

CONDITIONS ON X⁰-MOVEMENT

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ABSTRACT

X⁰-movement is subject not only to the Empty Category Principle (ECP), as is widely accepted by now, but also to such principles as Binding Condition C (BCC) and the Subjacency Condition (SC). This multi-principle constraining on X⁰-movement further supports the similarity between it and XP-movement, which is also constrained by all these principles of the Universal Grammar. Empirically, it enables us not only to explain certain data not explained in a theory based solely on the ECP, but also to provide a unified analysis to such diverse phenomena as verb-incorporation (VI), clitic-climbing (CC), and predicate-clefting (PC).

Theoretical background is laid out in Chapter 1, in which the notion of variables is modified to cover X⁰-traces resulting from moving a lexical head to a functional head. This in turn makes such an X⁰-trace fall into the domain of BCC. In Chapter 2, it is shown that the fact that cross-linguistically only a small set of verbs can trigger VI poses a problem if X⁰-movement is constrained only by the ECP, but can be readily explained by BCC plus the modified definition of variables. The environments in which CC takes place constitute a highly limited superset of those for VI. Chapter 3 argues that the similar requirements of the two phenomena on their structural environments results from BCC, while the difference derives from applying the SC and intermediate trace deletion in CC but not in VI. Chapter 4 studies PC, which requires an even looser restriction on the environments. Again BCC and the SC play crucial roles in determining when PC is possible, with the looser constraint attributed to the presence of a resumptive verb filling the D-structure position of the clefted one.

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Chapter 1

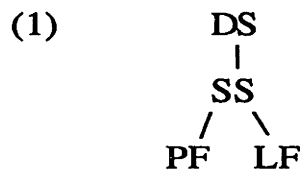
Introduction

This work studies the constraints on the movement of X^0 , the head of a phrase. In the earlier development of government-binding (GB) theory, as in Chomsky (1981), attention was primarily given to the behavior of phrases, with the study of head-movement far less than systematic. Recently, however, attempts have been made to account for various phenomena involving movement at the morpheme level. For instance, based on the verb-second phenomenon and predicate cleft constructions in Kru languages, Koopman (1984) argues that NP-movement and *wh*-movement have their correspondences in verb-movement. Chomsky (1986a), (1988), and Pollock (1989) both try to account for the relations between the verb and the "inflexional" elements as well as certain word-order problems in English and some Romance languages in terms of head-movement constrained by the Empty Category Principle (ECP). Working in the same framework and with essentially the same assumptions, Baker (1988) shows convincingly that the active processes of compound word formation in polysynthetic languages can best be described as the results of syntactic movement applied to various morphemes. Kayne's (1987) work on clitic-climbing in some Romance languages also assumes head-movement restricted by some interpretation of the ECP. These works cover different kinds of data and their analyses differ from each other in various degrees. The goal of this thesis is to provide a consistent analysis of such phenomena as compound word formation as discussed by Baker, clitic-climbing as in Romance languages, and predicate

clefting in some African languages and creoles. The goal is achieved primarily through a modification of the Binding theory, a subtheory within the GB. It will be shown that this modification not only allows us to provide a consistent analysis of the superficially very different linguistic facts mentioned above, but also accounts for certain data which the existing analyses have failed to explain.

1.1. Universal Grammar

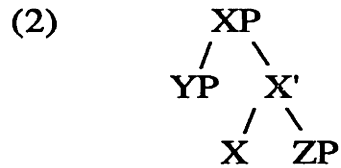
The model of UG assumed in this thesis is what is called the theory of government-binding as formulated in Chomsky (1981), (1982), (1986a), and (1986b). In general, it will be assumed that the model has the following levels of representation:



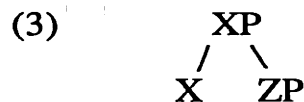
DS is a projection of lexical and functional items generated according to the X'-schemata and is the level where all thematic relations between constituents are directly satisfied. SS is derived from DS through the application of move- α , and is then subject to phonological rules to yield PF and to LF rules to map into LF. The structures at each level of representation as well as the derivations between levels are restricted by the submodels of the theory, which will be introduced below.

1.1.1. X'-Theory

The X'-schemata can be represented in (2):



where X, Y, and X range over V, N, A, P, I, C, D (for Determiner, See Fukui & Speas (1987), and Abney (1987)) and K (for Case. See Hale & Keyser (1989)). Following conventions, when nothing is generated in the position of YP, the structure will be represented as (3), though I always assume there is a X' node in such a structure:



In addition, I will assume that for X = a lexical category, the following "small clause" construction is always a possibility, along the lines suggested in Chomsky (1986a):



NP in (4) is the "subject" of the whole construction. Whether (2) or (4) is generated as the complement to a head Z is independently determined by other principles in UG and/or the idiosyncracies of Z.

1.1.2. Theta-Theory

A basic principle of theta-theory is the theta-criterion, which requires that each argument receive a theta-role and each theta-role be assigned to an argument.

1.1.3. Government Theory

Two types of government will be used in our analysis -- head government and antecedent government, respectively defined below (adopted from Rizzi (1989)):

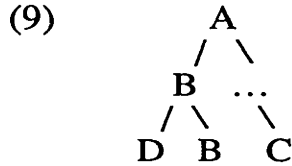
- (4) α head-governs β iff α m-commands β and there is no barrier between α and β .
- (5) α antecedent-governs β iff α and β are coindexed, α c-commands β , and there is no barrier between α and β .

Very often I will use the terms "govern" and "head-govern" interchangeably. The definitions of m-command and c-command are given as follows:

- (6) α m-command β iff α does not dominate β and every maximal projection that dominates α dominates β . (Chomsky (1986a))
- (7) α c-commands β iff α does not dominate β and β is not excluded by the node immediately dominating α .
- (8) α excludes β if no segment of α dominates β . (Chomsky (1986a))

The definition of c-command in (7) is the typical "first-branching" definition of c-command proposed by Reinhart (1983), where the segments of a node is

taken into consideration (also see May (1985)). The effect of (7) and (8) can be illustrated in the abstract configuration below:



Given (7), D will not c-command C in (9) since C is excluded by the higher segment of B, the node immediately dominating D, though B does c-command C, with the immediately dominating node A not excluding C. It follows that even if D and C are coindexed, the former would not antecedent-govern the latter for lack of c-commanding; but if B and C are coindexed, then C may be antecedent-governed by B provided no barrier intervenes.

The definition of barriers is adapted from Baker (1988)¹ with Chomsky's (1986a) notion of barrier by inheritance taken into consideration:

¹ Baker's (1988) definition of barriers is given below (p. 56):

- (i) Let D be the smallest maximal projection containing A. Then C is a Barrier between A and B iff 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.
- (ii) A selects B iff
 - (a) A assigns a theta-role to B, or
 - (b) A is of category I or C and B is its complement.

The notion of distinctness as used in (ib) is crucial for Baker to derive the Government Transparency Corollary, which guarantees everything governed by a head before incorporation remains governed after it. This need not concern us here.

- (10) γ is a Barrier between α and β iff γ is a maximal projection that contains β and excludes α , and either:
- (i) γ is not selected,
 - (ii) the head of γ selects some WP including β , or
 - (iii) γ immediately dominates a barrier between α and β .
- (11) Let αP be the maximal projection of α , then α selects β iff:
- (i) α assigns a theta-role to β and β is αP -internal, or
 - (ii) $\alpha = I, C, D,$ or K and β is its complement.
- (12) α includes β iff every segment of α dominates β .
- (13) Let XP be a maximal projection, then α is XP -internal iff XP includes α .

