to-Y RR to the bar-node of  $XY^1$ , making them sister nodes of the complements of  $Y^1$  in such a way that the head parameter is preserved.

SPEC1 cannot precede F2F1V (V) since the projection of F2F1V' preserves the head-parameter. Thus one of the Focus positions should be preceded by V. If wh-elements should be assigned [+Focus] by F1 but not by F2 (cf. fn. 38 for the semantics of Focuses assigned by F1 and F2), wh-elements would lie in the SPEC1 position in syntax. Thus the seeming peculiar Focus position in Aghem can be attributed to the fact that Aghem employs two Focus positions and to RR convention (c). Depending on the semantics of F categories that a language employs, the semantics of Focused elements may also differ; depending on the semantics of F1 and F2, different types of [+Focus] are assigned. Let us call an F that can assign [+Focus] to wh-elements F1. In Hungarian, F1 selects I; in Basque, I selects F1. We also saw that in Aghem, I selects F2, which selects F1. Thus it seems that the selectional properties of the functional category F may differ cross-linguistically.

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friends SM Pl/FOC fufu in the farm eat

"the friends did too eat fufu in the farm." ((32) in Watters (1979))

Note that the immediate post-V position is not assigned Focus since NP is a non-Focused form (bé-kó).

#### 4.4.3.3. English clefting and Topicalization

English differs from those languages discussed in the preceding subsection because no designated Focus position is available in a clause: In English, [+Focus] is assigned in-situ.<sup>41</sup>

- (42) a. MARY bought a car.  
b. Mary bought A CAR.

English, however, does have a designated Focus position in one construction. Rochemont (1986) notes that clefted elements are Focused in clefting construction, as shown below.<sup>42</sup>

- (43) a. It was MARY that bought a car.  
b. It was A CAR that Mary bought.

To explain this designated Focus position in the English clefting construction, we motivate an F category selected in a certain restricted environment in English. Given that the XP in the be XP that .. phrase has a Focus meaning,<sup>43</sup> we suggest that a certain ergative verb be selects an FP whose X-head (F), in turn, selects a CP and whose X-head is categorially dependent upon C. (We say that the CP (the complement of ergative be) is F-marked. Intuitively speaking, be selects an F-marked CP complement or the complement of an ergative be is an FCP.) In short, the structure of a

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<sup>41</sup> According to the Focus parameters suggested by Horvath (1986), English does not employ a 'grammaticalized feature of V and [+Focus] is assigned in situ.

<sup>42</sup> As for the various types of XP that can be clefted, see Rochemont (1986; 129;fn.137)).

<sup>43</sup> We suggest that the Focus semantics of a clefted element are determined by the semantics of an F category selected in the clefting construction in English. As for the semantics of clefted Focused elements, see Rochemont (1986).

clefting sentence, we suggest, is as follows, in which F and C are (covertly or overtly) RRed and FC and I are also covertly RRed.<sup>44, 45</sup>

(44) ... be [<sub>CP</sub><sup>1</sup> [<sub>SPEC</sub> XP<sub>1</sub> ] [<sub>FC</sub> that [<sub>IP</sub><sup>1</sup> ... t<sub>1</sub> ... ]]] ...

F-to-I RR is motivated since the F should be verbal to be a proper [+Focus] assigner.<sup>46</sup> XP moves to the SPEC of FP (A-bar movement) and is assigned [+Focus] by FC<sup>1</sup> (that).

This approach, in fact, has some advantages that other approaches (in fn. 45) may partially lack: First, (44) captures an intuitive idea that XP is not a complement of the predicate be: a clefted XP in the clefting construction is not selected by be and therefore receives no theta-role from be. Since XP in an A-bar position is not governed by be (because of that (= FC that would induce the MC), no secondary theta-role or Case is assigned by be. Second, since F and C are RRed, we predict that no that-trace effects are observed in clefting sentences (note that FC (that) does not induce the MC as long as movement does not cross an FCP projection). This prediction is borne out, as shown in (45a).

- (45) a. It was Mary that John thought bought a car.  
       b. \*It was Mary that John thought that bought a car.

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<sup>44</sup> As for wh-clefting, we assume that a sort of relative clause type of construction is operating: It was Mary who came yesterday.

<sup>45</sup> Some previous analyses of the structure of clefting sentences are as follows.

- (1) a. It is [S'' TOP(XP) S']] (cf. Chomsky (1977))  
       b. It [ be XP S'] (cf. Chomsky (1980); Rochemont (1986))

The present proposal is closer to (1a) than to (1b) in assuming that the XP is not base-generated in an A-position.

<sup>46</sup> In Section 4.1., we saw that while topicalization requires overt C-to-I RR in V-languages, it requires covert C-to-I RR in English. Likewise, it seems that covert F-to-I RR is enough to make F a [+Focus] assigner in English, unlike Hungarian, Basque or Aghem, which require F-to-V overt RR to have a proper [+Focus] assigner.

In (45a), no that-trace effect is observed; but an embedded that creates that-trace effects, as we see in the contrast between (45a and b). Third, since the clefted elements lie in A-bar positions, we expect the movement in (51) to have properties of A-bar movement. In fact, the clefting construction shows some properties of operator movement, as has been observed: it shows island effects (46), reconstruction effects (47a), and Weak and Strong Cross-Over effects (47b and c).

(46) a. \*It is this book that I accept the argument that John should read.  
 b. \*It is this book that I wonder who read. ((86c and d) in Chomsky (1977))

(47) a. It is himself<sub>i</sub> that he<sub>i</sub> likes.  
 b. \*It is John<sub>i</sub> that he<sub>i</sub> likes.  
 c. \*?It is John<sub>i</sub> that his<sub>i</sub> mother likes.

If Focus positions are determined in terms of the selectional properties of certain X-heads (be selects a CP which is selected by F), then we may also suggest that languages employ T categories and that Topic positions are determined in terms of the selectional properties of those T categories. Like Focus elements, Topic elements are then assigned [+Topic] assigned by a T category. Consider the following various Topic positions in English in which T is RRed with I.<sup>47</sup>

(48) a. John, Mary likes.  
 b. (i) It's obvious that Mary, he can't stand.  
 (ii) He's a man to whom liberty we could never grant. (cf. (70) and (69) in Baltin (1982;17); also cf. Chomsky (1977))  
 (49) a. [TCP<sup>i</sup> [SPEC XP<sub>i</sub>] TC<sup>i</sup> [IP<sup>i</sup> ... t<sub>i</sub> ... ]]  
 b. .... [CP that [TP [SPEC XP<sub>i</sub>] T [IP ... t<sub>i</sub> ... ]]]

In (48a), T selects CP (cf. Chomsky (1977)) and an XP moves to the SPEC of TP to be assigned [+Topic] (49a). In the case of (48a) in which CP is not a projection of C<sub>wh</sub>, T and C are RRed. In an embedded clause, Topics

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<sup>47</sup> Note also that TCP should be open. Remember that C-to-I RR applies in matrix sentences since ungoverned XP's are open or [+V] projections.

appear on the right side of C (that) (49b). Thus, it seems that an embedded C selects T instead of being selected by T, as in (49b).

The postulation of a T category also has some advantages. First, we can explain why the TP in an embedded clause is selected by C, given the notions of open/closed projections: Suppose that T should be RRed with I (or with V) to be a [+Topic] assigner. Then, in the embedded clause (with that), TP cannot be RRed with IP across CP; T-to-I RR would always make an embedded clause open. Thus, TP selects IP instead of selecting CP; since V selects CP, the only possible configuration would be that in (49b) but not that in (49a) in the case of an embedded clause. Second, the SPEC of TP is an A-bar position, like the SPEC of FP, by definition (cf. Chapter 1). Thus, like A-bar movement to the SPEC of FP, movement to the SPEC of TP shows island effects (50), reconstruction effects (51a), and Strong and Weak Cross-Over effects (51b and c).

- (50) a. \*This book, I accept the argument that John<sub>i</sub> should read.  
       b. \*This book, I wonder who read. ((63c and d) in Chomsky (1977))
- (51) a. Himself<sub>i</sub>, John<sub>i</sub> likes.  
       b. \*John<sub>i</sub>, he<sub>i</sub> likes.  
       c. ??John<sub>i</sub>, his<sub>i</sub> mother likes.

Before closing this subsection, we note that the postulation of the T and F categories under the notion of RR suggests that the semantics of the X category may be nonheterogeneous. The V category is projected from a terminal string that contains only the semantics of a verbal stem and some other semantics of V are obtained by the semantics of other functional categories that are categorially dependent upon V (cf. postulation of NEGP and AGRP in Pollock (1987) for INFL; fn. 22). The postulation of the nonheterogeneous X-head is theoretically plausible under the present approach, and it will be interesting to see whether it is also empirically plausible in some cross-linguistic phenomena other than the phenomena we

have discussed in this subsection (also cf. Section 4.1.). Note also that the present analysis implies that the C-I-V order may be universal while their relative order with respect to other functional categories may differ from construction to construction or from language to language (i.e., depending on the Lexicon of a language).

## CHAPTER 5: SOME THEORETICAL IMPLICATIONS

### 5.0. Introduction

In this Chapter we discuss some theoretical implications of our proposal and compare our approach to complex words with other recent proposals of complex words or of 'restructuring' effects. In the first and the second Sections, we discuss the structure of grammar our proposal implies and the status of morphology and syntax, which supports the autonomy thesis of syntax with respect to morphology. We also discuss some theoretical implications of our position with respect to syntax and semantics, advocating the 'autonomy thesis of syntax.' In the third Section, based on empirical facts concerning head-movement, we suggest a version of the Head Movement Constraint (the HMC) in terms of the notions of L-marking and government that correctly delimits the behavior of head-movement. We also show the mirror principle (cf. Baker (1985a)) derives from our version of the HMC, given independently motivated Strict Cyclicity and the notion of head-movement. In the fourth Section, we will discuss De Sciullo and Williams's (1987) analysis of reanalysis/'restructuring' and morphologically-complex words and argue against their strong lexicalist position. In the final Section, we discuss Kayne's (1987) analysis of clitic climbing found in RR environments. Kayne (1987) intends to capture Kayne's (1980) conjecture on the correlation between null subjects and clitic climbing. In discussing Kayne's analysis, we point out its limits and problems and conclude that the correlation between null objects and clitic climbing does not play a crucial role in the V-to-V RR phenomenon.

### 5.1. Syntax and morphology

The present analysis of complex words in terms of head-movement and RR assumes the structure of an X-head in (1) and the two working hypotheses proposed in Section 3.1., which are repeated in (2) in modified forms:

- (1)           X  
              |  
          [*a*S<sub>1</sub>,...*b*S<sub>n</sub>,-/+P, ... *a* ...]  
              where P indicates a bundle of phonetic features; S<sub>i</sub> (0<*i*<*n*+1) morphological, syntactic, and semantic features; and *a* other lexical idiosyncracies; and where X represents a bundle of categorial features.

(2) a. The universality of D-structure configurationality:

At D-structure, a certain version of the X-bar schema with (universal or language-specific) selectional properties of X-heads is adopted by every language. (cf. Chapter 3)

i. V is always directly or indirectly selected by I<sup>1</sup> (cf. Sections 4.1. and 4.4.)

ii. V is projected minimally up to CP (cf. Chapters 3 and 4.)

b. A convention of X-head-projection:

Every X-head (e.g. [+N,-V], I or C) has its own domain of projection at a certain level of representation (D-structure).

Under (1 and 2a), all X-heads are semantically nonnull even if they may be phonetically null; all X-heads by definition have their own selectional properties to be projected in syntax, subject to (2b). D-structure configurations are preserved at every syntactic presentation (including a sublevel of PF, which we will call morphological structure) subject to the following projection principle on X-heads together with the theta-criterion on X-heads at LF (cf. Chapter 2).

- (3) The projection principle on X-heads: X-heads (i.e., [+N,+V], I, C, .. and F) are preserved at every syntactic representation, i.e., D-structure, S-structure, LF, and (a sublevel of) PF in that the s-selectional/theta-assigning properties of heads dominated by those X-heads are observed.

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<sup>1</sup> X is indirectly selected by Y if X is selected by Z, which is selected by Y and X-Z-Y are RRed (cf. Section 3.4. for the definition of indirect selection).



- (4) The theta-criterion on X-heads: An H-chain has one and only one visible theta-assigning position.
- (5) An H-chain is visible for theta-assigning iff the morphological requirement of an H-chain is satisfied; the morphological requirement of an H-chain is satisfied if a head is in the position of the head of an H-chain

The proposed transformations, RR and head-movement, do not violate the projection principle on X-heads and the theta-criterion on X-heads. When X-heads form a complex X-head through RR, which is motivated by certain categorial dependency of X-heads, as in (6a) below, each X-head is visible with respect to (3) (cf. RR conventions).

- (6)      a.      XY  
                 ||  
                 a-b
- b.                      X2  
                              /    \  
                          Y2    X1      .... Y1  
                          |    |            |  
                         b<sub>1</sub>   a            t<sub>1</sub>

Each X-head of a complex X-head, but not complex X-heads derived by RR, is visible with respect to (3-4). On the other hand, head-movement, which is motivated by certain morphological dependency of heads, creates the segments of both X and Y (cf. adjunction function  $\bar{X}$ ), as in (6b): Since categories but not segments are visible with respect to the projection principle on X-heads, the s-selectional/theta-assigning property of heads remains intact in configuration (6b). The category X instantiated as X1 and X2 segments in (6b) is visible with respect to (3) and to (4) in the Xo-structure but the category Y (Y1 and Y2) is not visible in the Xo-structure in (6b) since only a segment of a Y category is present. Head-movement derives H-chains, abstract representations of X-heads, and the tail of an H-chain (b<sub>1</sub>, t<sub>1</sub>) is the position where we read the selectional/-theta-assigning property of a Y category. Since the head of H-chain (b) is morphologically-dependent and therefore moves in order to be morphologi-

cally licensed, it should be visible within the structure of the X-head X in (6b) at a level of interpretation, i.e., PF.

Under (3) and (4) that refer to the notions of (complex-)X-head (cf. 6a) and of H-chain (cf. 6b), the following 'generalized' projection principle, which also applies to (a sublevel of) PF (as discussed in Chapters 3 and 4), is motivated:

(7) The projection principle:

Representations at each syntactic level (i.e., LF, D- and S-structure, and (a sublevel of) PF) are projected from the Lexicon (through CSR(C)), in that they observe the s-selectional properties of Lexical item (C, I, [+/-N, +/-V], ...); the s-selectional property of an Lexical item (an X-head) determines appropriate comp(s) and SPEC (A or A-bar SPEC) of that X-head. (cf. Chapter 2)

(7) together with (3) lead to the wide interpretation of the projection principle: not only theta-positions but also X-head positions and A and A-bar SPEC positions (cf. extended projection principle in Chomsky (1982)) come under the scope of the projection principle. Therefore substitution to X-heads violates the projection principle for the same reason that substitution to complement positions violates the projection principle. No adjunction of maximal elements to X-heads is possible, probably because of the licensing theory of transformation which subsumes the Structure-Preserving Hypothesis; no substitution of minimal elements to SPEC positions is possible because of (3-4) (cf. 1). Suppose that X is replaced by y. Then, because of X-bar theory, X is no longer X and its projection should reflect the selectional property of y; the status of the SPEC and the comps of X would have to be changed or would not be properly licensed (cf. the projection principle on X-heads). Thus under the licensing theory of transformation, only SPECs are open for substitution of maximal elements<sup>2</sup> because of the projection principle and theta-theory; only heads are

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<sup>2</sup> Also, only maximal projections are open for adjunction of maximal

open for adjunction of heads and only X-heads are open for RR (because of the projection principle on X-heads).

#### 5.1.1. The Xo-structure and the structure of grammar

Under the wide interpretation of the projection principle, (X-)head-to-(X-)head transformations assume the syntactic position that includes the following principles on the status of morphologically-complex words.

##### (8) The Syntactic Position:

0. X-heads dominate phonetically null or overt morphemes at D-structure.
1. A complex word  $a_1 \dots a_i \dots a_n$  is derived transformationally if each  $a_i$  is dominated by an X-head in syntax and there are no intervening X-heads between  $a_i$  and  $a_{i+1}$ .
2.  $a_i$  is dominated by an X-head in syntax and there are no intervening X-heads between  $a_i$  and  $a_{i+1}$  if the complex word  $a_1 \dots a_i \dots a_n$  is derived transformationally.

Transformations that affect (X-)heads and therefore thus observe (8) are either RR or head-movement: Head-movement is subject to some morphological principles (especially the RHR), which may change string order. Given the structure of an X-head in (1), fusing morphemes or null morphemes may constitute syntactic units, forming suppletive words with other morphemes in syntax. As (1 and 8) imply, the morphological (ir)regularity of a word does not signify whether the word is lexically or syntactically derived.

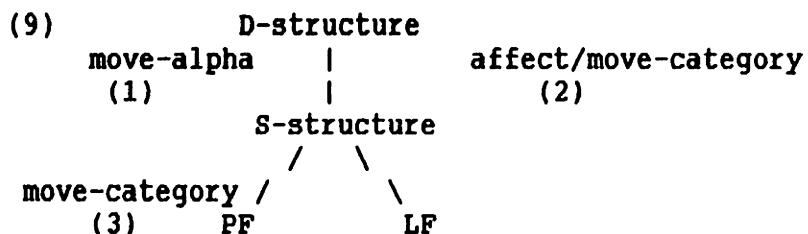
In the case of M- or M/R-complex words, the interpretation of the syntactic position given in (8) is obtained in a rather abstract way, i.e., (8:1) and (8:2) refer to the string order of morphemes at D-structure, i.e., before they are morphologically amalgamated. The string morpheme order is obtained through the morphological structures of words: if  $a_i$  and  $a_{i+1}$  are [+MD] and [-MD], respectively, then in actual morpheme order (among cyclic heads),  $a_i$  with [+MD] ( $a_i$ ) is ordered first because of the RHR

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elements (cf. Chapter 2).

unless the word  $a_i-a_{i+1}$  is derived by overt RR. When  $a_i$  is a fusing morpheme, its fusing information is recorded in morphological structure. In short, it is necessary to refer to the morphological structures of words. The structures of words are signified by the argument structure of a clause, by the syntax and semantics of each morpheme of a complex word or by the morphological properties of a morpheme (obtained in the Lexicon). In the case of R-complex words, (8) should also refer to null or fusing morphemes and the existence of R-complex words suggests that morphological independence does not signify syntactic independence.<sup>3</sup>

The syntactic position explicitly implies that words are not syntactic units (units dominated by X-heads) at D-structure and that syntactic units are amalgamated through head-to-head syntactic processes to form words.<sup>4</sup> On the other hand, depending on the levels of rule application, head-to-head transformations result in different types of morphological and categorial amalgamation:



<sup>3</sup> If head-movement across RRed X-head is possible, then (8) should be reformulated as follows:

- (i) 1. A complex word  $a_1...a_i...a_n$  is derived transformationally if each  $a_i$  is dominated by an X-head in syntax and there are no intervening non-RRed X-heads between  $a_i$  and  $a_{i+1}$ .
2.  $a_i$  is dominated by an X-head in syntax and there are no intervening non-RRed X-heads between  $a_i$  and  $a_{i+1}$  if the complex word  $a_1...a_i...a_n$  is derived transformationally.

However, if heads (RRed or nonRRed) induce the MC in the case of head-to-head government relation, as we will suggest, then (i) is not an option.

<sup>4</sup> Smith (1982); Woodbury (1985); Sadock (1986); Woodbury and Sadock (1986) also implicitly or explicitly suggest that complex words are derived by syntactic rules such as verb raising, which suggests that complex words are derived by nonlexical affixation.

Process (1) and (3), which are head-movement and surface-overt (or surface RR), are interpreted at PF and processes (2), which are covert and deep/surface-overt RR are interpreted at LF. Diagram (9) suggests that words are formed in the Lexicon and in syntax and that in syntax, there are two types of morphological amalgamation: deep-morphological amalgamation and surface-morphological amalgamation derived by deep-overt RR (2) or head-movement (1) and by surface-overt RR (3), respectively. Note that diagram (9) implies that the levels of syntactic representation are D- and S-structures, LF and (a sublevel of) PF.

Surface amalgamation (derived by surface-overt RR) is found in Korean 'restructuring' predicates (cf. Section 3.4.) and verbal complex morphology in English and Korean (cf. Sections 3.1. and 4.1.); such amalgamation especially suggests that some words are formed in the PF component so that morphological principles necessarily apply in the PF component. On the other hand, syntactic units may also be morphologically complex, as we see in derived nominals in English such as destruction (cf. Chomsky (1970)), and in the adjectival passive V-en (cf. Wasow (1977)).<sup>5</sup> Lexically-derived syntactic units thus require morphological principles in the Lexicon. Given that certain syntactically-derived words are sensitive to morphological principles such as the RHR, morphology must apply both to outputs of transformations such as RR and head-movement (i.e., words) and to syntactic units. In short, both transformationally-derived words and lexically-derived words are subject to morphological principles in the word formation

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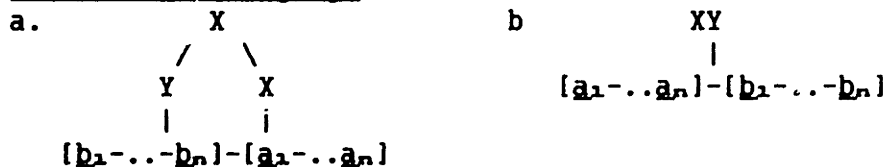
<sup>5</sup> Compounded words may also be syntactic units if they are not transformationally derived.



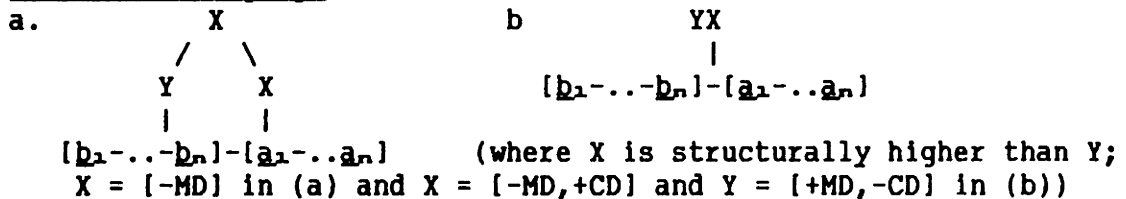
apply to Xo-structures in a subcomponent of the PF component whether Xo-structures are derived syntactically or lexically; morphological principles then operates on Xo-structures and ill-formed words are filtered out at a sublevel of PF, subject to PF principles of interpretation (cf. a principle of FI).

At this point, let us consider the structure of syntactically-derived words under the present proposal. We have the following Xo-structure of a morphologically-complex word, in which X and Y are either simplex or complex X-heads and a and b may or may not be morphologically complex. (For concreteness, one may imagine that X is V and Y is CIV<sup>1</sup>.)

(11) Head-initial language:



(12) Head-final language:



Depending on syntactic derivations, either morphological principles or syntactic principles play a rule. Head-movement is seemingly governed by the RHR; it is governed by a morphological principle because it is morphologically motivated. RR is seemingly governed by the head-parameter; it is governed by syntactic principles such as X-bar constraints because it is categorially motivated; note that move-category is motivated to satisfy some categorial requirements of X-heads at the level of LF (and perhaps at the level of PF also (cf. Section 4.4.)). Thus the direction of morphemes

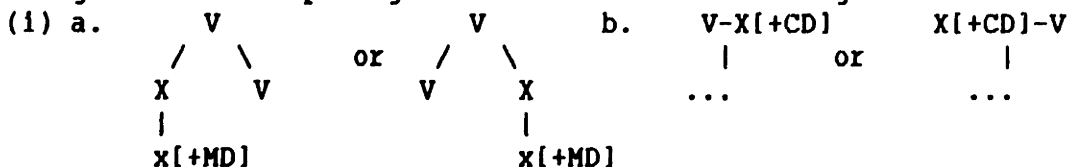
is governed by the following generalizations, especially when morphemes represent cyclic X-heads (cf. Chapters 3 and 4).<sup>a</sup>

- (13) a. The RHR holds with M-complex words for morphological reasons.  
b. The string-preserving property of RR holds for M/R-complex words.

In the case of transformationally-derived words (= M- or M/R-complex words), the m-head (which is [-MD]) and read as an affix in the component of PF) is always linked to an X-head structurally higher than an X-head that dominates the non-m-head because of trace theory (no lowering in syntax).<sup>a</sup> If word formation applies to the structures in (11-12), what is the morphological structure of a syntactically-derived word? Each X-head (or each segment of an X-head) dominates a lexically-derived morphologically-complex string, which has its own morphological cycle system obtained in the Lexicon (that is not indicated above), having its stem and affixes. In purely morphological terms, most embedded elements are called stems and any other elements attached to stems or stem-affix combinations which form morphological cycles can be called affixes (cf. Chomsky and Halle (1968)).

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<sup>a</sup> When *a* and *b* in (11-12) do not represent cyclic X-heads, either the RHR or other language-specific or morpheme-specific morphological principles play a rule in deciding morpheme order. Specific morphological mechanisms governing morpheme order other than morpheme order among cyclic heads do not come under the scope of this study. We simply assume that Xo-structures are not changed because of morpheme order in that within Xo-structures, the morphological aspects of morphemes are not changed since their categorial and morphological features are not changed.



<sup>a</sup> On the other hand, in the case of an M/R-complex word, the s-head ([-CD]) is linked to an X-head structurally lower than an X-head that dominates a non-s-head; in the case of an M-complex word, the s-head ([-MD]) is linked with an X-head configurationally higher than an X-head that dominates a non-s-head (see Appendix of Section 4.2. for the summary of the feature status of the s-head/m-heads of M-, M/R- and R-complex words).



Then, the question is what morphological cycle structure a transformationally-derived word has.

The structure of (11-12a) itself implies the following morphological cycle structure:  $[(b_1 \dots b_n)]_Y [(a_1 \dots a_n)]_X$  in which  $[(b_1 \dots b_n)]$  represents a stem (most embedded cycle) in (11-12a) and in which  $(a_1 \dots a_n)$ , which is the m-head, is an affix. (The cases in (11-12) are obvious or trivial but we suggest that there are algorithms that convert Xo-structures to morphological cycle structures.) Morphology refers to Xo-structure and interprets stem-affix relations obtained through conventions that interpret Xo-structures into morphological cycle structures. Let us call the level at which morphological cycle structures are obtained morphological structure and the component between morphological structure and PF morphological component; all the morphological principles then apply in the morphological component. The obtained morphological structure is consistent with the idea that the m-head is an affix: The m-head ([-MD] head) has priority in determining the categorial features of complex words, as we have seen in Chapters 3 and 4. Thus, the notion of m-head is consistent with the notion of the affix of a lexically-derived syntactic unit. Naturally, the notion of m-head corresponds to the notion of 'head of a word' (in Williams's (1981a) sense), while it is not related to any syntactic or semantic aspects of a word.

The present approach introduces another notion of head -- the notion of s-head. Because of the Grammatical Feature Percolation Convention (the GFPC), the s-head determined by the lexical properties of a word (semantics) take precedence over non-s-heads in determining the grammatical features of a complex word, such as the Case-transitivity (formal transitivity or formal ergativity) of a complex word. The s-head thus behaves



- (15) a. The s-heads of M-complex words (= [-MD]) are affixes and the s-head of M/R-complex words (= [+MD, -CD]) are stems.  
 b. The m-heads of M/R- or M complex words are affixes; [-MD] is the m-head ([-MD] or [-MD, +CD]).

The generalization in (15a) makes sense: Since syntactically or semantically, [-CD] is the prominent element in the case of M/R-complex words; in the case of M-complex words, the host X-head (stem; [-MD]) is prominent syntactically and semantically. The generalization in (15b) is well-motivated. The m-head that derives from the feature [-MD] is always an affix regardless of syntactic derivations so that the morphology that applies to lexically-derived units also applies to syntactically-derived units. Note also that given that there is no lowering of head-movement, and given the conventions that derive morphological cycle structures from the X<sub>0</sub>-structures of syntactically-derived words, the morphological cycle structures reflect syntactic hierarchical structures: The most embedded X-heads in the domains of head-movement and of RR become the stems and the configurationally highest X-heads become the affixes.

- (16) a. [[a]-b] (cf. 11-12a)  
 b. [[a]-b] or [b-[a]] (cf. 11-12b)

of trace theory would not arise.) Then, we have the following X<sub>0</sub>-structure of an M/R-complex word in which X is [+MD, +CD] and Y is the s-head and m-head being [-MD, -CD].

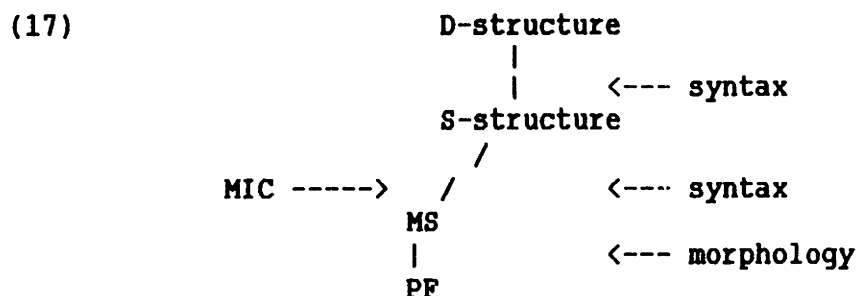
- (i) a. head-final                      b. head-initial
- $$\begin{array}{ccc}
 & Y & \\
 & / \quad \backslash & \\
 Y & & X \\
 | & & | \\
 [b_1 \dots b_n] & - & [a_1 \dots a_n]
 \end{array} = YX^1
 \qquad
 \begin{array}{ccc}
 & Y & \\
 & / \quad \backslash & \\
 X & & Y \\
 | & & | \\
 [a_1 \dots a_n] & - & [b_1 \dots b_n]
 \end{array} = XY^1$$

(i) leads to the following generalization.

- (ii) a. The s-heads are stems ([+MD] or [-CD, -MD] = target of head-movement or RR).  
 b. The m-heads of M-complex words (= [-MD]) are stems, and the m-heads of M/R-complex words (= [-MD, -CD]) are affixes.

The generalization in (iib) is rather strange since [-MD] heads may be either stems or affixes depending on syntactic derivations; if morphology applies to both transformationally- and lexically-derived words, we would expect the m-heads to be affixes regardless of syntactic derivations.

Given those morphological interpretation conventions and the notion of Xo-structure at morphological structure, we arrive at the following left side structure of grammar in which MIC and MS mean morphological interpretation conventions and morphological structure, respectively:



The PF component is subdivided into the syntactic PF component and the morphological/phonological PF component. Syntax may apply in the component between S-structure and MS in which transformations that trigger Xo-structure apply. At MS, the notions of stem and affix are available and word formation rules apply in the component between MS and PF (i.e., morphological component). The notion of s-head is not available at morphological structure since it is a purely syntactic notion; syntactic units may be s-heads whether they are stems or affixes (cf. 15a). The extended syntactic domain that include a subcomponent of PF and that is connected with morphological structure through MIC represents both syntactic and morphological aspects, yielding what Woodbury (1985) calls '(word-)internal syntax' (Swadesh's term (1939;1946)); the output of syntactic rules are inputs of morphology, given the MIC. Although syntax and morphology interact, by virtue of the MIC, they are independent: In syntax, all the syntactic principles such as the projection principle and X-bar constraints are operating referring to Xo-structure in a certain way (except for LF principles) while all the morphological and phonological principles apply in the component between MS and PF in an appropriate way.