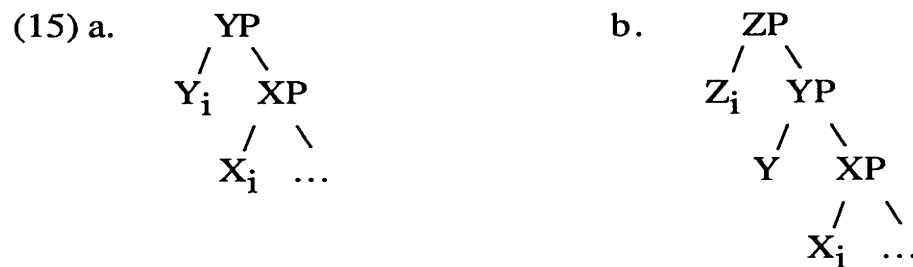
Clause (iii) of (10) defines a barrier by inheritance, a notion borrowed from Chomsky (1986a). The motivation for this addition to Baker's original definition is to eliminate a separate notion of bounding nodes (cf. section 1.1.4 later) and replace it with barriers, a proposal in Chomsky (1986a) which will be followed throughout this work. Specifically, we want to rule out the following example:

- (14) *the movie which [_{IP} [_{CP} watching t] would be entertaining]

Without clause (iii), the embedded CP subject, which is not selected (see (11)), would be a barrier between the trace t and its antecedent *which* but IP wouldn't, because by definition the head of IP does not select the subject CP. In order to treat (14) as a Subjacency violation which involves crossing of two bounding nodes, Baker has to separately define IP as a bounding

node independently of barriers (Baker (1989), p.57). In contrast, since IP immediately dominates the embedded CP, it becomes a barrier by clause (iii) of our definition (10), which means that there are two barriers between *which* and its trace *t*, and Subjacency may be defined in terms of barriers.

It should be pointed out that (10) partially maintains the idea in Baker's (1988) definition of barriers to incorporate into the definition what is called the Minimality Condition, which essentially blocks government from a remote governor in the presence of a closer one (cf. Chomsky (1986a), p. 42). Specifically, the Minimality Condition is automatically observed in head-movement:



Suppose that Z selects YP and Y selects XP. First consider (15a), in which X is coindexed with Y. Being selected, XP is not a barrier between Y_i and X_i . Thus Y_i antecedent-governs X_i . In contrast, if X is coindexed with a more remote head Z, as in (15b), Z cannot antecedent-govern X since YP counts as a barrier between the two with its head Y selecting XP which includes X. In effect, this is what the Minimality Condition requires: the antecedent-government of X by Z is blocked in the presence of Y, which is closer to X than Z is.

The Empty Category Principle (ECP) and proper government are defined in (16) and (17):

(16) ECP:

A trace must be properly governed.

(17) α properly governs β iff α antecedent-governs β .

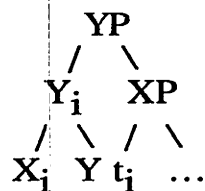
In Chomsky (1986a), theta-government is also treated as a case of proper government, though attempts are made to eliminate it. For the purpose of this thesis, (17) is sufficient. (But see section 4.3.4 for some complications.)

From the ECP and the definition of barriers in (10) is derived the Head Movement Constraint in Travis (1984) and Chomsky (1986a) (adapted to our terms):

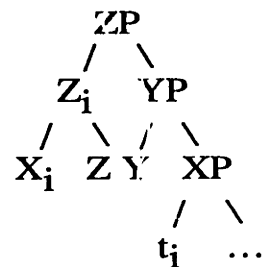
(18) An X^0 may only move into the Y^0 that selects the maximal projection of X^0 .

(18) can be easily proved by replacing X_i in (15) with its trace, with X_i moved to Y in (15a) and to Z in (15b):

(19) a.



b.



Since XP is not a barrier between Y and t_i , the trace of X, Y is able to antecedent-govern the trace provided they are coindexed, as in (18a). According to (16) and (17), this trace satisfied the ECP. If, however, X moves over YP and adjoins to Z, YP becomes a barrier between Z and t_i ; so Z cannot antecedent-govern t_i whether they are coindexed or not. With the trace not properly governed, the structure is ruled out by the ECP.

Notice that in (19a), X_i does not c-command its own trace given the definition of c-command in (7) because the node immediately dominating it, Y_i , excludes the trace. In order for this failure of c-command not to cause the violation of the ECP on the part of t_i , we assume the following rule of index percolation:

(20) The indices of the elements dominated by a X^0 node percolate up to the node.

Thus, the higher segment of Y acquires the index of X and thereby antecedent-governs the trace of X.

1.1.4. Bounding Theory

Bounding theory serves to restrict movement of constituents, with the intuition that an element cannot be moved too far from its starting point even if the movement is allowed otherwise. The core principle is the Subjacency Condition as in Chomsky (1986a):

(21) If (α_i, α_{i+1}) is a link of a chain, then α_{i+1} is 1-subjacent to α_i .

(22) β is n-subjacent to α iff there are fewer than n+1 barriers between α and β .

We will interpret (21) as a restriction on movement; i.e. if a constituent moves across more than one barrier, it violates the Subjacency Condition (see (Lasnik & Uriagereka (1988))).

1.1.5. Binding Theory

Let us start with the "standard" binding conditions, as given in Chomsky (1986b):

(23) An A-position is a D-structural position to which a theta-role can in principle be assigned.

(24) α binds β iff α and β are coindexed and α c-commands β .

(25) α locally binds β iff α binds β and there is no γ such that γ binds β and α binds γ .

(26) α is A-bound iff it is bound by an element in an A-position; otherwise α is A-free.

(27) (A) An anaphor is A-bound in its governing category;

(B) A pronominal is A-free in its governing category;

(C) An R-expression is A-free; a variable is A-free in the domain of the head of its maximal chain.

(28) A governing category of α is a maximal projection containing α , a governor of α , and a subject.

Notice that Binding Condition C actually contains two parts -- one for an r-expression such as *John* and *these books*, and the other for variables, the definition of which is given in (29):

(29) A variable is an element in an A-position that is locally A'-bound.

If we put (29) and Binding Condition C together, it is clear that what is ruled out is a "sandwiched" chain with two of its elements occupying A-positions and at least one element intervening between the two which is in an A'-position. In other words, the intervening element is not "of the same sort" as the elements surrounding it. Based on this reasoning, the definition of variables is modified as below:

(30) α is a variable if it is locally bound by β and α and β are not of the the same sort.

Obviously it must be made precise what is meant by "the same sort". If we carefully examine the definitions of binding in (23) through (28), we find that three "characteristics" are involved in determining legitimate binders and bindees: level of projection, category, and A- vs. A'-positions. Both the binder and the bindee are phrases (maximal projections) at least in normal cases of binding; and both are nominal. So with respect to variables defined in (29), "of the same sort" means the two elements must be either both in A-positions, or both in A'-positions.

A-positions, as defined in (23), are restricted to positions occupied by

phrases since heads don't receive theta-roles (in syntax). I propose that (23) be extended to cover heads as well:

(31) A T-position is a D-structural position to or from which a theta-role can in principle be assigned.

where a T-position means a "Theta-related" position in the sense that it is directly involved in theta-assignment. Thus, V, N, A, and probably P in some languages are T-positions since they are occupied at D-structure by (potential) theta-assigners. In contrast, I, C, D, and K are T'-positions because they dominate non-theta-assigners at D-structure.² Notice that the

² Two points need to be made at this stage. First, Chomsky (1986a) suggests that INFL assigns a theta-role to its VP complement. In the analysis proposed here, we are forced to say that either INFL assigns no theta-role, or the "theta-role" it assigns differs fundamentally from the ones involved in determining T-positions. In the first case, L-marking can be defined in terms of lexical selection or lexical sisterhood instead of lexical theta-marking (see Chomsky (1986a) for details). In the second case, one can argue that there is indeed a thematic relation of some sort between INFL and VP, following Higginbotham (1985) (in the spirit of Davidson (1980)), but that the theta-role involved in this relation differs in nature from "normal" ones, as Li (1987) suggests.