The above structure of grammar capture the domain of morphology and that of syntax that partially overlap in terms of the MIC, maintaining the thesis that syntax and morphology are independent of each other. Given the structures in (11-12a) and in (14), we now suggest, assuming the structure of grammar in (10b), that morphological structures obtained in the Lexicon and in syntax are preserved up to morphological structure; the domain of word formation is the internal structure of (the highest segment of) an X-head or a complex X-head (= Xo-structure) and that the lower limit of the syntactic domain is the lowest segment of an X-head or an X-head member of a complex X-head.

At this point, let us consider what happens when domains of rules overlap. We have seen that in the ACC-ing construction (cf. Section 4.1.), and in certain passive constructions such as get+en in English or -e ci- in Korean (cf. Section 4.3.), the domains of two instantiations of RR or those of instantiations of RR and head-movement overlap:

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| (18) a. ACC- <u>ing</u> construction | b. <u>get+en</u> passivization  |
| i. Vx-to-Vk (covert) RR              | i. Vx-to-Vk (covert) RR         |
| <u>-ing</u> -to-Vk (overt) RR        | Vk-to- <u>-en</u> head-movement |
| ii. Vx + C + <u>-ing</u> + Vk        | ii. Vx + <u>-en</u> + Vk        |
| [ <u>-ing</u> [Vk]]                  | [ [ <u>-en</u> ] Vk ]           |

The Xo-structure of (18a) simply represents the structure derived by -ing-to-Vk overt RR, but the two feature systems overlap: -ing has [-MD,+CD]<sub>1</sub> and [+CD]<sub>2</sub>, and Vk has [+MD,-CD]<sub>1</sub> and [-CD]<sub>2</sub>, in which [aCD]<sub>2</sub> represents the Vx-to-Vk RR relation. In the case of (18b), the Xo-structure is obtained by Vk-to--en head-movement, and again the two feature systems overlap: -en has [+MD]<sub>1</sub> and [+CD]<sub>2</sub>, and Vk has [-MD]<sub>1</sub> and [-CD]<sub>2</sub>. As we suggested, Xo-structures, which are read off at morphological structure are obtained according to the [aMD] or the [aMD,-aCD] relation but not to the [aCD] relation. Therefore, no Xo-structure conflict occurs in either case of

(18a and b) since they do not contain the features [aMD] and [aMD,-aCD] at the same time. Given the target-trigger relations of RR and head-movement, in syntax two operations whose application domains overlap produce different, independent effects. In fact, as we saw in Section 4.1., the separate effects of RR (18bi) and head-movement (18bii) are empirically found: in the Italian passive construction within the 'restructuring' construction, the auxiliary of Vx is determined by Vk (the s-head of the Vx+Vk R-complex word) because of the [aCD] relation, while the auxiliary of V-en is determined by -en (the s-head of the V-en M-complex word) because of the [aMD] relation.<sup>12</sup> Imagine that the domains of instantiations of overt RR and head-movement overlap in the following manner: Z is [-MD,+CD]<sub>1</sub>, X is [+MD,+CD]<sub>1</sub> and [-MD]<sub>3</sub>, and Y is [+MD,-CD]<sub>1</sub> and [+MD]<sub>3</sub>. Are X and Y compatible with each other even though they contain two [aMD] relations because the two relations are independent? The answer seem to be no. The Xo-structure of X-Y would face an Xo-structure conflict since overt RR and head-movement create different Xo-structures (cf. 11-12a and 14). We suggest that there are no such overlappings of the domains of overt RR and head-movement applications because of the conflict of Xo-structures.<sup>13</sup>

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<sup>12</sup> Consider an Italian 'restructuring' sentence with an embedded passive clause in (1).

(1) Mario gli {ha/\*é} [<sub>1</sub> voluto [<sub>2</sub> essere presentato]] da Gianni.

"Mario to him has wanted to be introduced by Gianni." ((1) in Rizzi (1982;45;fn 27))

avere is assigned to an R-complex word (a) while essere is assigned to a passivized predicate (<sub>2</sub>).

<sup>13</sup> In fact, we were not able to find examples in which the domain of overt RR application and that of head-movement application overlap.

### 5.1.2. Some theoretical consequences

The Xo-structures of syntactically-derived complex words outlined in the preceding subsection has the following theoretical consequences. First, since the domain of word formation is an X-o structure, we may modify the generalized lexical hypothesis shown in (19a) (which is also known as the lexical integrity hypothesis; cf. Selkirk (1982)) formulated by Lapointe (1981;222):

- (19) a. Syntactic rules are not allowed to refer to, and hence cannot directly modify, the internal morphological structures of words.  
 b. Syntactic rules are not allowed to refer to the internal structure of an Xo-structure.

(19a) can be rephrased as in (19b) under the present approach. Because of (19b), either a or b in (20a and b) cannot move but a-b or b-a can move when the a-b or b-a is morphologically-dependent.

- (20)      a.            XY  
                  ||  
                  a-b
- b.            X2  
                  /        \  
                  Y2      X1      .... Y1  
                  |        |            |  
                  b<sub>1</sub>      a            t<sub>1</sub>
- where a and b may or may not be morphologically complex

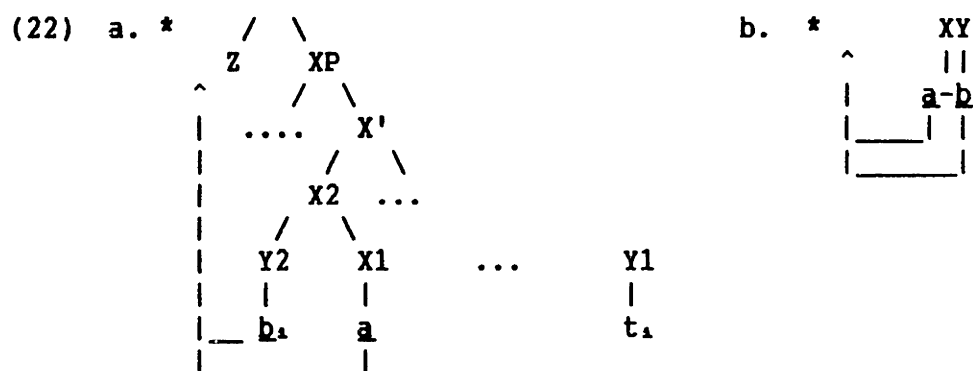
It seems that b or a cannot move in syntax but that Y2 (b) is visible in syntax, through its H-chain and also both X and Y in (20a) are visible with respect to the projection principle on X-heads. The syntactic units within an Xo-structure seem to be visible in syntax. Thus instead of (20b), we propose the following Revised Lexical Integrity Hypothesis.

- (21) The Revised Lexical Integrity Hypothesis (the RLIH):  
 Syntax cannot refer to the internal structures of syntactic units (X-heads).

The RLIH suggests that the internal elements of an Xo-structure (syntactic units) are visible in syntax but not the internal structure of a syntactic unit (the segments of an X-head or an X-head member of a complex X-head).

Given (21), it is desirable to derive (19b), which implies that neither a nor b moves in configurations (20a and b).

There are at least two approaches to explain why a or b in (20b) cannot move further. First, one can suggest, by analogy with the notion of 'transparency' discussed by Chomsky (1987; class lectures)<sup>14</sup>, that category X (a = affix) is transparent in that segment Y2 can bind its trace in the configuration in (20b). Although the notion 'transparency' with respect to binding should be incorporated in grammar (because of trace theory), the binding approach in terms of the notion of transparency would not block b from moving further. When b or a moves to Z that c-commands X, as in (22a), Y inside of Z would always locally bind its trace as long as both X and Z are transparent. In addition, this suggestion would not explain the unacceptability of (22bb) in which a moves out of a complex X-head.



Second, one can suggest that the movement of b is blocked by the HMC, assuming a certain version of the HMC that states that the trace of head-movement is (properly) governed by its antecedent, which we will propose shortly in the next section. Suppose then that in (22a), Z L-marks XP. Then Z governs XP and therefore X (X1-X2). Since b or a moves out of XP that is L-marked by Z, the question is whether Z also governs Y2 or X1. To

<sup>14</sup> In the structure of (20b), if X is 'strong,' it is 'transparent' to allow Y to govern its trace (cf. the Government Transparency Corollary in Baker (1985/to appear)).



block the derivations in (22), let us suggest that both heads and head-segments can induce the MC in certain cases: when government relation is involved between heads, either X1 or Y2 (a segment of category X or Y) can induce the MC.<sup>15</sup> (We call this the parallelism condition on the MC.) Likewise, a or b-movement out of an RRed XY is blocked (cf. 22b) because Y (b) or X (a) would induce the MC.<sup>16</sup> Then Z does not govern Y2 or X1 (because of the MC effects) and a would not govern its trace after it moves in configuration (22b). In short, under the HMC that requires antecedent-government, b/a-movement to Z in (22) would be blocked since its trace is not governed by its antecedent because of the parallelism condition on the MC. It thus follows that head-movement out of an Xo-structure is always blocked since the trace of that element is not properly governed because of the other member within the Xo-structure that induces the MC. Thus we do not have the following case even if come and cause-understand are RRed (cf. fn. 15):

(23) \*Mary understand<sub>i</sub>-comes to [cause-t<sub>i</sub>], John t<sub>i</sub> this problem.

To conclude, the Lexical Integrity Hypothesis shown in (19b) derives from (a certain version of) the HMC. Since (19) derives from the HMC,<sup>17</sup> the

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<sup>15</sup> The notion of 'transparency,' which allows Y2 (b) to bind Y1 (a), would not imply that Y2 (b) governs its trace (cf. Baker's Government Transparency Corollary), given the notion of MC. Y2 (b) or X (a) would not govern its trace after it moves to Z because Y2 or X1 induces the MC.

<sup>16</sup> Note that we suggested that RRed X-heads would not induce the MC, which suggests that either a or b would not induce the MC in (22b). We suggest that when head-to-head government is involved, heads induce the MC whether or not they are RRed or that when segment-to-segment government is involved, intervening segments induce the MC. This suggestion is in spirit similar to Rizzi's (1987) relativized minimality condition, which roughly states that a-to-a government is blocked when there is an intervening a in which a is the same type of category in a certain way. Unlike Rizzi, we intend to suggest that the parallelism condition of the MC applies to minimal categories/segments.

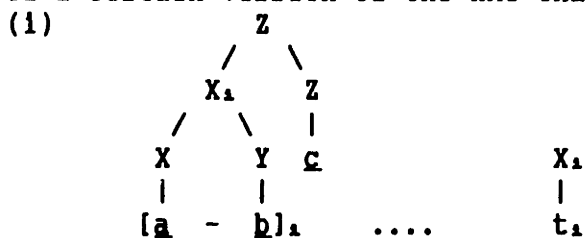
<sup>17</sup> When a terminal string moves, we have assumed that an X-head that

grammar need to incorporate only the RLH in (21). Note that the thesis that syntax and morphology are independent of each other is supported in terms of (21) although we allow the syntax-morphology interface obtained by syntactic head-to-head transformations. The syntactic units within an Xo-structure are selectively visible with respect to syntax and the selectivity is constrained by principles of UG such as the HMC.

The second consequence of our proposal has to do with the notion of head. The notions of the s-head of a word and the m-head of a word are operating in the domain of word formation (in an Xo-structure). Thus the notion 'head of a word' should be understood in a different way: the notion 'head of a word' should be subdivided into two notions of heads: s-head and m-head: the notion of m-head is available both in syntax and in morphology, whereas the notion of s-head is available in syntax. Note also that the m-head of a word can be either the s-head or a non-s-head (depending on syntactic derivations), while the notion of s-head does not apply to syntactic units. It has been suggested under the strong lexicalist position, that the 'head of a word' (affix) determines the categorial features of a word and affects the theta-structure of a stem (cf. Williams (1981b); Di Sciullo and Williams (1987)). From our point of view, the m-head of a syntactic unit (the affix of a lexically-derived complex morpheme) may affect theta-structure (for example, the adjectival passive

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dominates that string is also obtained in the landing site. When a syntactically-derived string moves, we have the following structure because of a certain version of the HMC that derives (19).



-en; Di Sciullo and Williams (1987); Roeper and Siegel (1978)), but the m-head of a word (the affix of a syntactically-derived word) should not affect theta-structure given the projection principle (cf. the verbal passive -en). Thus the present approach suggests that the affixation of a word is not determined by whether it affects theta-structure but the m-head of a word would affect theta-structure depending on whether the word is derived lexically or syntactically.

The last theoretical consequence is that the notions of 'inflectional' or 'derivational' do not have any theoretical implications especially with respect to levels of rule application since both can apply either in syntax or in the PF-syntax component (although head-movement in the PF-syntax component is always accompanied by RR), as we see in Eskimo data (24) for example:<sup>1\*</sup> Some inflectional morphemes may appear between derivational morphemes.

(24) Cug-nun        atange-ciq-ni-llru-a-ten  
          person-DATp wait-FUT-say-PAST-IND-3s/2s  
          "He said that the people will wait for you." (cf. (22) in Woodbury and Sadock (1986;239))

At the same time, some alleged lexically-derived words may contain 'inflectional' elements as an infix (cf. Lieber (1980)). Exceptions of these kinds do not provide any serious problems since, theoretically speaking, a real difference between inflectional and derivational morphology comes from the fact that 'inflectional' amalgamation involves functional elements (INFL) and is derived by RR, while 'derivational' amalgamation is obtained either by lexical head-to-lexical head head-movement or RR. Thus the differences in syntax, semantics, and morphology between complex words with

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<sup>1\*</sup> Marantz (1985), Di Sciullo and Williams (1987) also suggest not distinguishing inflectional and derivational affixes in their formal similarity (also cf. Lieber (1981) and Kiparsky (1982); but also cf. Allen (1978)).

and without inflectional elements can be attributed to the properties of functional categories and to the fact that inflectional affixation is obtained only by RR while derivational affixation is obtained by overt RR or by head-movement. The levels of affixation application are not theoretical issues but empirical issues; even if affixation in the Lexicon includes functional elements, such affixation would be perfectly compatible with the present approach.

## 5.2. Syntax and Semantics

The present syntactic position with the notions of RR and head-movement also touches on syntax and semantics. Our approach to causative and psych-verbs constructions in English and Romance languages (cf. Section 4.2.), on the one hand, and cross-linguistic various types of passive construction (cf. Section 4.3.), on the other hand, advocates a certain aspect of generative semantics traditions (Lakoff (1965;1971); McCawley (1968;1971)).

Lakoff (1965), for example, suggests that Y melt X is derived from Y cause (X to melt) by showing that the phrase X to melt is a syntactic and semantic constituent. One argument is that the following is ambiguous.

- (25) a. Floyd melted the glass and it surprised me.  
 b. Floyd melted the glass though it surprised me that he was able to bring it about.

In (25a) it can mean either that Floyd melted the glass or that the glass melted. In (25b), it means that the glass melted rather than that Floyd melted the glass. It is thus suggested that melt (Vt) contains two predicates (cause and melt (Vi)) and that melt(Vi) is raised to cause (predicate raising): The two predicates become lexicalized into melt(Vt) and therefore lexicalization is a form of transformation. McCawley (1971)

further suggests that the verb kill is derived from (CAUSE (BECOME ( NOT ( ALIVE))) each of which is a semantic predicate (not a morpheme), which McCawley calls pre-lexical syntax.<sup>19</sup> This approach, which is called the generative semantics tradition, suggests that semantics is reflected in syntactic structure.

Our position essentially differs from the generative semantics tradition since the postulation of predicates that are morphologically-dependent is motivated by syntactic reasons but not by semantic reasons (semantic decomposition). The generative semantic tradition maintains the thesis that there is no need to postulate any distinction between the deep structure of a sentence and its semantic interpretation (cf. Lakoff (1971)). On the other hand, we maintain the transformational grammar tradition that syntax determines semantics and that D-structure is obtained by properties of Lexical items (cf. Chomsky (1965); also cf. Higginbotham's notion of semantics).

Under the present framework, one can assume that the semantics of a syntactic formative are found in Hale's Lexical Conceptual Structure where semantic decomposition takes place. 'Semantic decomposition' is syntactically realized if decomposed predicates form independent Lexical items and are syntactically licensed (significant) under a principle of FI. D-structure is obtained by Lexical properties of decomposed predicates; the notion of grammatical functions as configurational notions and selectional restrictions are also taken up. A predicate as a Lexical item has full lexical information whether it is a 'fusing' morpheme or a null morpheme. Thus a morphologically-nondecomposable predicate X may syntactically decom-

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<sup>19</sup> Fodor (1970) shows that kill X does not derive from cause X to die, which directly rejects McCawley's position. See also Lakoff and Ross (1972) for a response to Fodor (1970).

pose into more than one predicate with independent Lexical information in the Lexicon.

Given the notions of fusing or null morpheme, we, however, have the problem of when we can stop syntactically decomposing predicates. For example, what blocks melt (Vi) from deriving from two syntactic predicates [+become] and [+liquid] (cf. McCawley (1971))? The constraint may not come from the projection principle and the principles of UG as long as we have the notion of overlapping (RR conventions). Let us suppose that the verb kill in sentence Mary Killed John derives from three predicates, [+caus], [+become], and [+not alive]. Theta theory suggests that the syntactic structure would be [Mary [+caus] [ John<sub>i</sub> [+become] [ PRO<sub>i</sub> [+not alive]]]]. John and PRO are assigned theta-roles from predicates [+become] and [+not alive]. Overlapping conventions also suggest that when the two predicates are RRed, the two theta-roles overlap through RR conventions and the overlapped two theta-roles are interpreted as a certain type of 'patient' role at the level of LF. The principles of UG fail to prevent this potentially endless syntactic decomposition, as long as each predicate (phonetically null or not) can be syntactically licensed. This potentially endless syntactic decomposition would not create morphological problems since after the application of V-movement, predicates would form a word kill at PF. The theta-role overlapping at LF and morphological amalgamation at PF are theoretically conceivable under the present framework. In short, we would face the problem which the generative semantics tradition also faces with the notion of semantic decomposition and lexicalization.

We may suggest that the licensing factors of each predicate allow each predicate obtained by predicate decomposition to have syntactic licensing or syntactic motivations. Syntactic decomposition would be constrained by

grammar or by the Lexicon in language-specific or universal ways. However, how do we know that all the possible predicate decompositions are syntactically licensed but that for some reason, there is no syntactic evidence for syntactic decomposition? We suggest that when they select a Lexical item, language learners have a strategy, which may be called the minimal structure strategy. First, a language learner would hypothesize that a morphologically-non-decomposable predicate formed a mono-clausal structure. Then when a language learner is given syntactically justifiable evidence, he starts to hypothesize bi-clausal structure. For example, suppose that an English speaker hears either X melt or Y melt X, which makes it possible to hypothesize that the second melt is derived from the first melt when there is syntactic evidence for that hypothesis. Then the speaker would be making use of a syntactic predicate [+causal], which is probably chosen from a universal Lexicon, and which does not contradict the semantics of melt (Vt). Or predicate [+caus] would be incorporated as a Lexical item in his or her Lexicon, which is perhaps very flexible in some limited degrees. Given the minimal structure hypothesis, a language learner would not hypothesize triple-clausal structure for melt (Vt) even if in the Lexical Conceptual Structure, which one may consider as containing potential Lexical items, further semantic decomposition took place. Likewise, in Korean, when a Korean language learner hears cwu- (die) and cwuk-i- (die-caus), he hypothesizes that cwuk-i- derives from bi-clausal structure,<sup>20</sup>

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<sup>20</sup> In fact, there is a piece of evidence related to the scope of adverbs that cwuk-i- (kill-caus) is bi-clausal (also cf. Section 4.2.).

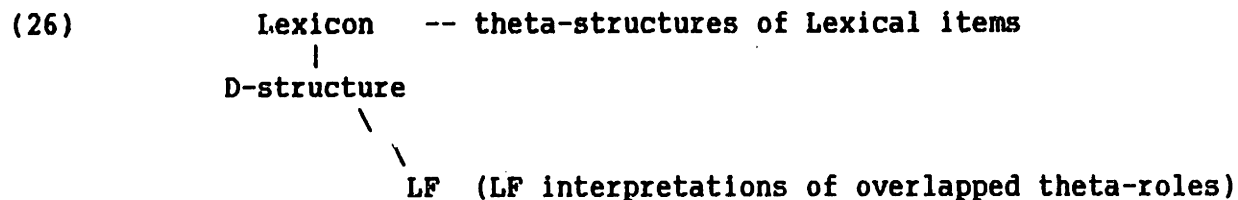
(i) uysa-ka pengtu-0-n kay-lul kothong-epsi  
 doctor-sub sick-Inf-comp dog-obj pain-without  
 cwu-i-ki wihayse yak-lul ss-ess-ta  
 die-caus-to to medicine use-past-em

"The doctor used the medicine to kill the sick dog without pain."

These types of sentences are also found in I.-S. Yang (1976); in -key ha- causativization, the scope of the adverbial without pains is the die clause;

but he or she would not hypothesize that gwuk- (die) is further decomposed unless there is empirical evidence.

Under this approach, the right side of the structure of grammar is as follows.



LF is basically interpretive, like FF. Among the interpretive principles, we suggested, are principles of 'overlapping' (RR conventions). Of course, the study of all the possible principles that govern the semantics of predicate composition is beyond our reach. Nevertheless, we can only point out that the lack of understanding of a mechanism or of a principle does not indicate implausibility or nonexistence.

### 5.3. The revised HMC and the mirror Principle

In this Section, we discuss the condition on head-movement (and overt RR) and propose a certain version of the HMC. We will argue that under our interpretation of the mirror principle (the MP), the MP derives from the Strict Cyclicity and our version of the HMC, given the notion of head-movement.

#### 5.3.1. The revised Head Movement Consttaint (the RHMC)

Head-movement (move-alpha) and RR (affect/move-category) are independent of each other in that they are triggered by different licensing properties to be properly interpreted at different levels of representation. They also differ in determining the domain of rule application. The

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in -i- causativization, it is possible that the scope of without pain is the die clause.



targets of RR are restricted on semantic grounds; the target of RR is either a functional or a lexical X-head. Configurationally RR is restricted in terms of government: X is categorially dependent upon Y iff X governs Y and X is [+CD] and RR is obtained through coindexing among local categorial dependency links. Note that when X does not directly govern Y, the categorial dependency between X and Y is obtained through the transitivity of dependency.

On the other hand, the domain of head-movement is restricted on other grounds; head-movement to functional categories are not attested to, and therefore the target of head-movement is always a lexical head (cf. Section 4.1.). We therefore suggest that head-movement applies only to lexical heads. In addition, the notion of theta-government also plays a role. Baker notes that the cases in (27b) and (27c) are blocked (cf. (48) in Baker (1985/to appear; Chap 2)).<sup>21</sup>

- (27) a. [<sub>XP</sub> [<sub>Y</sub> X<sub>1</sub>-Y] [<sub>XP</sub> [<sub>X</sub> t<sub>1</sub>] ZP]]; Y selects (theta-governs) XP  
 b. \*[[<sub>XP</sub> [<sub>Y</sub> X<sub>1</sub>-Y] [<sub>XP</sub> [<sub>X</sub> t<sub>1</sub>] ZP]]; Y does not select (theta-governs) XP  
 c. \*[[<sub>XP</sub> [<sub>Y</sub> Z<sub>1</sub>-Y] [<sub>XP</sub> X [<sub>XP</sub> [<sub>Z</sub> t<sub>1</sub>] ]]]]

The notion of theta-government explains the contrast between (27a) and (27b). Given that the target of head-movement is always lexical, it thus seems that L-marking (theta-government by a lexical head) is a crucial requirement of head-movement. The unacceptability of (27c) also suggests that head-movement should be local: The notion of government is also

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<sup>21</sup> Baker (1985/to appear) makes use of the notion of selection that implies theta-government but not of the notion of L-marking. Non-L-marked categories would create a barrier in the case of V-to-I movement if we do not assume that V-to-I head-movement change the property of I, as in Chomsky (1986a). If I theta-governs VP, as Chomsky suggests, then V-to-I head-movement would be allowed, which we would not allow under the present framework.

required. To capture these points, we suggest the following formulation of Head Movement Constraint (the Revised HMC):<sup>22,23</sup>

(28) The revised Head Movement Constraint (the RHMC):

Movement of a head a is restricted to the position of a head b that L-marks the projection containing a, and b governs a.

Given the formulation in (28) in terms of both L-marking and government, head-movement is strictly local. In the case of (27c), if Y and X L-mark XP and ZP respectively, the notion of Subjacency would not block (27c) but the RHMC blocks the movement in (27c) since X would induce the MC. In the case of (27b), if Y is not lexical, and therefore does not L-mark Y, head-movement is blocked even if the target-trigger relation is configurationally local enough to allow head-movement, as in (27a). (28) implies that in order for X to move to Y, Y should be lexical and that there must be no barrier. (In Section 5.1., we interpreted this aspect of the HMC in terms of the notion of antecedent-government (the ECP); x should properly govern its trace in (27).<sup>24</sup> Since only a lexical X-head L-marks its

<sup>22</sup> The notion of government we are assuming is repeated below:

(i) a governs b if a m-commands b and (i) there is no barrier between a and b and (ii) b is not protected by a simplex or complex X-head (cf. Chapter 2).

<sup>23</sup> This is a refined version of the HMC in Chomsky (1986b:71), who makes use of the notion of L-marking under different assumptions about head-movement.

(i) Movement of a zero-level category b is restricted to the position of a head a that governs the maximal projection x of b, where a theta-governs or L-marks x if a  $\neq$  C.

Note that (i) implies that the target of head-movement can be a functional category (e.g., C).

<sup>24</sup> The following head-movement that applies across [+CD] categories in a small clause environment in which C-to-V is not overt, is not a possibility, given the parallelism condition on the MC.

(i)