Secondly, Koopman (1984) also argues that there is a parallelism between NP arguments and verbs with respect to movement. In particular, she treats V-to-INFL movement as the counterpart of NP-movement in passives and raising, and predicate clefting as corresponding to wh-movement. There are a few differences between Koopman's analysis and mine, though. First of all, my approach is more general in the sense that not only verbs but also heads in general are now viewed in terms of T-positions vs. T'-positions. Besides, Koopman argues that V-to-INFL movement (which is a V-to-V movement for her) is triggered by Case-assignment, in direct correspondence to NP-movement. This may very well be the case in the languages Koopman studies, but if my analysis in this thesis is on the right track, Case-assignment cannot be the fundamental reason for all V-to-V movements. For instance, VI does not seem to be carried out to satisfy any

T- vs. T'-positions at the X^0 -level as determined by (31) match the distinction between lexical categories and functional categories. Given (31), two elements are of the same sort if both are in T-positions or both in T'-positions.

To summarize, "the same sort" is defined below:

(32) Two elements are of the same sort (with respect to the definition of variables in (30)) if they are the same in the following aspects:

- (i) level of projection;
- (ii) category;
- (iii) occupying T-positions.

Accordingly, the part of Binding Condition C for variables (as defined in (27)) is changed to (33):

(33) A variable must not be bound by an element of the same sort in the domain of the head of its maximal chain.

Two points are worth pointing out. First, it is easy to define something like "S-bound" in the sense of being bound by an element of the same sort and Case-marking requirement which would otherwise not be satisfied. Finally, since Koopman's notion of verb movement is "Case-oriented", not "theta-role-oriented", she may treat INFL as a verb irrespective of whether INFL assigns theta-roles or not. This differs fundamentally from the approach I take here. For me, INFL crucially is not a verb. The importance of this difference will be seen in the following discussions. See section 4.2 for more discussion on this issue.

then to substitute S-bound/S-free for A-bound/A-free in all three Binding Conditions. Whether this step is necessary is a purely empirical issue. Insofar as I have not found linguistic data whose explanation requires this overall expansion of the binding theory, I will restrict the notion of "the same sort" only to variables. Secondly, since the part of Binding Condition C for variables is now explicitly interpreted as a constraint on chain formation, there is no a priori reason that this constraint must be represented as part of Binding Condition C, nor even as part of the binding theory -- it could very well be an independent condition on chains. However, I find it convenient to have it stated in terms of binding, and will treat it as part of Binding Condition C throughout this work.

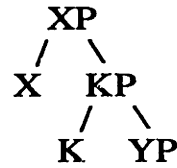
1.1.6. Case Theory

Following most of the work in this area, we assume that an NP argument must receive a Case to be visible for theta-assignment, and that structurally the Case-assigner must govern an NP to assign Case to it. Chomsky (1986b) has distinguished structural Case and inherent Case. A structural Case is assigned to an NP at S-structure as long as the NP is in the right structural configuration. For instance, the NP complement of a verb may receive Accusative Case and the NP in the Spec of IP Nominative Case. An inherent Case, however, is always associated with a specific theta-role and is assigned at D-structure. Since structural Case is not assigned at D-structure, I choose to represent the distinction between the two types of Cases as below (ordering and projectional level being irrelevant):

(34) a. Structural Case



b. Inherent Case



Both (34a) and (34b) are the D-structure presentations of some constituents. With X assigning structural Case to YP at S-structure in (34a), no Case can be seen in the structure. In contrast, since inherent Case is assigned at D-structure, there is a KP (with K standing for Case) in (34b).

In addition, three assumptions are made in this work to implement Case-assignment:

(A) The Case-assigning ability of a lexical item is described with [+C], [-C], or unmarked. A constituent can potentially assign Case when marked with [+C], cannot assign Case when marked [-C], and is otherwise unspecified. When a constituent is not specified concerning this [C] feature, it of course cannot assign Case, but it may acquire a plus or minus value through some grammatical means, and then behave accordingly.

(B) A [+C] verb can actually assign structural Case to its argument only when its maximal projection is governed by INFL or a [+C] constituent, or by a constituent with unspecified [C] feature whose maximal projection is governed by INFL or a [+C] constituent.

(C) A verb may assign a structural Oblique Case to a VP-internal

adjunct NP in the last resort.

The intuition underlying (A) is the well-accepted distinction between verbs that are capable of assigning Case and verbs that aren't. Furthermore, [-C] is used to describe verbs (and lexical categories in general) that cannot be Case-assigners no matter what happens, while verbs unmarked for [C] may depend on other linguistic mechanisms for a specific value of this feature.³ Assumption (B) can be thought of as the extension of a suggestion made in Larson (1988), which says a verb assigns Case only when the VP it heads is governed by INFL and that INFL can induce the Case-assigning ability of its complement V because INFL can assign objective Case. If we follow this reasoning, then in a structure in which a VP is the complement of a verb, the head of the VP assigns Case only when the verb governing the VP can assign Case ([+C] in our terms).⁴ When the

³ The distinction between [+C] verbs and the rest is well-grounded. For instance, the ungrammaticality of (i) below is usually attributed to the lack of the Case-assigning ability of *seem*:

- (i) *It seems the actor funny

In contrast, the further distinction between [-C] verbs and ones with unspecified [C] feature is quite theory-internal. By definition, a verb by itself will not assign Case to the NP it governs as long as it is not [+C]. So it is impossible to tell whether it is [-C] or unspecified when used independently. As I will argue in Chapter 2, certain verbal morphemes (e.g. the causative affix) are unspecified but the compound it heads may become [+C] if the non-head of the compound is [+C], via feature-percolation in Di Sciullo & Williams (1987). On the other hand, some other verbal morphemes such as the passive affix is [-C], so the compound it heads is [-C] because, again according to Di Sciullo & Williams, the features of the head has the priority to percolate up to the compound. The reader is referred to following chapters for the implementation of this distinction and its consequences.

⁴ There is a difference between Larson's assumption and mine, though. He assumes that INFL triggers Case-assignment by its complement V because

[C] feature of the governing verb is unspecified, we assume it is "transparent" for this feature in the sense that the head of the governed VP will look further up to determine whether it can actually assign Case or not. Notice that the C-feature of the governing verb only affects the assignment of structural Cases of the lower verb. This is because inherent Case comes with a theta-role. Since the C-feature of the governing verb has nothing to do with the theta-assignment of the lower verb, it cannot affect its inherent Case assignment, either.

At first sight, assumption (C) may seem quite ad hoc, though it can almost be derived from the general principles of UG. If an NP is an adjunct inside VP, it is either a theta-assigner or a theta-receiver. If it is a theta-assigner, it is a predicate and probably does not need Case, but this need not concern us in this work. If it is a theta-receiver, then it does need Case. By the principle of Full Interpretation in Chomsky (1986b), which requires that every element at LF must be licensed/appropriately interpreted, a language should have a way to license this NP, which is to receive a theta-role from the governing verb. Specifically, this NP should be assigned a Case to be visible for theta-assignment. This Case cannot be inherent, because an inherent Case comes with a theta-role assigned to an argument of the verb -- the NP adjunct with an inherent Case would not be an adjunct. It follows that this NP must get a structural Case. If a structural Case such as Accusative is the accusative Case of INFL is "transmitted" through V to an NP argument, whereas I will assume that the [+C] feature of a verb is sufficient to trigger Case-assignment of its complement verb and no Case transmission is necessary. In other words, in my analysis, the Case assigned by a verb is the verb's own Case, not one from its governor.

available (i.e. not assigned to an argument), it may be assigned to the adjunct. But when no such Case is available, the only alternative left is to assign a structural Oblique Case to the adjunct NP. Assuming that Oblique Cases are usually inherent, we may conclude that assigning a structural Oblique Case is a highly marked process in human languages and is therefore used only when there is no other way to license the NP. In Chapters 2 and 3, we will see some situations where a theta-receiving adjunct NP becomes inevitable.