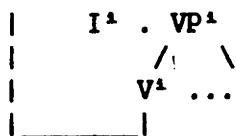
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      VP(1)
     /  \
  V(1).. CP1
   ^   /  \
   | ... IP1
   | C1 /  \

```

complements, V-to-I or I-to-C head-movement is automatically blocked.<sup>25</sup> V head-movement is thus possible only from a small clause complement that is obtained by C-to-V RR; N-to-V (and P-to-V (cf. Baker (1985/to appear))) would be possible when V L-marks NP when there is no barrier between V and N.<sup>26</sup>

In what follows, we show that a certain generalization between syntactic derivations and morphological derivations, which is called the mirror principle (Baker (1985a)), is a consequence of the RHMC and Strict Cyclicity, under the notion of Xo-structure obtained by head-to-head transformations.



RRed  $C^1$  and  $I^1$  would induce the MC although CP and IP that are either simplex or complex are not inherent barriers. Therefore the movement in (i) would violate the RHMC. This is, in fact, a welcome result since there seems to be no V-V amalgamation shown in (i).

<sup>25</sup> The RHMC also discards a V-to-C head-movement approach to VSO languages (cf. Emonds (1980;1986); Sproat (1985a)). See Choe (1987a) who shows that V-to-C approaches to VSO languages are empirically inadequate and suggests an adjunction approach to VSO languages that leads to an account of parametric variations among VSO languages.

<sup>26</sup> If NP is DP or KP, then D or/and K should be RRed with N in order for an N head to be incorporated into V (cf. Abney (1987); Hale (1987; class lectures)).

### 5.3.2. The mirror principle as a consequence of the RHMC and Strict Cyclicity

The autonomy thesis of syntax with respect to morphology does not necessarily follow from any version of the syntactic position, which advocates the thesis that morphological amalgamation may take place in syntax. While our version of the syntactic position in (8) suggests the autonomy thesis of syntax with respect to morphology, Baker's (1985a; 1985/to appear) syntactic position denies the autonomy thesis of syntax with respect to morphology in explaining the following generalization called the MP, which is repeated from Chapter 2.

- (29) The mirror principle (the MP; Baker (1985a)):  
Morphological derivations must directly reflect syntactic derivations (and vice versa).

Baker (1985a) suggests a very simple explanation of the MP: the 'strong' correlation between affixation order and order among syntactic process such as passive and causative can be captured by the Mirror Image Hypothesis (the MIH): Morphology and syntax each represent one side of the same coin (cf. Chapter 1).

On the other hand, the strong lexicalist position in general<sup>27</sup> claims that morphology and syntax are independent in that the objects of study and principles differ. This claim largely depends upon the hypothesis that the internal structure of words is not the domain of syntax (cf. the LIH in (19a)). Consequently, the content of the MP is explained in the strong lexicalist position differently from Baker.

Grimshaw (1986), for example, suggests that the content of the MP can be explained in terms of the theory of word structure and of the notion 'head of a word' (cf. Williams (1981a)). According to Grimshaw, the 'head

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<sup>27</sup> Di Sciullo and Williams (1987); Roeper and Siegel (1978); Roeper (1987); Grimshaw and Mester (1985); these assume various theoretical frameworks.

of a word' (and nothing else) can trigger changes in 'the argument structure, Case structure,<sup>28</sup> or subcategorization of a word, or can otherwise affect the syntactic configuration the word appears in' (Grimshaw (1986;-747)). Grimshaw suggests, under the strong lexicalist position, that there are syntax-related morphosyntactic operations that are triggered by affixation.<sup>29</sup> She suggests that the two operations (affixation and morphosyntactic operations) apply in a single derivation in a single domain (probably in the morphological component or in the Lexicon) but that they can be ordered separately with other rules intervening between them because they are independent of each other. By separating these two operations, she derives the MP from the following assumption, which is plausible from the point of view of the strong lexicalist position: Any operations associated with an affix must be applied at the point in the derivation where the affix is the head (Grimshaw (1986;747)). Thus, the MP follows with slightly different empirical predictions from Baker's MIH, as Grimshaw notes: affixation and morphosyntactic operations can be ordered together, but do not have to be, as the MIH implies.<sup>30</sup> Compare Grimshaw's and Baker's interpretations of the MP. Grimshaw interprets the MP as a generalization that holds for the link in (30a) while Baker interprets the MP as a generalization that holds for the link in (30b).

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<sup>28</sup> Grimshaw's terminologies 'argument structure' and 'Case structure' roughly correspond to our terminologies 'theta-structure' and 'argument structure,' respectively.

<sup>29</sup> Grimshaw's lexical operations are 'syntax-related' since they may change the grammatical relations of arguments (argument/Case structure) (cf. Grimshaw and Mester (1985)).

<sup>30</sup> Whether Grimshaw's prediction or MIH's prediction is right seems to be both an empirical and a theoretical question. We will not attempt to prove which prediction is correct here. Like Grimshaw (1986), we will have a weak interpretation of the MP below.



The notion of Xo-structure derived by head-movement and the MIC (morphological interpretation conventions) suggest that the one-to-one link (ii) is trivially obtained: When a moves to b, the only possible morphological derivation is either  $[[a]-b]$  or  $[b-[a]]$  in which a is a stem and b is an affix. Thus, we may interpret the MP in the following way: there must be a one-to-one relation between D-structures and derivations of head-to-head transformations or morphological derivations.

Given that transformations are constrained principles of UG, we can interpret the one-to-one relation of link (i) as follows: given a D-structure A, there must be only one output structure A' at an appropriate level. For example, at S-structure, John was killed is obtained from e was killed John through A-movement and John killed whom from who did John kill through A-bar movement. Likewise, at morphological structure,  $[[V]-\text{caus}]$  is obtained from caus ... V[+MD] through head-movement. Under the present framework, this one-to-one link is obtained through the interaction between transformations and principles of UG and certain conditions of transformations. If the MP is interpreted in this generalized way, given a principle of FI and the licensing theory of transformation, we would expect the one-to-one link between D-structures and the outputs of transformations that apply to those D-structures; other possible derivations of transformations are ruled out by principles of UG and conditions on transformations. More specifically, given a D-structure, principles of UG and conditions on head-to-head transformations insure that there is only one derivation of head-movement (head-to-head transformation) and therefore only one morphological derivation. In short, the present approach suggests that the MP is an effect of the interaction between transformations and principles of UG/conditions on transformations.

Two clear candidates for conditions on (head-to-head) transformations are the RHMC as formulated in (28) and Strict cyclicity of rule application, which states as follows:<sup>22</sup>

(32) Strict Cyclicity (STC):

No rule can apply to a domain dominated by a cyclic node A in such a way as to affect solely a proper subdomain of A dominated by a node B which is also a cyclic node ((51) in Chomsky (1973:243)).

The STC in (32) implies 'bottom-to-top' application (cf. Chomsky (1966)), and blocks the application of rule B if the domain of rule B is a sub-cycle of that of rule A, when an output of rule A is the input of rule B. In fact, below we show that both the RHMC and STC correctly predict that there is an one-to-one relation between syntactic structures and syntactic derivations, as long as morphological derivations are obtained by head-to-head transformations<sup>23</sup> and that we do not need to motivate any other mechanisms of UG to explain the interpretation of the MP given in (31).

Under the present approach in which pass represents a predicate (cf. Section 4.3.), consider the following Bemba data, which observe the MP.

- (33) Mwape aa-mon-eshy-wa Mutumba na ine  
 Mwape 3sS-see-caus-pass Mutumba by me  
 "Mwape was made to see Mutumba by me."  
 \*"I made Mutumba to be seen by Mwape." ((51b) in Baker (1985a))

Given the interpretation of the sentence in (33), the syntactic structure of (33) must be (34a) below and given the string order of the complex

<sup>22</sup> The hypothesis that the syntax of complex predicates is subject to STC is explicitly suggested in Smith (1982) and implicitly assumed in the syntactic position (cf. Woodbery (1985); Sadock (1986); Woodbery and Sadock (1986)).

<sup>23</sup> If morphological derivations are not obtained by head-to-head transformations (cf. cliticization), then there may not be one-to-one relation in link (i). Below we will assume that the MP holds of complex words derived by head-to-head transformations.





another head and trace theory always insures (A) that the affix in the largest cycle represent a matrix predicate and that the affix in the second largest cycle represents a second matrix predicate (and so on) and (B) that the stem in the most embedded cycle represents the most embedded predicate in syntactic structure. Thus, as long as predicate-movement is involved, there seems to be an one-to-one relation between D-structures and morphological derivations.

Consider another example where four predicates affixed in head-final languages:

- (35) a. Utit-ti-tau-kqu-vauk  
           return-caus-pass-want-3sS/3sO    "He wants it to be returned (made to come back)" (cf Smith (1982); LI Eskimo)  
       b. [<sub>S</sub> want [<sub>S</sub> pass [<sub>S</sub> caus [<sub>S</sub> return ]]]]

The interpretation of (35) suggests the clausal structure given in (35b). In head-final languages, the structure of V-caus-pass-want must be [[[[V]-caus]-pass]-want], whether the complex predicate is derived by RR or by head-movement, because predicates cannot cross other predicates, given the RHMC. Thus the morpheme order reflects syntactic structure: want is the highest matrix predicate and pass is the predicate of the second highest clause. Their order cannot be changed without changing their positions at D-structure since every predicate represents a syntactic cyclic domain.

Consider another set of data from Baker (1985a), which contains a nonpredicate.

- (36) a. Naa-mon-an-ya                           Mwape na Mutumba  
           1sS-past-see-recv-caus                           and  
           "I made Mwape and Mutumba see each other."  
       b. Mwape na Chilufya baa-mon-eshy-ana Mutumba  
           and                           3pS-see-caus-recv  
           "Mwape and Chilufya made each other see Mutumba ((49) in Baker (1985a))

The interpretation of (36a) suggests that recv should be associated with the embedded predicate and given the morpheme order, the morphological

structure of the complex predicate may be either (1) [[[V]-recip]-caus] or (2) [[V]-[[recip]-caus]]. In (1), recip moves to see in the embedded clause and then [recip-see] moves to caus. In (2), recip-to-caus movement in a matrix clause is followed by see-to-recip-caus movement. Those derivations would not violate both STC and the RHMC since recip does not represent a predicate. Thus the MP may not hold in this case. The interpretation of (36b) suggests that recip must be associated with the matrix clause and the morphological structure of V-caus-recip may be either [[V]-caus]-recip] or [[V]-[caus-recip]]. Both derivations are possibilities since they do not violate the RHMC or STC. However there seems to be a reason for why the RHMC does not choose one from the two possible derivations: it may be that recip is a clitic and is cliticized to V,<sup>35</sup> and therefore it may be possible to have two derivations. Or if recip amalgamation is obtained by a mechanism other than head-movement, we expect other principles of UG that govern the behavior of cliticization to choose one of the two possible derivations.<sup>36</sup>

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<sup>35</sup> It may not be the case that recip is incorporated to V exclusively by head-movement, since noun-incorporation from an ECMed NP to a matrix V is not attested to in general (cf. Baker (1985/to appear)). We also assume that ne-cliticization described by Rizzi (1981) may not be derived exclusively by head-movement since the landing site of the clitic ne is not a lexical head; there may be an independently motivated mechanism (other than head-movement) governing cliticization of heads, which is not morphologically-motivated.

<sup>36</sup> If some morphemes that are not derived by head-movement are not constrained by the RHMC, then we would expect that morphological structure may not reflect syntactic tree structure. Consider the Eskimo data in which NEG appears as adjacent to tell but not to dry; nevertheless, NEG does not go with tell but with dry, as we see in the translation.

(1) ...[ ma-kut atura-ni,... keniller-mun kana-vet, macire-lu-ki  
 this-ABp clothes-ABp.3Rs firepit-TMs down-TM expose-APO-3pO  
 kiner-ci-gaal-sqe-vke-na-ki  
dry-just-tell-NEG-APO-3pO

"...(he) told (her) not to dry his clothes (by) exposing them to the firepit down there." ((23) in Woodbury (1985))

We simply assume that syntactic operations through which complex predicates

One more example under the domain of the MP is the one which contain agreement elements.

- (37) a. Hu#na'-fan-s-in-aolak i famagu'un gi as tata-n-niha  
 1sS-caus-pl-pass-spank children obl father-their  
 "I had the children spanked by their father." (Chamorro data; (25)  
 in Baker (1985a))  
 b. [<sub>S</sub> caus [<sub>S</sub> pl pass [<sub>S</sub> spank ]]]

In (37a), pl is associated with the clause with pass but not one with V or with caus, as shown in (37b), and the morpheme structure of caus-pl-pass-V<sup>37</sup> is either [caus-[pl-[pass-[V]]] (1) or [[caus-pl]-[pass-V]] (2). Derivation (1) would not violate either the RHMC or STC since it is a typical cyclic application. On the other hand, derivation (2) indicates that caus-pl is obtained first and that then caus-pl-pass-V is obtained. However, the second derivation would violate the RHMC because the trace of pl would induce the MC when pass-V moves to caus-pl. Note also that pl is not RRed with caus, since V-to-I RR is not an option given that I, which is the s-head, is semantically weaker than V.

To conclude, the content of the MP is simply a consequence of the interaction of the RHMC and STC under the notion of Xo-structure obtained through head-movement/overt RR. On the other hand, Baker apparently intends to constrain both link (i) and link (ii) in terms of the MIH. Given that both links are constrained independently, the MIH is not a viable hypothesis since it is redundant and causes theoretical problems, as

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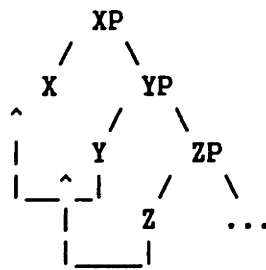
are obtained determine the syntactic aspects of those complex predicates. Depending on different morphological structure, we may have different types of morphological realization; depending on whether movement obeys the RHMC, the relation between morphological structure and tree structure may be understood in different ways, about which we do not have much understanding at this point.

<sup>37</sup> In Chamorro, a head-initial VSO language, morpheme order reflects the head-parameter. We thus predict that the complex predicate in (37) is derived by RR. Note that whether it is derived by RR or head-movement, the morphological cycles are the same except for the direction of affixes.

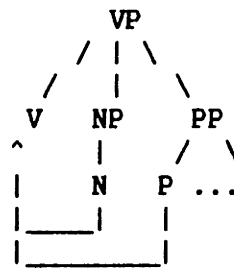
we discussed in Chapter 2. Although Baker interprets the MP from a different point of view, the MIH itself does not actually play a role in ruling out possible unacceptable derivations and would have to resort to STC and to a version of the HMC to rule out them.

The RHMC not only explains the MP (which we interpret as the one-to-one link between D-structures and derivations of head-to-head transformations) but also excludes some impossible combinations. Baker illustrates various cases of possible and impossible combinations of head-movement. There are two possible instantiations of multiple head-movement: First, head-movement may apply cyclically (38a). Second, P and N can both be separately incorporated into the same V (38b).<sup>28</sup>

(38) a.



b.



Given the RHMC, cyclic head-movement is valid as long as complementation relations (L-marking relation) hold. For example, a noun/verb-incorporated

<sup>28</sup> For example, in (1), N and P are incorporated.

(1) Wa?-khe-ta?nar-atya?t-hah0.

past-1sS/3FO-bread-buy-app "I bought some bread to her."

((1); Tuscarora data drawn from Williams (1976); cf. (2) from Baker (to appear; ch 7))

V can further be incorporated to another V (cyclic application).<sup>39</sup> These two instantiations violate neither STC nor the RHMC.<sup>40</sup>

There are three impossible instantiations of multiple head-movement. First, when P is incorporated to a V, the head (N) of its object (NP) cannot be incorporated to that V.<sup>41</sup> Second, two nouns or Ps cannot be incorporated to a V at the same time.<sup>42</sup> Third, after V is incorporated to {caus/pass}, P, which is in the same clause as V, cannot be incorporated to

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<sup>39</sup> The following example demonstrate the case of successive cyclic application: N-to-V head-movement and then [N-V]-to-caus head-movement apply (noun-incorporated V is incorporated to another V)). Also cf. (33) and 935) for other instantiations of cyclic application.

(i) I-'u'u-kur-'am-ban.

1s:2s-[[baby-hold]-caus]-past "I made you hold the baby." ((i); Southern Tiwa data drawn from Allen, Gardiner, and Frantz (1984); (1) from Baker (to appear; ch 7))

<sup>40</sup> Given the parallelism condition on the MC, N might induce the MC when P moves to V in configuration (38b). We suggest that a head can induce the MC only when it intervenes in the path between a governor and a governee and the head of a sister maximal projection of a governor does not induce the MC.

<sup>41</sup> The specific example Baker gives is in (i), in which P and the head (N) of the NP object of P are incorporated.:

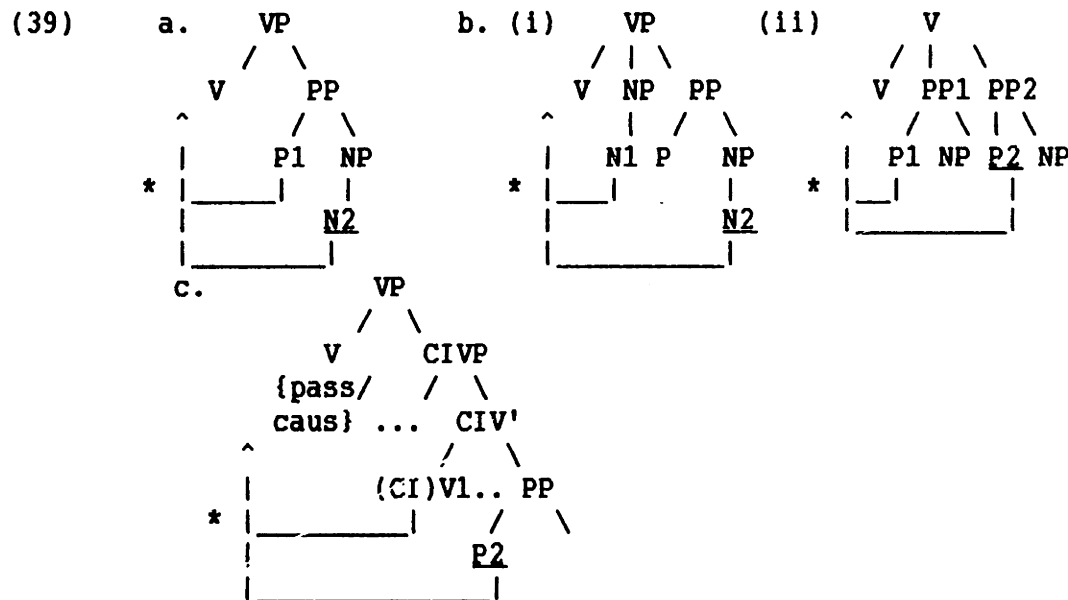
(i) \*Wa?-khe-yat-wir-ahninv-?-0

past-1sS/30-refl-child-buy-asp-app "I sold him to the children." ((i); Tuscarora data drawn from Williams (1976); cf. (3) from Baker (to appear; ch 7))

<sup>42</sup> The data can be drawn from Niuean (drawn from Baker (to appear; ch 7; 24c)); compare (1a) and (1b).

- (1) a. Kua fa fakahu vakalele tuai he magafaoa e tau tohi.  
perf-hab-send-airplane-perf erg-family abs-pl-letter  
"The family used to send the letters by airplane."  
b. \*kua fa fakahu tohi vakalele tuai e magafaoa.  
perf-hab-send-letter-airplane-perf abs-family  
"The family used to send the letters by airplane."

[V-{caus/pass}].<sup>43,44</sup> Those three cases are schematically represented as follows:



Let us call the underlined N2 or P2 in (39) X2 and the V1, N1 or P1 in (39) X1. In (39), X1-to-V head-movement and X2-to-V head-movement apply at the same time. The RHMC explains why the derivations in (39) are unacceptable when both X1 and X2 are separately incorporated to V: V L-marks the

<sup>43</sup> The data comes from from Chichewa (i) (Baker (to appear; ch 7; (91b) and (93b)).

(i) a. Mbidzi zi-na-gul-ir-idw-a nsapato ndi kalulu  
 zebras SP-past-buy-appl-pass-asp shoes by hare  
 "The zebras were bought shoes by the hare." [[[buy]-appl]-pass]  
 b. \*Mfumu i-na-ph-edw-ex-a mbuzi (ndi Mavuto)  
 chief SP-past-kill-pass-appl-asp goat by Mavuto  
 "The chief was killed a goat by Mavuto." [[[buy]-pass]-[appl]]  
 In (ia), P2 moves to V1 and then [V1-P2] moves to pass; the derivation represents the cyclic application of head-movement. In (ib), after V1 moves to pass, P moves to [V1-pass].

<sup>44</sup> Baker also notes that noun-incorporation out of a possessor is not allowed; Baker (to appear; chap 7) notes that incorporation example of (i) is not attested to (in the grammars of the Iroquoian languages).

(i) \*I-agr-[baby [car-stole]]  
 "I stole the baby's car."

This is also predicted by the RHMC if 's induces the MC: the whole NP is L-marked, but N out of its SPEC is not possible because V cannot govern the SPEC of NP because of 's (a possessive marker) that governs the SPEC position within NP and that would induce the MC.

PP in (39a), the NP or PP1 in (39b) and the CIVP in (39c). Thus, the head of a category L-marked by V can be incorporated to V. However, X2-movement in (39) violates the RHMC. In (39a), although V L-marks PP, V does not govern N2 because of P1 that would induce the MC. In (39bi), N2-movement is not acceptable, since P would induce the MC. Thus V does not govern N2. In (39c), CIV1 would induce the MC so that V could not govern P2. In (39bii), since a predicate cannot select two PP's as its complements, one of the two PPs (= P2) is not L-marked and therefore P2-movement is not legal. In short, the X2-movement in (39) violates the RHMC, resulting in the ungrammaticality of the derivations in (39). Since the RHMC correctly rules out impossible instantiations of movement, grammar does not need to employ additional mechanisms to rule out the X2-movement in (39).

At this point, let us compare our approach to Baker's approach to the facts in (39). Unlike the present approach, Baker has the following notion of the GTC, assuming a certain version of the HMC.<sup>45</sup>

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<sup>45</sup> The HMC formulated by Baker (to appear; Chapter 2; (49)), for example, is as follows:

(i) a trace of X should be properly governed; a is properly governed by b if there is no barrier between a and b; and a and b are heads.

(ii) barrier: Let D be the smallest maximal projection containing A.

Then C is a barrier between A and B if and only if C is a maximal projection that contains B and excludes A, and either:

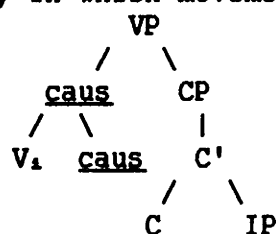
(a) C is not selected, OR

(b) the head of C is distinct from the head of D and selects some WP equal to or containing B.

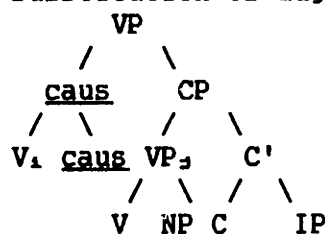
(i) and (ii) together with the GTC allow X2-movement in (39); if XP2 is selected, it is not a barrier as long as it satisfies the second condition (iib).

For Baker, (iib) is needed to explain long-distance movement as in causative constructions since V-to-caus movement in Baker's framework is as follows, in which movement to X<sub>0</sub> is either substitution or adjunction.

(i) a.



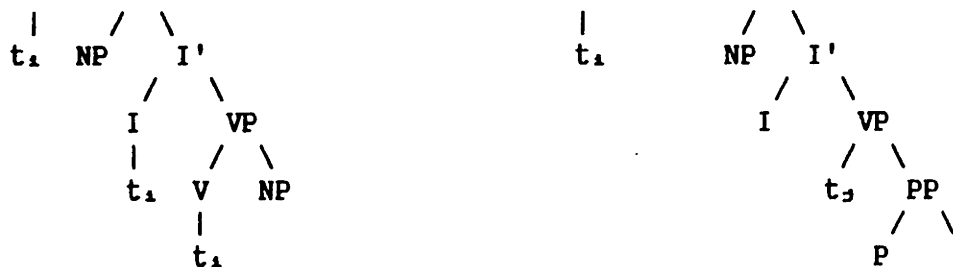
b.





- (40) The Government Transparency Corollary (GTC): A lexical category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position.

The GTC suggest that when P1 and V1 in (40a and c) are incorporated to V, then {P1/V1}-V automatically governs NP2 or PP2. Thus, if the GTC should hold, nothing blocks the movement of N2 or P2 to P1-V or V1-V in (39) under the present approach or under Baker's framework in which head-substitution (head-movement to functional categories) and long-distance head-movement are allowed (cf. fn. 45). Given the GTC, V-X would govern X2; since V L-marks XP containing X2, X2-movement would not violate the RHMC. Thus unlike the present approach, under the notion of GTC given in (40), we need additional mechanisms to rule out X2-movement in (39):<sup>46</sup> Note that the GTC contradicts the RHMC in terms of the parallelism condition on the MC. Given that head-movement is motivated by a certain morphological reason and does not affect categories, the GTC as a head-movement effect is rather counter-intuitive and is not deduced from principles of UG. Thus assuming the RHMC, which is both empirically and theoretically motivated, we dispense with the GTC as a head-movement effect.<sup>47</sup>



As long as one allows long-distance step-by-step movement, head-movement cannot be constrained by L-marking and government (cf. the RHMC). It should be constrained by antecedent-government or by theta-government, given that functional categories do not theta-mark.

<sup>46</sup> Baker (1985/to appear) introduces the notion of morphological identification to block the X2-movement in (39a and b); see Choe (in progress) for problems with the notion.

<sup>47</sup> One more motivation for the GTC is to explain the case of applicative NPs (and stranded possessors). For example, Baker (1985/to appear)

Comparing Baker's and our proposal on the notion of head-movement, we summarize our discussion as follows:

- (41) a. Baker's (1985/to appear) proposal: the GTC; a version of the HMC that allows head-movement to functional categories and head-substitution (long-distance head-movement is possible)
- b. the present proposal: no GTC; the RHMC that allows no head-movement to functional categories and no substitution (no long distance head-movement)

Our approach is preferable to Baker's approach for both empirical and theoretical reasons: Under Baker, the HMC that does not rule out X2-movement in (39) and therefore an additional mechanism is required. We eliminate undesirable effects of the GTC in terms of the RHMC, ruling out impossible head-movement without motivating an additional mechanism to rule out X-movement in (39). In addition, the RHMC not only restricts head-movement in a theoretically and empirically motivated way (cf. Chapters 2 and 4), but also correctly delimits head-movement so that no additional mechanism is required to rule out X2-movement in (39). The present understanding of restricted head-movement in terms of the RHMC also nullifies Di Sciullo and Williams's (1987) (DW hereafter) argument against a head-movement approach to noun-incorporation. They correctly point out that Baker's approach does not imply (A) that an incorporated noun must be an argument of the incorporated verb (p.67) (cf. the L-marking requirement of the RHMC) and does not incorporate the empirical fact (B) that the

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suggests that the applicative construction is derived when the P of a PP complement of V is incorporated into a V. Applicative NPs are assigned Case by their D-structure governors even after their governors are incorporated; given the GTC, as long as the governor of an NP is incorporated to another head obeying conditions on transformation, that NP is governed in-situ by an incorporated complex head.

We suggest, without argument, that the GTC effect with respect to Case-government in fact derives from an independently-motivated ECM effect. See Choe (in progress) for the details of ECM effects that correctly subsumes the GTC effect with respect to Case government. See also Massam (1985) for an approach to ECM that subsumes the GTC effect with respect to Case assignment.

incorporated item is the head of the category that is the complement of the incorporating verb (p. 68) (cf. the government requirement of the RHMC; also fn. 45). Given the RHMC, we correctly imply the two properties of head-movement without abandoning the syntactic position. Under the notion of head-movement in Baker (1985/to appear), who assume the GTC and head-substitution (and long-distance head-movement), fails to explain the two properties of head-movement. Baker's head-movement is subject to a version of the HMC, which requires either a theta-making relation or a certain version of antecedent government (cf. fn. 45). Thus Baker's notion of head-movement is not restricted or too loose to predict the properties (A) and (B) above. Under the current formulation of the RHMC, those empirical properties on noun-incorporations follow; in fact, we have shown that the two properties, which is explained in terms of the RHMC, applies to any instantiations of head-movement.<sup>48</sup>

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<sup>48</sup> Since the RHMC is formulated in terms of L-marking, the RHMC subsumes the effects of the First Sister Principle proposed by Roeper and Siegel (1978;208) that constrains lexical compounding:

(1) All verbal compounds are formed by incorporation of a word in the first sister position of the verb.

Under the present approach advocating the autonomy thesis of syntax with respect to morphology, it would be undesirable to suggest that a restricted version of the RHMC applies to the Lexicon or that a generalized version of the First Sister Principle applies in syntax, simply because the First Sister Principle and the RHMC share the same effects.

Given that both lexically-derived and syntactically-derived words are subject to morphological principles, and given that (1) and the RHMC require head-complement relations, the fact that lexical compounding and head-movement are constrained by similar principles can be attributed to some morphological principles referring to the notion of subcategorization. In fact, the notion of subcategorization may be available in morphology in the following way: Affixes subcategorize for stems (cf. Lieber (1981); Williams (1981a)). Note that under the RHMC, when the projection of a target of head-movement subcategorizes for or selects the projection of a stem, head-movement can apply. Thus we can suggest that there is a morphological interpretation of the notion of L-marking into the notion of morphological subcategorization in the morphological component: head-complement relations in syntax and in the Lexicon are interpreted as affix-stem relations in terms of head-complement relations.

If both lexically- and syntactically-derived words are subject to a

DW also argue that what Baker calls 'syntactic' can also be shown as lexical. Then the MP is nothing more than a consequence of word formation (cf. Grimshaw (1987)). DW argue against Baker's (1985) suggestion that noun-incorporation is syntactic.<sup>49</sup> One strong argument (cf. DW; (1985 NELS abstract)) is that Baker's system does not explain why the usual cases of noun-incorporation do not occur in ECM environments.<sup>50</sup> Baker, who suggests the GTC and long-distance head-movement, fails to explain why this is so. On the other hand, the RHMC correctly explains why head-movement is not possible out of an ECMed argument. ECM V's L-mark CIPs so that ECMed NPs

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morphological principle that refer to the relations that can be interpreted as affix-stem (head-complement) relations in the morphological component, then it is not coincidental that in Korean, some  $V_k+V_x$  sequences or  $V_{\{i/h\}}-$  ( $V_{\{caus/pass\}}$ ) are also lexically-derived. Remember that  $V_k+V_x$ , and  $V_{\{i/h\}}-$  complex predicates are syntactically derived, while they may also be lexically derived, losing their compositional meanings.

<sup>49</sup> Other arguments that Baker gives as evidence for the syntactic position on noun-incorporation include these:

a. noun-incorporation may result in stranding:

- (i) a. Ka-nuhs-rakw [ nehneh a-ak-ahninu?]  
 3N-house-white that indef-3F-buy  
 "[The house that she would buy] is white."

b. Hrao-nuhs-rakw ne [sawatis ]

3M-house-white John

"[John's house] is white." (Mohawk data; (49 and 55) in Baker

(1985/to appear; Chap 3); originally from Postal (1962; 395 and 319))

b. noun-incorporation may illustrate doubling.

- (ii) Ka-nuhs-raku thiku ka-nuhs-a

3N-house-white this pre-house-suf (Mohawk data: from DW (p.64))

c. incorporated nouns may be referentially transparent.

- (iii) K-atenun-hah-kwe. Ah tis yehetkv

I-watch-HAB-past ah how she.ugly

"I was baby-sitting. Boy is she ugly." ((34) in DW (p.68); originally from Mithun (1984;112))

DW discusses other ways to look at these aspects of noun-incorporation. Both Baker's and DW's claims on these points are not falsifiable under the current understanding of the linguistic facts in (i-iii). We simply point out that these three points are not incompatible with either Baker's or our version of the position that noun-incorporation is syntactic.

<sup>50</sup> There is an exception to the fact that N out of an ECMed NP does not incorporate: recip may incorporate to V in a small clause ECM environment, as in (36b). It thus seems safe to assume that cliticization (independently of noun-incorporation) is responsible for the recip-movement in (36b).

can be incorporated to ECM verbs. However, CI would induce the MC so that an ECM verb cannot govern the head of the embedded subject NP.<sup>51</sup>

So far, we have discussed the behavior of head-movement. By discarding head-movement to functional categories, we have reformulated the RHMC, which correctly delimits the behavior of head-movement. We have also shown that the MP derives from Strict Cyclicity and the RHMC (an effect of the interaction between transformations and principles of UG/conditions on transformations). In the following Section, we discuss an approach to complex words, i.e., Di Sciullo and Williams's (1987) approach, and show that it is not viable on both theoretical and empirical grounds.

### 5.3. Complex words under the strong lexicalist position

The strong lexicalist position<sup>52</sup> advocates the following theses: (1) affixation is always lexical and (2) it results in change in theta-structure since affixation affects the theta-structure of a stem. On the other hand, the present approach suggests that (1) is not true since affixation can apply in syntax and that (2) is an empirical question. Given the projection principle, affixation affects theta-structure if it is lexical whereas it does not affect theta-structure if it is syntactic. We have seen that affixation does not really change theta-structure although it changes argument structure (or Case structure). Whether affixation results in change in theta-structure is a purely empirical issue. Affixation that is argued to change theta-structure can also be argued to change argument

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<sup>51</sup> If ECMed arguments adjoin to an ECM verb, as we suggested in Section 4.1. (cf. Choe (in progress)), then head-movement out of an ECMed NP is ruled out by the RHMC since an ECM verb cannot L-mark its projection that contains an ECMed argument.

<sup>52</sup> cf. Mithun (1984;1986); Williams (1981); Grimshaw and Mester (1985); Grimshaw (1986); and Di Sciullo and Williams (1987).

structure but not theta-structure (cf. Sections 3.3. and 4.2.). Thus it seems that the criterion based on whether 'affixation 'changes theta-structure' is not theory-external and does not determine whether it is derived lexically or syntactically. For example, affixation of -able has the same effect as passive affixation (-en). Both affixations may change theta-structure, but whether they really change theta-structure is an empirical issue. We have also seen that the morphological aspects (of a word) do not directly indicate whether it is lexically-derived or syntactically-derived, as we saw in Sections 4.2. and 4.3.. Thus neither morphological aspects of words nor 'changes in theta-structure' determine whether morphologically-complex words are derived syntactically or lexically.

Di Sciullo and Williams (1987; DW hereafter) discuss complex words under the ideas that when phonological strings are morphologically words, they are always derived lexically and that if words are morphologically complex, affixation triggers change in the theta-structure of a stem. They claim that syntactic rules may alter grammatical relations (A-movement) but that there is 'no syntactic rule that alters argument structure.'<sup>53</sup> In short, DW aim at a theory in which affixation is entirely excluded from the syntactic component. Under the two theses above, DW introduce the notion of words as 'syntactic atoms' and 'syntactic words'<sup>54</sup> to explain the

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<sup>53</sup> Note that their position does not allow the notion of change in argument structure but does allow that of change in theta-structure, which occurs in the Lexicon. On the other hand, the present approach allows the notion of change in argument structure (Case structure) in syntax (cf. causative constructions) and that of change in theta-structure in the Lexicon. Syntactic rules that change argument structure are not blocked as long as the principles of UG (such as the theta-criterion and the projection principle) are not violated. Because of the projection principle, there are no syntactic rules that change in theta-structure, whereas RR or head-movement changes argument structure without changing theta-structure.

<sup>54</sup> The two other notions they discuss are a 'morphological object' (morpheme) and a psychological object (listeme), which are not our immediate