1.1.7. Control Theory

Control theory as usually assumed determines the antecedent of PRO. In this work, it also applies to *pro*. In other words, I assume that the antecedent of any pronominal empty category should be determined by control theory. The motivation for such a generalized control theory comes from Chinese:

(35) a. Baoyu xiwang [*pro* neng jiandao Daiyu]

wish can see

"Baoyu wished that he could see Daiyu"

b. Baoyu wished [PRO to be able to see Daiyu]

Huang (1982) argues that Chinese allows *pro* in the subject position of a finite clause, which is governed by the finite INFL. The embedded clause in (35a) provides such an example, where the presence of the modal *neng* "can" clearly indicates that INFL is finite (For treating modals in Chinese as elements of finite INFL, see Huang (1982)). This embedded *pro*, however, must take the matrix subject as antecedent, in the same way PRO finds its

antecedent in the English sentence (35b). It is thus plausible to extend the domain of control theory from PRO alone to both PRO and pro. For a detailed discussion of this generalized control theory, see Li (1985). Essentially the same proposal is also made independently in Huang (1989).

Quite a few proposals have been made as to how the antecedent of a pronominal empty category should be determined (See for instance Williams (1980), Chomsky (1981), Bresnan (1982b), Manzini (1983), Koster (1984), Li (1985), and Huang (1989)). For the purpose of this work, I will adopt the basic idea in Koster (1984):

(36) The controller is a designated argument of the control verb.

where by designated is meant that the determination of the controller (i.e. the antecedent of the pronominal empty category) must be stipulated in the lexical structure of the control verb. For example, the subject argument is the controller for *promise* but the object is the controller for *persuade*. It follows that a verb is not a control verb if none of its argument(s) is designated as the controller.⁵

⁵ (37) as it is cannot handle pro in Italian, which does not have an argument controller but instead has its semantics recovered through the governing Agr (cf. Chomsky (1982)). To provide a fully developed control theory to cover Italian pro is beyond the purpose of this work. Suffice it to point out that pro in Italian is not inconsistent with (37) -- A controller is necessary to recover the semantic content of pro/PRO. In languages like Italian, this recovery is done through a semantically rich Agr which governs pro. In other words, the "controller" of such a pro is determined by the agreement relation between the Spec of IP and the head of IP, a relation more local than the one captured in (37). In the case of English infinitives and Chinese, there is no Agr in INFL, so the Spec-head relation can no longer be

1.2. Organization of the Thesis

Chapter 2 reconsiders Baker's (1988) analysis of verb-incorporation. It starts by pointing out the Baker's analysis predicts the existence of certain compounds that actually have never been reported. Then it is shown that verb-incorporation takes place only in certain syntactic environments, and that this limitation on verb-movement is the result of Binding Condition C as defined in (28) above. Various further implications of this analysis are explored in subsequent sections.

The analysis in Chapter 2 is extended to clitic-climbing in Romance languages in Chapter 3. While accounting for miscellaneous facts associated with clitics, I will argue for an alternative to restructuring, a process of VP-movement proposed in some important works on Romance linguistics to explain clitic-climbing. My analysis also questions the application domain of the Lexical Integrity Hypothesis (see Bresnan (1982)), which basically prevents syntactic processes from affecting the components dominated by an X^0 node.

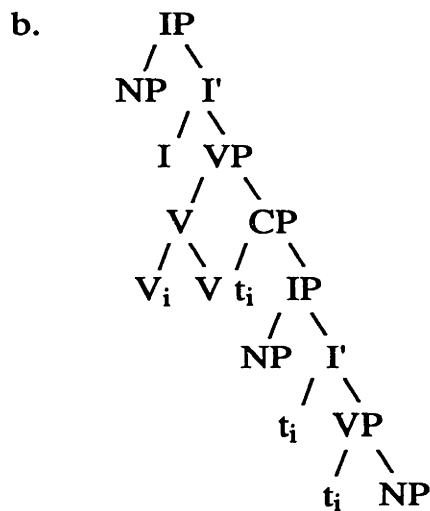
Predicate clefting is studied in Chapter 4. After giving arguments for semantic recovery, and (37) comes into play. It is still to be worked out how the two mechanisms of semantic recovery for empty pronominals can be integrated formally, but obviously it is not an impossible task. For instance, it is plausible to treat the Spec-head agreement as an inherent property of the X'-structure and therefore it is less costly to recover the semantics of pro through Agr (see Chomsky (1986) for the notion of cost in the application of principles and rules). In contrast, establishing a relation between two NPs which belong to different argument structures is arguably more costly because it involves constituents in different maximal projections.

treating this phenomenon as verb movement, I compare it with clitic-climbing on the one hand and with wh-movement on the other. It turns out that the differences between predicate-clefting and these two other processes can be readily explained in my analysis of head-movement proposed and maintained in the previous chapters.

Chapter 2 Incorporation

Baker (1988) argues convincingly that verb incorporation (VI) can be analyzed as the result of V-movement restricted by the empty category principle (ECP). A typical example of VI (in Swahili, from Vitale (1981)) and its analysis (following Baker) are given below:

- (1) a. Musa a-li-m-pik-ish-a mke wake chakula
 Musa he-pst-her-cook-caus-ind wife his food
 "Musa made his wife cook some food"



In (1a), a causative morpheme *-ish* is affixed onto a verb stem *-pik* 'cook' to form a causative verb compound. This process, usually called causativization, is widely observed cross-linguistically. In Baker's analysis (1b), the causative affix is treated as the matrix verb which takes a clausal complement CP, and the verb stem is actually the embedded verb which first raises to the embedded I, then to the embedded C, and finally gets

incorporated onto the matrix causative verb. The attraction of this analysis is that some of the typical properties and effects of verb-incorporation can be explained with the mechanisms independently required in the government and binding theory, as we will show later in this chapter.¹

Now consider the following Swahili sentences, also quoted from Vitale (1981):

- (2) a. na-ju-a kama Hamisi a-na-ogop-a giza
I-know-ind that Hamisi he-prs-fear-ind darkness
"I know that Hamisi is afraid of the dark"
- b. Juma h-a-ku-tak-a Ahmed a-j-e
Juma neg-he-pst-want-ind Ahmed he-come-subj
"Juma didn't want Ahmed to come"

These sentences, other details aside, have the same D-structure as (1a). Then following the analysis in (1b), we would expect the embedded verb in each sentence to be able to move up to the matrix verb by verb-incorporation. The fact is, however, that VI is impossible in these cases. To put the problem differently, it seems that not every verb that can take a clausal complement is capable of triggering VI, though, in Baker's analysis, all these verbs may share the same structural description (1b). Furthermore, even though the embedded verb in (1b) adjoins to the intervening INFL before it incorporates to the matrix verb, no sign of this embedded INFL is observed in a VI

¹ The idea that verb compounds are formed by moving a lower verb to a higher one dates back to generative semantics in 1960's. Smith (1982) also analyzed Labrador Inuttut compounds such as *taku-guma* 'want to see' as the result of verb movement.

compound. Again, an analysis of VI as given in (1b) seems to allow more than what actually exists.

In this chapter, I will argue that these two problems with an analysis of VI as in (1b) can be avoided in the current government-binding framework without drastically changing the key idea of Baker's analysis. More specifically, I will argue that in a construction that triggers VI, the complement of the matrix verb is not a CP but a bare VP, and that a structure such as (1b), which does involve an embedded CP, is ruled out by Binding Condition C as re-defined in Chapter 1 (hereafter referred to as BCC). In section 2.1, the two problems at issue are more carefully examined, and some apparent solutions to them are shown to be either implausible or insufficient. Then evidence is given that verbs which trigger VI are (potentially) capable of taking bare VP complements. Based on this observation I offer an analysis in which VI is constrained by the binding theory. Various applications of the analysis are carried out in section 2.2. The final section briefly considers the absence (as far as I know) of VI with perception verbs, which in English also seem to take bare VP complements.

2.1. Solutions to Problems

2.1.1. Apparent Solutions Which Don't Work

As mentioned above, given (1b), one would expect (A) that every verb that can take a clausal complement can potentially trigger VI, and (B) that the compound verb formed through VI may contain the embedded INFL in it. As far as I know, these predictions are incorrect throughout the languages in the world.

First consider the range of VI-triggering verbs. Though causativization as a result of VI is extremely common cross-linguistically, it is clear to my knowledge that no language allows VI with all verbs which take a clausal complement, as the contrast between (1a) and (2a) shows.² One may suggest that this asymmetry is actually due to the affixal nature of causative morphemes: Since they are affixes, they cannot stand alone, thus causing the embedded verb to move up. If, on the other hand, verbs which don't trigger VI cannot be affixes, it will be impossible for the embedded verb to attach to them (or vice versa); hence VI would never take place with such a verb. This explanation is plausible after all: though both *-ed* and *will* in English are treated as dominated by INFL (cf. Chomsky (1986a)), only the former triggers head-movement. However, there is evidence that affixation is not the only factor that affects VI. In Onondaga, a Northern Iroquoian language, both VI and N(oun)I(ncorporation) are allowed, as shown in (3):

- (3) Pet wa?-ha-hwist-ahtu-?t-a? (Baker (1988))
 Pat past-3ms-money-lost-cause-asp
 "Pat lost money"

In (3), the embedded verb *-ahtu* incorporates onto the matrix verb *-?t* to form a compound verb, and the embedded subject *-hwist* incorporates to the compound verb through a similar process. Now consider the examples

² Greenlandic Eskimo allows a wider range of verbal morphemes to trigger VI. Specifically there are two verb suffixes, one meaning "say" and the other meaning "think", that can take the embedded verb to form a compound. This is a very unusual phenomenon, which I will discuss in section 2.2.6 later.

below, quoted from Chafe (1970):

(4) a. k-a?sha-nohwe?s

1s-knife-like

"I like the knife"

b. Alice e-nohwe?s a-yot?ahse-ny-a?

3s-like indef-basket-make-asp

"Alice likes to make baskets"

Given (4a), we know that the verb *-nohwe?s* at least may co-occur with a lexical morpheme in a compound, whether it is an affix or not. Since the same verb can also take a clausal complement, as shown in (4b), we would expect it to form a compound with the embedded verb. Evidently, this is not possible because *-nohwe?s* does not fall into the small group of verbal morphemes that trigger VI in this language. Therefore, the failure of VI with certain verbs cannot simply be attributed to their incapability of forming a compound with another lexical morpheme. It will be shown later that the same conclusion is supported by examples of a different nature.

Now consider the second problem with (1b)--the lack of embedded INFL in a VI compound. At first sight, one might think that (overt) embedded INFL in a compound is ruled out because a verb somehow cannot bear multiple INFL (both embedded and matrix INFLs). However, such an approach turns out to be implausible. For a simple verb (one consisting of only one verbal morpheme), it can be reasonably argued that multiple INFL may lead either to redundancy or to epistemic contradictions since the same

event denoted by the head of the predicate cannot happen at different times. In a compound, however, more than one verb is involved, and there is no reason why the two verbs cannot each have its own INFL. In fact, it should be very simple to make clear which INFL comes with which verb in such a compound -- the ordering of the morphemes in the compound is sufficient to recover such information. In short, it is hard to imagine why a compound formed by V-movement in a structure like (1b) should forbid multiple INFL.

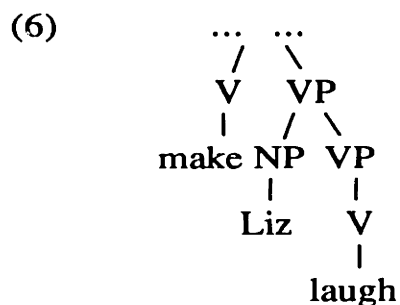
2.1.2. CP Complement vs. VP Complement

If we take a closer look at the verbs that most often trigger VI, we notice that they are either causatives or modal-like verbs. Causative verbs are definitely the most common VI triggers, with verbal causativization reported in languages as diverse as Japanese, Russian, Chichewa (Bantu), Malayalam (Dravidian), and Onondaga (Iroquoian). What is interesting about the causative verb is that its complement, though containing a verbal projection, rarely takes the form of a full clause. Empirically, this is hard to tell when causativization is done through VI. But in a language like English, where the causative verb stands alone, the difference between it and a "normal" clause-taking verb becomes clear:

- (5) a. Chris made Liz laugh
b. *Chris made Liz to laugh
c. *Chris made (that) Liz laughed

These examples show that *make* cannot take a finite clause (5c), nor even an infinitive with *to* (5b). In fact, the embedded verb must be in its bare form

(5a). The most straightforward explanation for this paradigm, then, is that the complement of *make* is a bare VP, as shown in (6):



where the complement is a VP "small clause" (See Chomsky 1986a). Since no projection of INFL is involved in this structure, it can be expected that neither an infinitival nor a finite clause is allowed (For treating the complement of a causative verb as a bare VP, see also Marantz (1985) and Li (1987), among others).

If (6) is the correct structural description of the causative *make* in English, the difference between a causative verb and a verb like *say* becomes clear: while the former may (though probably does not have to) take a bare VP as complement in some languages, the latter always takes a full clause--as far as I know, there is no evidence that a verb meaning "know" can take a bare VP complement in any language. Now let us try to extend this observation to other VI triggering verbs. The following examples are quoted from Baker (1988):

- (7) a. Ndi-ka-pemp-a pamanga (Chichewa, from Watkins (1937))
 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-impr me
 "if it's your water, come 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"

(8) a. kutti urangg-anam (Malayalam, from Mohanan (1983))
 child-dat sleep-want
 "the child wants to sleep"

b. kutikke aanaye gull-aam
 child-dat elephant-acc pinch-may
 "the child may pinch the elephant"

(9) a. angutik-p annak taku-guma-vaa (Labrador Inuttut, Smith (1982))
 man-erg waman see-want-3sS/3sO
 "the man wants to see the woman"

b. angutik anna-mik taku-kqu-ji-juk siitsi-mik
 man-abs woman-instr see-ask-Apass-3sS squirrel-instr
 "the man asks (wants) the woman to see the squirrel"

In (7c) and (8b), the matrix verbs directly correspond to modals in English (and many other languages), and it is hardly controversial that modals in English take a bare VP as complement. The English paraphrase of (7b) shows that *come* can also be followed by a bare VP. Similarly, the matrix verb in (7a) falls into the same category as *come* in English at least in certain situations:

(10) Go get the fish for me!