morphologically-complex words and 'restructured' or 'reanalyzed' words discussed in the literature. 'Syntactic atoms' refer to [words] that can be inserted into an Xo position (p.78) (the syntactic atomicity of words). 'Syntactic words' refer to phrasal units that can be inserted in an Xo-position; since these phrasal units do not follow from morphological laws or from the syntactic autonomy of words, they consider them as marked objects. The rules creating this 'syntactic word' essentially reanalyze a phrase as a word (as a syntactic atom) and they are part of word formations. (p.79). Their main suggestions, as summarized below, directly relate to our concerns.<sup>55</sup>

- (42) a. Words are syntactic atoms that are inserted in Xo positions.
- b. Phrases may be inserted in Xo position as syntactic words (marked cases). (93/100)

(42a) suggests that M- and M/R-complex words in our sense should be 'syntactic atoms'; (42b) suggests that R-complex words in our sense may be phrases inserted in Xo positions ('syntactic words'), along the lines of Rizzi (1982) and of Zubizarreta (1982;1985)).

The strong lexicalist position in (42a) can easily be dismissed from a theoretical and empirical point of view.<sup>56</sup> First, (42a) directly contradicts the syntactic position that allows the employment of phonetically null predicates or of 'fusing' morphemes (remember that we saw in Sections 4.2. and 4.3. that such predicates and morphemes lead to proper understand-

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concern.

<sup>55</sup> The other specific related morphological phenomena they discuss will not be dealt with here. Our point in this subsection is to show that the two suggestions in (42) are not desirable and do not offer any insight into the matters we are discussing.

<sup>56</sup> As Jensen and Johns (in press) have also pointed out, the strong lexicalist position is theoretically problematic; it is forced to say that lexical rules also change Case structure or grammatical functions (cf. Grimshaw and Mester (1985); Grimshaw (1986)).

ing of cross-linguistic variants of passive and ergative (and nonergative) causative constructions). (42a) also fails to face empirical facts concerning three different types of morphological amalgamations: lexical amalgamation, deep-morphological amalgamation (by deep-overt RR or by head-movement), and surface-morphological amalgamation (by surface-overt RR), which are empirically found cross-linguistically, as we discussed in Chapters 3 and 4.

By maintaining (42a), DW may lack various aspects of predictions that our proposal has: DW fail to offer any insight into the fact that in certain cases morpheme order reflects the head-parameter or the RHR and therefore in head-initial languages both directions of affixation are attested to, while in head-final languages only one direction of affixation is attested to. Under (42a), it would be difficult to explain why morpheme order reflects the head-parameter in certain cases and in fact, the string-preserving property of RR would be surprising or considered as a marked phenomenon (as exceptions to the RHR), since DW have no principled way to correlate the head-parameter and morpheme order in certain environments. Also, it would be hard to differentiate the morphology, syntax, and semantics of M- and M/R-complex words in a systematic way as we do.

The suggestion in (42b) also has some serious problems. In DW, the notion 'syntactic word' is motivated to explain 'reanalysis;' DW suggest that reanalysis is obtained by having double structure (called coanalysis) whose top structure reflects syntactic structure consistent with (42a) and whose bottom structure reflects morphological aspects or represents the structure of a 'syntactic word' formed by more than one 'syntactic atom.' They suggest that coanalysis is obtained when an affix is ambiguously taken as adjoined to the phrase and affixed to the head; thus coanalysis is





morphological compounds with V since, like sase in Japanese, faire 'internalizes' an embedded subject (cf. Williams (1981b); DW).<sup>58</sup>

There are a number of problems with this approach.<sup>59</sup> First, the principle behind coanalysis, i.e., the HPC, is not deduced from principles of UG. Thus, from the point of view of UG, it is not economical and causes a learnability problem. Second, the syntactic analysis allows a VP complementation in the environments of coanalysis; the above VP complementation is rather radical since the logical subject of read (à Marie) is not base-generated in the proper domain of V-projection; it appears in the complement position of a matrix verb. The more serious problem with VP complementation is that in noncoanalysis environments, the IP projection would be projected in different ways with regard to the subject position of read. Thus the top structure (syntactic analysis) violates the projection principle at D-structure, or they would have to allow different projections for every transitive predicate in French and Italian, which is very undesirable. Third, this approach does not distinguish between Italian causative and 'restructuring' constructions since the structure of Italian causative construction would be like (44a) and therefore would require additional mechanisms to differentiate 'restructuring' and causative constructions in Italian.<sup>60</sup> Given that the top structure does not intend

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<sup>58</sup> DW call the causee in both Japanese and Romance causative constructions the 'internalized subject.' This notion applies both to the nonmorphological faire affixation and to the morphological sase affixation.

<sup>59</sup> Our criticisms of Zubizarreta's (1982) 'parallel' structure approach to 'restructuring' directly apply to DW's coanalysis approach (cf. Chapter 3), which we will not repeat here. Below, we discuss additional objections to their coanalysis.

<sup>60</sup> Remember that Italian causative construction does not employ V-to-V RR showing no auxiliary change, while the 'restructuring' construction triggers auxiliary change.



linguistically productive phenomena, as we in fact showed in Chapters 3 and 4, we would better motivate mechanisms or transformations governing the morphological aspects instead of motivating coanalysis, loosening the burden of grammar and reducing the redundancy of the bottom structure.

In fact, a coanalysis approach is also empirically problematic. For example, the following Chi-Mwi:ni causativization raises a problem with coanalysis.<sup>61</sup>

- (47) Mwa:limu ~~ʒ~~-wa-andik-ish-iz-e wa:na xati  
 teacher SP-OP-write-caus-T/A children letter  
 "The teacher made the children write a letter." ((7.76) in Marantz (1984); originally from Abasheikh (1979))

Since Chi-Mwi:ni is head-initial, if caus is considered as an affix, coanalysis cannot apply to the Chi-Mwi:ni causatives since the HPC does not hold for the write-caus string (V-affix), i.e., an affix is not a prefix in a head-initial language (cf. 43b). Thus hit-caus in this language should be a 'syntactic atom,' yielding a mono-clausal structure in the top structure. However, sentence (47) must represent a bi-clausal structure, like the Japanese sase causativization, given the binding fact in (48b) and the SSC effect in (48c):

- (48) a. Mi m-p<sup>h</sup>ik-ksh-iz-e ru:hu-y-a cha:kuja  
 I SP-cook-caus-T/A myself food  
 "I made myself cook food."  
 b. Mi mi-m-big-ish-iz-e mwa:na ru:hu-y-é  
 I SP-OP-hit-caus-T/A child himself  
 "I made the child hit himself."  
 c. \*Mi ni-m-big-ish-iz-e Aʔi ru:hu-y-a'  
 I SP-OP-hit-caus-T/A Ali myself  
 "I made Ali hit myself." ((7.83) in Marantz (1984); originally from Abasheikh (1979))

In (48a), the causee instead of the causer binds an anaphor; (48c) shows that the causee triggers the SSC effects. DW would thus want to suggest,

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<sup>61</sup> Alec Marantz (p.c.) has pointed out that the word order in the Chi-Mwi:ni causative may create a problem when the causative is coanalyzed.

by analogy with the analysis given in (45), that coanalysis does apply in (47), assuming that the morpheme order in (47) follows the HPC: caus does not behave as an affix but as a stem in this language. However, given their claim that only 'affixes' can change theta-structure, caus should be an affix (caus 'internalizes' the subject of V; cf. fn. 58) and in fact, DW would want to say that caus is an affix, like Japanese sase. Thus suppose that Chi-Mwi:ni constitutes an exception to the HPC. Then sentence (47) can be coanalyzed consistent with the binding facts in (48). However, there is no way to have the top structure since we would need a crossing node because hit and its arguments are intervened by cause. Thus, in either direction, DW meet a dilemma.

To summarize, DW's approach (a strong lexicalist position) to morphologically-complex words and to renalysis or 'restructuring' constructions not only is not theoretically viable but also has empirical problems. In what follows, we discuss Kayne's analysis of 'restructuring' (clitic climbing) in some Romance languages and maintain our position that 'restructuring' triggers clitic climbing, assuming that clitic climbing is also constrained by other principles of grammar (cf. Kayne's (1980) conjecture).

#### 5.5. Kayne's (1987) analysis of clitic climbing and the universality of V-to-V RR

Kayne (1980) observes that Old French, which was a pro-drop language, also showed some 'restructuring' effect, i.e., clitic climbing in certain environments, like Italian, while in modern French, both null subjects and clitic climbing are not observed. Kayne (1980) thus conjectures that pro-

drop parameters and 'restructuring' phenomena are related in that clitic climbing is obtained in languages in which pro-drop is employed.<sup>62</sup>

In his recent paper, Kayne (1987) develops an idea that the mechanism governing null subjects may also govern clitic climbing and suggests that clitic climbing is not a side effect of 'restructuring,' unlike Rizzi (1982), but has to do with the formal properties of INFL in a language with clitic climbing, just as the property of INFL determines pro-drop parameters. The interesting part of this suggestion is that it accounts for the correlation between null subjects and clitic climbing that is observed diachronically in French. However, the present approach to the 'restructuring' phenomenon does not provide any insightful or theoretically interesting way to correlate clitic climbing and null subjects. In fact the present approach suggests that the 'restructuring' phenomenon obtained by V-to-V RR is independent of null subjects whereas clitic climbing is an (optional) by-product of V-to-V RR. Below, we discuss Kayne's proposal; while pointing out problems with Kayne's analysis of clitic climbing under the present understanding of head-movement, we discuss a possible explanation of Kayne's conjecture in the present framework, maintaining that clitic climbing is a 'restructuring' effect.

#### 5.5.1. Kayne's (1987) 'restructuring' (clitic climbing)

Kayne's proposal goes as follows. First, clitics are heads and clitic movement is head-to-head movement. Second, in a certain language in which INFL is 'strong' or 'rich' enough to allow pro in a simple clause, INFL[-

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<sup>62</sup> Kayne (1980) thus suggests that the relation between clitic climbing and null subjects can be explained if Rizzi's restructuring rule requires null subjects in infinitive clauses and if languages with null subjects allow null subjects in infinitive clauses.

Tense] 'L-marks' VP. Third, the infinitive complements of verbs which allow clitic climbing contain empty C's. Given the above assumptions, clitic climbing is obtained through the following three steps of derivations.

- (49) a. .. I<sub>k</sub> [VP V [CP [C e] [IP PRO [I<sub>j</sub> [VP V CL...]]]]]..  
 b. .. I<sub>k</sub> [VP V [CP [C e] [IP PRO [ [CL<sub>1</sub>-I]<sub>j</sub> [VP V t<sub>1</sub>...]]]]]..  
 c. .. I<sub>k</sub> [VP V [CP [C [CL<sub>1</sub>-I]<sub>j</sub>] [IP PRO [t<sub>j</sub> [VP V t<sub>1</sub>...]]]]]..  
 d. ..[[CL<sub>1</sub>-I]<sub>j</sub>-I]<sub>k</sub> [VP V [CP [C t<sub>j</sub>] [IP PRO [t<sub>j</sub> [VP V t<sub>1</sub>...]]]]]..

In (49b), a clitic moves to I, then cl-I moves to C, as in (49c). Finally, cl-I-C moves to the matrix INFL (clitic climbing), as in (49d). Since INFL[-Tense] in pro-drop languages L-marks VP so that the trace *t*<sub>1</sub> in (49b) is legal with respect to the ECP, the trace *t*<sub>1</sub> is antecedent-governed by its antecedent in pro-drop languages. If VP is not L-marked, VP is a BC (inherent barrier) and antecedent government from I<sub>j</sub> in (49a) is not possible. Thus, in non-pro-drop languages in which VP is not L-marked by INFL[-Tense], clitic-movement to INFL is blocked and therefore, no further step is possible.

As for a motivation for the movement in (49b), Kayne notices that in Old French, and in some Romance languages that allow clitic climbing, clitics may be separated from V by an adverb or by a quantifier, while in Modern French, clitics should not be separated from V by an adverb or by a quantifier.

- (50) a. (\*) Jean a promis de les bien faire.  
 b. Jean a promise de bien les faire. ((3-4) in Kayne (1987))

Kayne thus suggests that the grammaticality of (50a) in pro-drop languages implies that clitic movement is not to V but rather to I; it is also a necessary step to satisfy the ECP. The option for (50a) is not possible for non-pro-drop languages since VP is a barrier and therefore clitics should move to V, yielding (50b).

The derivation of (49c) is not always possible even when INFL is [-Tense] in pro-drop languages. For example, the usual control construction does not allow clitic climbing, while clitic climbing is observed in certain control environments in which a certain limited class of predicates which Rizzi call V<sub>x</sub> appears. Based on Luján (1978)'s hypothesis that verbs that take infinitival complements associated with an independent tense do not allow clitic climbing, Kayne suggests that in the usual control construction, C is filled with [+Tense]. Kayne further suggests that I-to-C head-movement is blocked because of the feature [+Tense] in C in the usual control construction.<sup>63</sup> Thus, the contrast between control and 'restructuring' constructions with respect to clitic climbing is obtained. Kayne also suggests that the third movement (INFL-INFL amalgamation) also explains the contrast between Italian and Old French clitic climbing in ergative construction.

- (51) a. \*Lo bisogna fare. "(It) it<sub>acc</sub> is-necessary to-do."  
 b. Il le faut faire (cf. (30-31a) in Kayne (1987))

In French, agreement does not agree with the post-verbal NP and in Italian, agreement must assign NOM to a post-verbal NP in the absence of a distinct thematic subject. Kayne thus suggests that in Italian, the infinitive complement of the impersonal verb will be coindexed with the matrix AGR, which is associated with NOM. Kayne suggests that this difference is reflected in the contrast in (51a) and (51b) if the amalgamation of

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<sup>63</sup> It is usually assumed that the overt element in C blocks head-movement to C (cf. Section 1). Kayne illustrates such an example below.

- (i) a. Non so de farli ('(I) neg. know if to-do-them')  
 b. \*Non li so se fare. (cf. (23-4) in Kayne (1987))

The ungrammaticality of (ib) would also be explained if the if (so) clause is not L-marked so that the movement in (49c) is blocked. Under the present framework, we, however, suggest that the overt realization of C (so) blocks V-to-V RR in Romance languages for some language-specific reasons; note that in Romance languages overt C in general blocks RR (whereas in languages such as Korean overt C does not) (cf. Section 4.1.).



differently indexed INFLs is blocked (by a nondistinctness condition) in Italian (51a); this nondistinctness condition explains why 'restructuring' verbs are strongly 'subject-control' and why clitic climbing is impossible with true object control. A version of the nondistinctness condition also blocks clitic climbing in control construction in which the lower C has Tense, since there might be a Tense conflict with the matrix Tense, if clitic climbing took place in control construction.

### 5.5.2. Some problems with Kayne (1987) and reviving 'restructuring'

Despite its interesting explanatory domain,<sup>64</sup> Kayne's proposal has three problems. First, the proposal raises a problem with the RHMC and with the notion of head-movement. In the derivation in (49a), a head (N-head probably) moves to I across V. Thus, the antecedent of INFL would not govern its trace since V would induce the MC. The HMC may thus not be satisfied unless a stipulation is added.<sup>65</sup> As for the second movement in (49c), we have already shown that head-movement to C (substitution) is neither theoretically nor empirically well-motivated. In addition, if the RHMC in terms of L-marking is right, then I-to-C movement also violates the HMC since C does not L-mark I. As for the movement in (49d), if the RHMC blocks head-movement out of the Xo-structure formed by head-movement, CL-I moves up to a matrix INFL. However, the overt realization of an embedded INFL element ususally remains in-situ, as we see in Italian data.<sup>66</sup>

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<sup>64</sup> For more interesting phenomena associated with this proposal, see Kayne (1987).

<sup>65</sup> For this reason, cliticization may not be derived (exclusively) by head-movement.

<sup>66</sup> As we speculated in Chapter 4 (cf. fn. 9 in Section 4.3.) if the auxiliary verb essere is base-generated as V but is amalgamated with INFL with V at PF, then clitics climb without taking it, but clitics climb with

- (52) a. Maria ci potrebbe essere dovuta tornare t<sub>i</sub>.  
 "Maria there<sub>i</sub> might 'be' had to go back t<sub>i</sub>."  
 b. Piero gli stava per essere presentato t<sub>i</sub>.  
 "Piero to him<sub>i</sub> was going to be introduced t<sub>i</sub>." ((91) and (114) in Rizzi (1982;23 and 28))

The data in (52) raise a doubt about the movement in (49d) and therefore the movement in (49a).

The second problem has to do with auxiliary assignment in Italian. Consider the following data from Burzio (1986) and Rizzi (1982):

- (53) a. Mario ci sarebbe proprio voluto andare.  
 "Mary would really want to go there." (auxiliary change)  
 b. Mario sarebbe proprio voluto andarci (auxiliary change)  