In the rest of the examples (8a) and (9), the matrix verbs are translated as 'want', which in English is not a modal and cannot take a bare VP complement. But in German, the same meaning is indeed expressed by a modal which takes a bare VP as complement:³

(11) ...weil Hans [_{VP} seiner Schwester Angst machen] will
because his sister fear make wants
"...because Hans wants to make his sister afraid"

Notice that the German example (11) indicates that a verb capable of taking a bare VP complement in one language does not necessarily do so in all languages. In general, verbs that can take bare VP complements are causatives, modals, and ones like *come* and *go*, which are probably also modals. It is not the intention of this thesis to explain why and when certain verbs can take VP complement. Instead, I will be content with the fact that some verbs are subcategorized for VP and capitalize on the following generalization:

(12) A necessary condition on VI is that the matrix verb must be able to take a bare VP as complement.

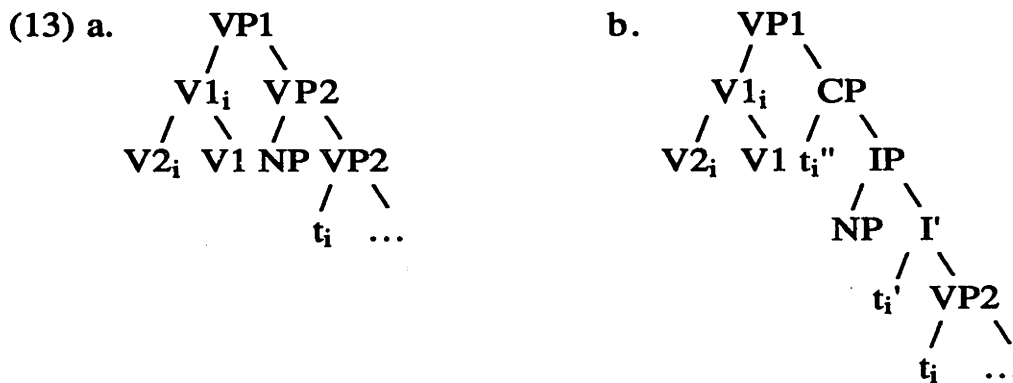
I will show that (12) is a direct consequence of the modified BCC, and that

³ Thanks to Harry Leder for providing the German example to me.

the asymmetry concerning VI can be explained on the basis of (12) plus the general linguistic principles as outlined in Chapter 1.

2.1.3. Analysis Outlined

Generalization (12) states a relation between verbs that can trigger VI and verbs that may be subcategorized for VP complement. If this relation is not accidental, the relevant structure of a VI construction and that of a sentence with (for instance) *say* as matrix verb will be (13a) and (13b) respectively (after the embedded V2 moves to V1):



In (13a), the embedded verb V2 directly adjoins to the VI-triggering matrix verb V1, assuming that V1 can take a bare VP complement. In contrast, a "normal" verb takes a CP complement,⁴ so the embedded verb V2 in (13b) would have to first move to I, then to C, and finally adjoin to V1, as required by the ECP (Baker (1988)).

Now consider the chains formed by head-movement in these two structures, keeping in mind that (13b) is the construction we want to rule

⁴ To simplify the discussion, I ignore the cases in which the matrix verb takes an IP complement. As the reader will find out, an embedded IP blocks VI for the same reason CP does.

out. In both constructions, t_i occupies the D-structure position of a verb; furthermore, in (13b) t_i'' occupies the D-structure position of C and t_i' the position of I. Assuming the V node which dominates the compound ($V1_i$ in (13)) heads a head-movement chain, then the chains in (13) may be represented as (14a) and (14b):

(14) a. [V, V]

b. [V, C, I, V]

A remarkable difference between these two chains is that both elements in (14a) are of the "same kind" since both are X^0 's, both are of category V, and by definition both occupy T-positions (positions from which theta-roles can be assigned. See definition (24), Chapter 1). In contrast, the elements in (14b) are "different" because, though the head and tail of the chain in (14b) are Vs, the intervening elements are C and I. As we suggested in Chapter 1, this "sandwiched" chain of X^0 elements is ruled out by our definitions of variables and BCC in the same way "improper movement" at the phrase level is banned. Specifically, since the trace in the position of embedded V is locally bound by I, which differs from V in category, the trace is a variable by definition. Then BCC requires that it must not be bound in the chain by another V. Since the trace is precisely bound by the matrix V in this case, we conclude that (13b) is ungrammatical for the violation of BCC. In other words, we predict that a matrix verb that takes a CP or an IP as complement, be it affixal or not, will never trigger VI because due to the Head Movement Constraint (definition (14), Chapter 1) the embedded verb must first move to the position of the embedded I before it can adjoin to the matrix V. This

inevitably creates an ungrammatical chain like (14b). This immediately explains why embedded INFL never occurs in a VI compound since the embedded verb can never incorporate with intervening INFL. In contrast, when the matrix verb can take a VP complement (as in (13a)), it becomes a potential VI-triggerer because there is no intervening I and C to block the movement of the embedded verb to the matrix verb.

At this point, there seems to be some redundancy in determining the sameness with respect to the definition of variables. Take (14b) for example, the embedded V trace (tail of the chain) is a variable for two reasons: First, its local binder I differs from it in category; second, I is in a non-T-position (incapable of assigning theta-roles) but V is in a T-position. Since one of the two reasons is enough to rule the chain out, it would simplify the theory if only one of them is used to define the sameness. However, I will show later that both are independently needed.

2.2. Applications

In this section, I will consider a few complications in VI and show how they can be handled by the analysis proposed in the previous sections.

2.2.1. Two Types of Causativization

Marantz (1985) notices that causativization falls into two patterns. In one case (Type 1), the embedded object (if there is one) functions like the object in a simple clause with a single verb -- marked with accusative Case (or agreeing with the object agreement affix on the verb) and coindexed with the matrix subject if it is an anaphor. In the other case (Type 2), however, it is the embedded subject that functions like the object of a simple clause. These

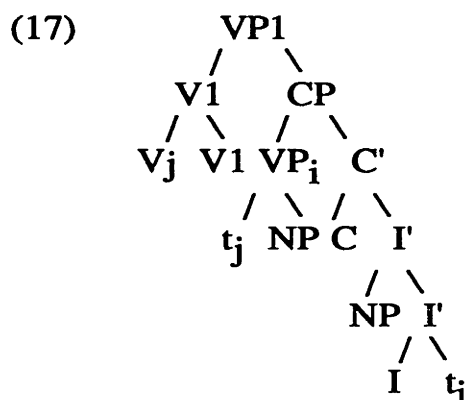
two types of causatives are illustrated below (All examples are from Baker (1988). Unless otherwise indicated, the data are from two Chichewa dialects, which according to Baker exhibit the two types of causatives respectively):

- (15) a. Anyani **a-na-wa-meny-ets-a** **ana** kwa buluzi
 baboons SP-T-OP-hit-make-A children to lizard
 "the baboons made the lizard hit the children"
- b. Arna-m **annga-ni** **tuqute-vlar-aa** **ing'u-mun** (Yupic)
 woman-erg brother-refl kill-make-3sS/3sO guy-Dat
 "the woman made the guy kill her/*his own brother"
- (16) a. Catherine **a-na-mu-kolol-ets-a** **nwana wake** chimanga
 Catherine SP-T-OP-harvest-make-A child her corn
 "Catherine made her child harvest the corn"
- b. Mi **ni-m-big-ish-ize** **mwa:na ru:hu-y-e/*ru:hu-y-a** (Chimwiini)
 I 1sS-OP-hit-make-A child himself/*myself
 "I made the child hit himself/*myself"
- c. Mi **m-phik-ish-ize** **ru:hu-y-a cha:kuja** (Chimwiini)
 I 1sS-cook-make-A myself food
 "I made myself cook food"

(15) illustrates Type 1 causatives. In (15a), the embedded object triggers object agreement on the verb (both the NP and the affix are in bold face). (15b) shows that the anaphor in the embedded object NP must be coindexed with the matrix subject, not the embedded one. Type 2 causatives are shown in (16), where (16a) illustrates the object agreement triggered by the embedded object, (16b) the obligatory coindexation between the embedded

subject and the anaphoric embedded object, and (16c) the anaphoric binding between the embedded subject and the matrix one.⁵

In Baker (1988), these two different types of VI are handled respectively by pure head-movement for Type 2 VI and VP movement plus head-movement for Type 1. The structure for Type 2 was already given in (1b), which, as I showed at the beginning of this chapter, makes wrong predictions concerning when VI can ever take place. Now let us briefly review how Baker handles Type 1 VI (Recall that for Baker the complement of the causative verb is always a CP):



As the first step, the embedded VP moves to the Spec of the embedded CP. Then the head V moves up to adjoin to the causative verb V1.

This analysis has a few problems. First, it is crucial for the

⁵ Marantz (1985) tries to account for these differences between the two types of causatives with the theory in Marantz (1984), where a process called Merger collapses a biclausal construction into a monoclausal one. Thus, type 1 VI is analyzed as the result of Merging the causative verb and the embedded verb at D-structure whereas type 2 VI derives from Merger at S-structure.

(19) I-'u'u-kur-'am-ban

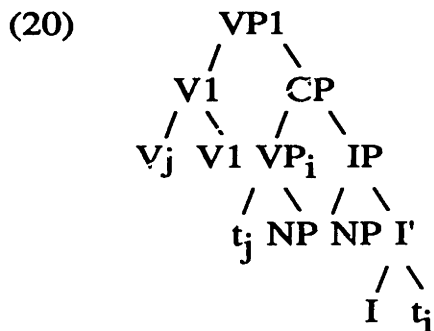
1sS/2sO-baby-hold-cause-past

"I made you hold the baby"

But the ordering of the morphemes is crucially different from the hypothetical example (18a) -- the noun 'u'u "baby" precedes the embedded verb rather than following it. Baker does not say that an ordering like (18) is bad, but his analysis in general does imply that only (19) is well-formed, given the Mirror Principle in Baker (1985a) and (1988) which essentially states that the linear ordering of the heads in a compound should reflect their structural adjacency before incorporation. Thus, while the N-V-cause sequence in (19) directly reflects the D-structural hierarchy of these heads, V-N-cause as given in (18) doesn't, with N not adjacent to the matrix causative V in D-structure. Empirically, it is also unlikely that Southern Tiwa (or any language) allows the two orderings in (18) and (19) with the same interpretation. Thus, we conclude that it is at least highly suspicious to say that the VP in the Spec position of CP is not a barrier. As for the barrierhood of CP in (17), Baker notes that he can prevent it from being a barrier only at the cost of defining bounding nodes as totally different entities than barriers. In a theory where barriers are also bounding nodes, CP must be a barrier between the head of the NP in its Spec position and the matrix causative verb (cf. sections 1.1.3 and 1.1.4 for relevant definitions and discussions).

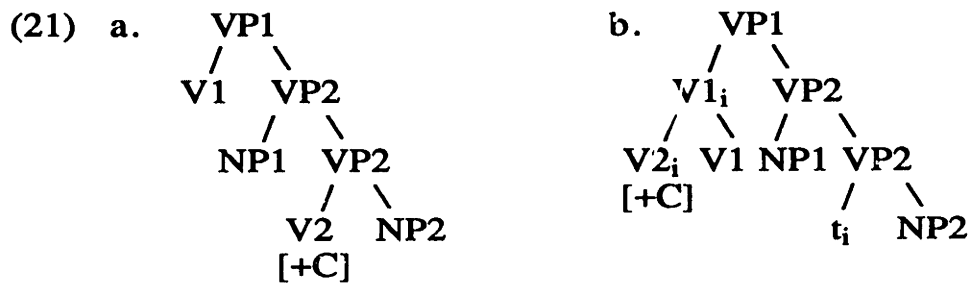
Baker also notices another problem with a structure like (17); namely the embedded subject is not governed by anything that can assign Case. This is because the embedded CP is a barrier between the subject and the matrix V

(whether the embedded VP moves to the Spec of CP or not) since its head C selects a maximal projection IP which includes the subject. With the assumption that this NP receives Case from the matrix V, it is necessary for Baker to allow C-deletion, which removes the barrierhood of CP under his definition of barriers (note 1 of Chapter 1). After applying C-deletion to (17), we have the structure (20):



where CP is "head-less" as the result of C-deletion. However, this structure is actually a violation of the basic idea of the X'-theory, i.e. X^n exists only as the projection of X^{n-1} , where $n > 0$. In (20), the CP does not even have a C^0 node. Such a structure cannot be permitted without drastically changing the notion embodied by the X'-theory.

Having shown that Baker's analysis of both Type 1 and Type 2 VI has problems, I will now present my analysis of these constructions. First consider the derivation of a Type 2 VI compound:



Assume that the matrix causative verb V1 is [+C], then by assumption (B) of the Case theory (Section 1.1.6, Chapter 1) V2 is able to assign Case to NP2, its own object, since its maximal projection VP2 is governed by a [+C] verb, i.e. the causative V1. Similarly, NP1 will receive a Case from V1 since the latter governs it and can actually assign Case under the government of INFL. When V2 moves up to adjoin to V1, the structure will be (21b). To guarantee that NP2 remains governed for Case-assignment even after V1, I make the following assumptions:

(22) A trace maintains all the properties of its antecedent.⁶

(23) A verb compound inherits the Case-assigning properties of its components.

With (23), V1_i in (20b) inherits both the Case-assigning property of the matrix V1 and the incorporated V2_i. Since it is also the antecedent of the trace t_i which governs the embedded object NP2, the trace also assigns Case to it. If this language (on the surface) allows only one Accusative Case, which is usually assigned under adjacency, then only NP1 (i.e. the embedded subject) will have Accusative Case with the Case for NP2 realized as Oblique. (16a) provides such an example, where the embedded object

⁶ Baker tries to derive the effect of (22) in his Government Transparency Corollary by adding certain conditions in the definition of barriers.

triggers object agreement and presumably receives accusative Case thereby. On the other hand, if the language allows two Accusative Cases in a single sentence, NP2 will also be marked as Accusative. Kinyarwanda provides such an example (from Baker (1988)):

(24) Umugabo a-ra-yi-b-uubak-iish-s
 man SP-T-OP-OP-build-make-A
 "The man is making them build it"

where the object agreement affix *yi-* is for the embedded object and *b-* is for the embedded subject. Furthermore, the embedded VP2 in (20) is the minimal governing category for the binding purpose, with NP1 as subject (cf. section 1.1.5). Thus, when NP2 is an anaphor, it will be necessarily bound by NP1 (see (16b)). When NP1 is an anaphor, however, the whole clause will be the minimal governing category since the governor of NP1 is the matrix verb V1. It follows that NP1 is bound by the matrix subject, as (16c) shows.

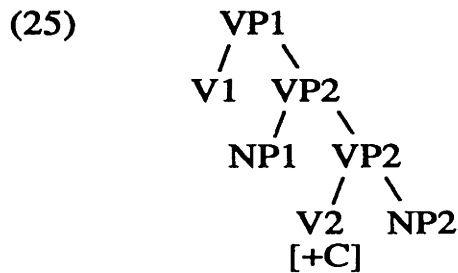
Next consider Type 1 VI, recalling that in this case the embedded object functions like the object of the whole sentence. Suppose what distinguishes this type from the previous one is that the causative verb is unspecified for the [C] feature. This means that V1 cannot assign accusative Case.⁷ The question is whether V2, which is not governed by a [+C] verb,

⁷ Notice that a Type 1 causative verb, which assigns theta-role to the subject but does not assign Accusative Case, is actually compatible with what is called Burzio's Generalization (cf. Burzio (1986)):

- (i) A verb does not assign Accusative Case to its object iff it does not assign subject theta-role.