 c. \*Mario ci avrebbe proprio voluto andare.  
 d. Mario avrebbe proprio voluto andarci. (cf. Burzio (1986;327))  
 (54) Maria {c'è/\*? ci ha} dovuto venire molte volte.  
 "Maria there {be/has} had to come many times." (cf. (84) in Rizzi (1986;21))

When the auxiliary change takes place, clitic climbing may or may not be observed. On the other hand, when no auxiliary change takes place in (53c) with the auxiliary avere, clitic climbing is not possible.<sup>67</sup> However, Kayne's analysis does not explain the contrast between (53a) and (53c). Under Kayne (1987), one might suggest that the auxiliary avere blocks clitic climbing or if avere is taken as V, then avere selects an embedded CP that contains a 'weak' I that does not L-mark VP. But in the causative construction in Italian in which no auxiliary changes (55a), clitic climbing is allowed, as shown in (55).

- (55) a. Mario lo {ha/\*è} fatto venire.  
 "Mario him {has/be} had come." (cf. (113b) in Rizzi (1986;28))  
 b. Maria la fa riparare a Giovanni  
 "Maria it makes Giovanni repair." ((20b) in Burzio (1986;238))

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the INFL elements. Clitics are then complex words that represent [CI<sub>1</sub>, ...-CI<sub>n</sub>-cl], which is somewhat counterintuitive since clitics usually do not have INFL properties morphologically.

<sup>67</sup> Note that the paradigm shown in (53-54) is not fully representative (cf. fn. 20 in Section 5.3.; Rizzi (1982; chapter 1; fn.26)), but does not affect our point in any serious way.

Kayne's analysis of clitic climbing would thus fail to offer insight into the contrast given in (53a and c).

Kayne in fact assumes that auxiliary change can be explained independently of clitic climbing since clitic climbing does not imply auxiliary change. However, the fact that clitic climbing does not imply auxiliary change does not nullify Rizzi's observation that auxiliary change signifies clitic climbing.<sup>68</sup> In fact, as Burzio (1986) and Rizzi (1982) notice, there are some mismatches between auxiliary change and clitic climbing. Burzio (1986) observes, mostly based on Rizzi's observations, that clitic climbing is found in a wider range of the data than auxiliary change:

There are three types of predicates that select infinitival complements that allow clitic climbing (Burzio (1986)); two of them are illustrated below.<sup>69</sup>

|      |                  |         |                 |
|------|------------------|---------|-----------------|
| (56) | Auxiliary Change | Passive | Clitic climbing |
| a.   | yes              | no      | yes             |
| b.   | no               | yes     | yes             |

The (56a) class verbs are typical 'restructuring' verbs. From our point of view, the property of the (56a) class verbs is expected: since V-to-V RR applies, auxiliary change is obtained and the passive is not possible, given the generalization that auxiliary predicates ([+CD]) are not passivized (cf. Section 4.2.). According to Burzio (1986:381), predicates taking di infinitives belong to class (56b).

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<sup>68</sup> Under Rizzi's restructuring rule that changes configurational structure, auxiliary change automatically triggers clitic climbing; under the present approach, auxiliary change does not automatically trigger clitic climbing, as we discussed in Section 3.3., since the embedded configuration remains intact.

<sup>69</sup> The third case includes the Italian verbs begin and continue, which are discussed in Section 4.2..

- (57) a. Coll'inizio della scuola {avremo finito/\*saremo finiti} di andare in spiaggia.  
 "With the beginning of school we will {have/\*be} finished going to the beach."  
 b. Lo finirò di leggere presto  
 "(I) it will finish to read soon."  
 c. Questo libro fu finito di stampare nel 1978  
 "this book was finished to print in 1978." ((156-7) in Burzio (1986;381))

The property of the (56b) class verbs is similar to that of causative verbs in Italian: The verb finish which selects a di infinitive clause as its complement does not trigger auxiliary change, as shown in (57a), like causative verbs. We suggest that the verb finish that takes a di infinitive is like causative construction in that the embedded CP is open (or C is RRed with I or V) so that embedded clauses are not barriers with respect to clitic climbing; since di and V are separated, we suggest that RR is covert so that PRO is obtained, in contrast to what occurs in causative construction. The sentence with the verb finish thus allows clitic climbing (57b) and passivization (57c).<sup>70</sup> If the generalization that auxiliary predicates are not passivized holds, the possibility of the passivization of this type of verb also suggests that finish in Italian is not an auxiliary predicate (Vx).<sup>71</sup> To conclude, the (56b) class verbs do not

<sup>70</sup> Interestingly, Aissen and Perlmutter (1983) also point out that verbs such as terminadas (finish) and acabadas (finish) that specify the end point of an action can be passivized, unlike most 'restructuring' construction in Spanish.

(i) a. Estas paredes están diendo terminadas de pintar (por los obreros).  
 "(Lit: These walls are being finished to paint (by the workers).)"

b. Las casas fueron acabadas de pintar (por los obreros).  
 "Lit: The houses were finished to paint (by the workers)," (P32-33b) in Aissen and Perlmutter (1983;390-1))

Like Italian, these two verbs also take de infinitives in Spanish. We suggest that finish is not a 'restructuring' verb in Spanish but selects an open complement taking di, like the Italian (56b) verbs. This cross-linguistic fact supports our position that a certain instantiation of RR is triggered by a semantically significant class of verbs (cf. ECM verbs in Section 4.1.).

<sup>71</sup> Kayne (p.c.) notes that (b) is the marked option, whereas in causatives,

constitute counterexamples to Rizzi's observation that auxiliary change signify clitic climbing while they show that clitic climbing does not signify auxiliary change and therefore 'restructuring.'

Two apparent exceptions to Rizzi's observation that auxiliary change signifies clitic climbing have to do with passive be (58a) and copular be (58b).<sup>72</sup> Under the domain of 'restructuring,' passive be does not trigger auxiliary change and copular be triggers auxiliary change with various degrees of marginality (also cf. Rizzi (1982;45, fn.27)).

- (58) a. Giovanni gli {ha/\*è} voluto essere presentato  
       "Giovanni has {averre/\*essere} wanted to be introduced to him."  
       b. Giovanni le {?sarebbe/?(?)avrebbe} dovuto essere fedele.  
       "Giovanni would have {?averre/?(?)essere} had to be faithful to her." ((114b) and (117a) in Burzio (1986;364-5))

The data in (58a) is explained under the analysis that passive construction is bi-clausal, which means that the most embedded V that is RRed with Vx is introduce but not the passive -en. Thus, the be in (58a), which represents the formal ergativity of a passive complex predicate but not that of the R-complex predicate, does not trigger auxiliary change. As for the second type of exceptions (58b), we suggest that these exceptions may fail to constitute real exceptions since the structure of copular be may differ from other predicates.<sup>73</sup> In short, it seems that Rizzi's observation

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clitic climbing is pretty much the only option in Italian. This fact is not incompatible with our analysis. Remember that clitic climbing is obligatory in causatives since the C-to-V overt RR in small clauses destroys VP, as we discussed in Section 3.3. We may attribute the contrast to the fact that the Italian finish triggers C-to-V covert RR but not C-to-V overt RR that would destroy environments of embedded cliticization, while causative verbs trigger C-to-V overt RR.

<sup>72</sup> Burzio (1986; 367-369) also illustrates some exceptions to Rizzi's rule of auxiliary change that the most embedded Vs trigger auxiliary change. As Burzio suspects, we assume that those exceptions are caused by other factors.

<sup>73</sup> Burzio (1986; 366) also illustrates some residual exceptions -- raising verbs that take sc-complements. We also assume that they do not constitute

should be explained and that other independent phenomena are related to its limited/predicted exceptions in (58) (cf. fns. 72 and 73). Note also that auxiliary assignment is very systematic in connection with the notion of formal ergativity in Italian grammar, as noted in discussing the auxiliary assignment in the Italian psych-verb construction in Section 4.2..

To conclude, if Rizzi's observation (the correlation between auxiliary change and clitic climbing in certain (unmarked) environments) is real and linguistically-significant, as seems to be the case, then it must be explained in connection with the 'restructuring' phenomenon. In other words, we should explain why the lack of auxiliary change in the usual 'restructuring' environments blocks clitic climbing. However, Kayne's approach has not yet answered this question.

The third problem with Kayne's proposal has to do with the empirical/-explanatory domain of the proposal. Kayne's analysis of clitic climbing/-'restructuring' suggests that there may be no significant class of 'restructuring' effects other than clitic climbing or that auxiliary change is independent of clitic climbing. We also saw that in Korean significant V-to-V RR effects are found in constructions with Vx types of verbs; in Korean, a small number of verbs that are semantically weak have the same properties as Vx's in Italian, and construction with those verbs allows long distance dependency between a negative quantifier and its scope marker, whose dependency is strictly clause-bounded. We could not extend Kayne's analysis to Korean facts in spite of the fact that there are many similarities between Korean 'restructuring' verbs and Italian 'restructuring' verbs, both of which are explained in terms of V-to-V RR effects. Furthermore, a subset of auxiliary predicates has a phonetically null C and a

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the core case of auxiliary change.

phonetically weak I and mostly constitute 'subject control' verbs. Nevertheless, what we call V-to-V RR effects has nothing to do with the richness of INFL since modal verbs in Korean that are V-to-V RR verbs employ rich INFL,<sup>74</sup> like control verbs that do not trigger V-to-V RR.<sup>75</sup> In short, in Korean, the overt realization of C or INFL does not determine whether V-to-V RR would apply. If the formal property of INFL is linked with its overt realization, then the formal property of INFL may not be responsible for triggering 'restructuring.' Third, in reference to the V-to-V RR in causative and passive constructions discussed in Sections 4.2. and 4.3., 'subject control' verbs are not the only ones that may have 'restructuring' effects; with dative subjects, 'restructuring' effects are also observed in the Korean -key ha- causative construction.<sup>76</sup> In fact, Kayne's INFL-index nondistinction condition on clitic climbing would not be

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<sup>74</sup> One example is as follows:

- (i) Chelswu-nun pwumonim-lul mosi-l-swu iss-0-ta  
       -TOP parentH-obj serveH-Inf-comp(can) be-pres-em  
       "Chelswu is able to serve (his) parents."

<sup>75</sup> Control verbs in Korean also show rich I and overt C elements unlike auxiliary predicates with aspectual or motion meanings. In fact, based on the semantics of INFL or of COMP, the choice of controllers differs:

- (i) a. Chelswu-ka Yenghi-eykey ka-0-ra-ko seltukha-ess-ta  
       -sub -to go-Inf-em-comp persuade-past-em  
       "Chelswu<sub>1</sub> persuaded Yenghi<sub>1</sub> [PRO<sub>1</sub>/\*<sub>2</sub> to leave]."  
       b. Chelswu-ka Yenghi-eykey ka-0-ca-ko seltukha-ess-ta  
       -sub -to go-Inf-em-comp persuade-pass-em  
       "Chelswu<sub>1</sub> persuaded Yenghi<sub>1</sub> [PRO<sub>1</sub>/\*<sub>2</sub> to leave]."  
       (ii) a. Chelswu-ka Yenghi-eykey ka-keyss-ta-ko yaksokha-ess-ta  
       -sub -to go-Inf-em-comp promise-past-em  
       "Chelswu<sub>1</sub> promised Yenghi<sub>1</sub> [PRO<sub>1</sub>/\*<sub>2</sub> to leave]."  
       b. Chelswu-ka ttena-lye-ko kyelsimha-ess-ta  
       -sub leave-Inf-comp decide-past-em  
       "Chelswu<sub>1</sub> decided [PRO<sub>1</sub> to leave]."

In (ia), -ra- is an imperative marker and in (ib), -ca- means let's; -ra- or -ca- can be considered either as I or as C. In (ii), -keyss- or -lye- corresponds to English will, which indicates the subject's will.

<sup>76</sup> Remember that the V-to-V RR effects of -key ha- construction do not derive from small clause effects since -key mantul-, which selects a small clause complement, does not show 'restructuring' effects (cf. Section 4.2.).

maintained if French causativization is derived by V-to-V RR, as we suggested in Section 4.2.. The 'restructuring' phenomena (V-to-V RR effects) in other languages without clitic climbing would also have to be understood in different ways under Kayne's analysis of clitic climbing. In addition, since the analysis implicitly detaches clitic climbing from other 'restructuring' effects such as auxiliary change, auxiliary change would have to be independently explained. This is undesirable from the point of view of UG.

Kayne's (1987) analysis is confined to a certain limited empirical coverage related to clitic climbing: Kayne suggests that clitic climbing/'restructuring' is obtained by the formal properties of INFL in certain types of languages, while we suggest that 'restructuring' (V-to-V RR) occurs because the semantics of V or the Lexical properties of V triggers RR, which trigger (optional) clitic climbing. If V-to-V RR ('restructuring') is universal (nonlanguage-specific and non-construction-specific in Chomsky's terms), then we do not predict the correlation between null subjects and 'restructuring'/clitic climbing (Kayne's (1987) conjecture). Suppose, however, that the correlation between null subjects and clitic climbing (cliticization that is independent of V-to-V RR) is true but that the correlation between V-to-V RR and null subjects is not. Then, a null subject language that employs clitics allows clitic climbing. This narrow interpretation of Kayne's conjecture may, in fact, be on the right track, given that null subject Romance languages allow clitic climbing. One (apparent) counterexample is German (and Dutch): German, which is usually assumed to be a non-pro-drop language, allows clitic climbing, according to Kroch and Santorini (1987).<sup>77,78</sup> Although German is mostly known as a non-

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<sup>77</sup> Kroch and Santorini (1987) notices that German and Dutch show clitic



null pro-drop language, Safir (1985) suggests that German is also a null-subject language based on the fact that expletive subjects are missing in impersonal construction in (subordinate) clauses.

- (59) a. Es wurde ein Mann getötet  
           there was a-NOM man killed  
       b. ... daB (\*es) ein Mann getötet wurde  
           ... that (there) a+NOM man killed was
- (60) a. Es wurde getanzt  
           there was danced "There was dancing."  
       b. Er sagte, daB getanzt wurde  
           he said that danced was "He said that there was dancing."  
 ((3-4a) and (7a and b) in Safir (1985))

If Safir is right in suggesting that German is also a pro-drop language, and therefore it employs INFL[-Tense] that L-marks VP, then we can maintain the narrow interpretation of Kayne's conjecture, arriving at the following conclusion: V-to-V RR ('restructuring') is not correlated to null subjects. Null subject and non-null subject languages both have the 'restructuring' phenomenon, which derives from V-to-V RR effects in a language-specific way or in a universal way. On the other hand, clitic climbing is obtained when both RR and certain other requirements are also met (e.g., perhaps some conditions required for null subjects, as Kayne suggests). If this reasoning is right, the following contrast between

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climbing but that German clitic climbing is observed in a wider range of the data than in Dutch: Dutch allows clitic climbing only with bare infinitives while German allows clitic climbing with bare or *to*-infinitives and with what they call 'extraposed' complement. Given Kayne's suggestion, it is interesting that German has two landing sites of clitics (the immediate post-subject position and the immediate post-COMP position) while Dutch has only one (the immediate post-subject position). Thus, it may be possible that the properties of functional categories may determine the landing sites (cf. Kayne's reasoning on the data in (50)).

<sup>7\*</sup> Also, it has been noticed in Haegeman and Riemsdijk (1986) and in Evers (1975) that German shows 'restructuring' effects related to scope phenomena.

Italian and French clitic climbing does not follow from whether French employs V-to-V RR.<sup>79</sup>

- (61) a. \*Jean les veut vedere "John them wants to see." (French)  
 b. Gianni li vuole vedere (Italian)

This conclusion is very welcome given our position that V-to-V RR is universal, being transformational and that it is motivated by the lexical properties of Lexical items (based on their semantics or on their phonological aspects in a language-specific or universal way). We can also maintain our position that 'restructuring,' which is understood as V-to-V RR here, has nothing to do with the formal property of INFL in a certain language or with the pro-drop parameter. V-to-V RR, whose effects interact with principles of UG, is quite universal but not exclusively linked either with clitic climbing or with a 'strong' property of INFL.

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<sup>79</sup> As we discussed in fn. 12 in Appendix II of Chapter 3, the following long-distance dependency between ne and personne can then be attributed to the V-to-V RR in French (cf. the Korean anwu-to-an- long distance dependency in certain environments):

- (i) a. Pierre ne veut voir personne  
 "Pierre neg wants to see nobody."  
 b. \*Pierre ne dit voir personne  
 "Pierre neg say to see nobody." ((48-49a) in Pica (1985))

As the contrast between (ia) and (ib) shows, the V-to-V RR in French is triggered by a certain class of semantically-weak verbs that we call auxiliary predicates, or by some other classes of verbs (cf. Pica (1985)).

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