According to Burzio (p. 184f), if the object does not receive Accusative

can assign accusative Case to its complement. According to assumption (B) of the Case theory, if VP2 is governed by V1, a verb with unspecified [C], its Case assigning ability is determined by the governor of VP1. Since VP1 is the complement of INFL, V2 can actually assign accusative Case to its complement. Suppose the D-structure is (25):



With V1 itself unable to assign Case, NP1 cannot receive Case from V1. Nor can it move to a Case-receiving position because no such position is available in the sentence. So we conclude that (25) cannot be the right structure for (the relevant part of) a sentence with a type 1 VI compound.

Before proposing another alternative structure to (25), let us consider what Larson (1988) calls *Argument Demotion*:

- (26) If α is a theta-role assigned by X^i , then α may be assigned to an adjunct of X^i .

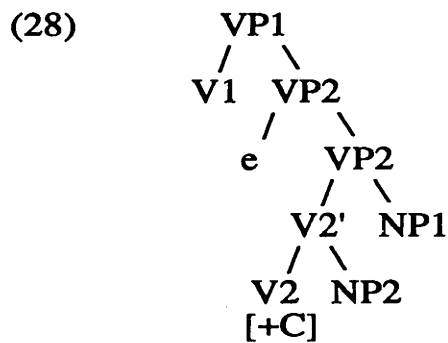
Case, it has to move to the subject position to get Nominative Case. But this movement necessarily requires that no theta-role is assigned to the subject position. Otherwise the chain containing the moved object and its trace will receive two theta-roles, violating the Theta-Criterion. The crucial point in this reasoning is that it presumes that the verb has an object which needs Case. For a Type 1 causative verb, however, its complement is a VP, which does not need Cases (Chomsky (1981), for instance, assumes that clausal complements don't need Case.) Therefore, such a verb is not restricted by (i).

Larson assumes an interpretation of X'-structures somewhat different from ours, so it is not straightforward that (26) can be directly brought into our system. However, the basic idea in (26) is suggestive to us -- that an argument may be optionally base-generated as an adjunct. For the purpose of our analysis, let us propose the following "argument demoting" rule:

(27) The external theta-role of a verb can be assigned to a VP-internal adjunct.

Notice that nothing needs to be said about where the adjunct is generated inside VP if we follow a long tradition of thought that theta-roles of a verb impose a certain structural hierarchy on the expressions that receive them from the verb. For recent implementation of this idea, see Grimshaw (to appear) and Li (1990a).

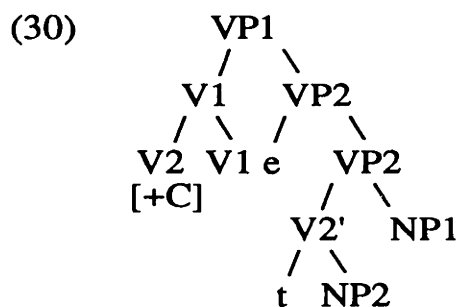
Applying (27) to the embedded VP of a type 1 causative construction, plus the assumption that a "small clause" construction is always an alternative to a "bare" maximal projection of some lexical category, we now have a D-structure (28):



where NP1 is in a D-structure adjunct position. It is under VP2 as required by the argument demoting rule (27). It has to take a position "higher" than the object argument NP2 since the theta-role it receives is hierarchically higher than the one given to NP2. The position *e* under the top VP2 node is an empty position (optionally) generated as subject of the embedded VP small clause. Now that NP1 is in an adjunct position, it may be assigned an Oblique Case following assumption (C) of the Case theory (section 1.1.6). And indeed it is marked Dative, as the following Chichewa example shows (same as (15a)):

- (29) Anyani a-na-wa-meny-ets-a ana kwa buluzi
 baboons SP-T-OP-hit-make-A children to lizard
 "the baboons made the lizard hit the children"

As for NP2, it can receive Accusative Case in situ from the trace of V2 after incorporation, according to (22) and (23):



Now consider the following example from Central Alaskan Yup'ic (Baker (1988) p.c. with A. Woodbury):

(31) Arna-m annga-ni tuqute-vkar-aa ing'u-mun (= (15b))
 woman-erg brother-3refl(abs) kill-cause-3sS/3sO guy-dat
 "The woman made the guy kill her own/*his own brother"

The embedded object, when containing an anaphor, must be coindexed with the matrix subject, as the interpretation of (31) shows. The same binding property is also found in Malayalam (Mohanani (1983)). This indicates that the embedded VP2 does not count as a governing category for the object. Given the theory of this work, there are two possible ways to achieve this result. First, if the VP-internal adjunct does not count as an A-binder (because it is not an argument), then it cannot serve as subject either, since the notion subject presupposes argumenthood. Furthermore, the subject position of the small-clause in (30) is empty, so VP2 does not qualify as a governing category for lack of subject. As a result, the whole sentence becomes the minimal governing category, in which the embedded object is coindexed with the matrix subject. It is also possible to make use of structural adjacency in Case assignment to achieve the binding effect in (31). For instance, with the embedded subject position in (30) empty, NP2 may move into it to get structurally adjacent to the "real" Case-assigner, i.e. the compound verb $V1_i$. Once in this position, it is governed by the compound and hence takes the whole sentence as governing category. Both of these possible explanations are plausible but in both the technical details need to be worked out. For lack of independent evidence to make a choice between the two, I will leave it open for the time being.

(30) also provides a way to explain another phenomenon characteristic of type 1 VI. Baker (1988) notices that cross-linguistically, type 1 causatives

often allow the causee (i.e. NP1 in (30)) to be implicit and with arbitrary reference. (32) shows an example in Chichewa (from Baker (1988)):

(32) Amayi a-na-ki-its-a mtsuko pa mpando
 women sp-past-put-cause-asp waterpot on chair
 "the women made someone put the waterpot on the chair"

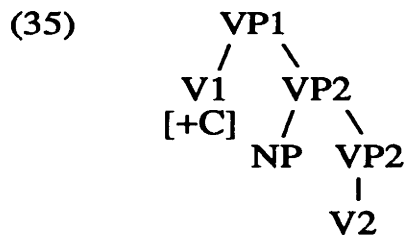
where the causee is not explicitly expressed. This optional presence of the causee can be explained given (30) and the Case theory assumed in this paper. Recall that NP1 is base-generated in an adjunct position to which an Oblique Case is assigned. Suppose the assignment of oblique Case to an adjunct position is optional; then NP1 will be unable to have phonetic content when no Case is ever assigned to it. Since NP1 is head-governed by V2, it cannot be PRO. But it may be a pro, which is by definition a governed pronominal empty category without phonetic content. Furthermore, assuming that a causative verb is not a control verb (i.e. with none of its arguments designated as controller, cf. section 1.1.7), this pro must be arbitrary in reference. Hence the interpretation of (32).

Baker (1988) also notes that when the embedded verb is unergative, its single NP argument functions like the object of the whole sentence both in terms of object agreement and passivization no matter which type the VI compound falls into (also see Marantz (1985)). Below are examples from Baker to illustrate object agreement, with passivization postponed till the next section:

(33) **buluzi a-na-wa-sek-ets-a ana**
 lizard sp-past-op-laugh-cause-asp children
 "the lizard made the children laugh"

(34) **mphunzitsi a-na-wa-lemb-ets-a ana**
 teacher sp-past-op-write-cause-asp children
 "the teacher made the children write"

(33) and (34) are from the two dialects of Chichewa, representing type 1 and type 2 causatives respectively. In both cases, the embedded subject, which is also the single argument of the embedded intransitive verb, may trigger object agreement (in bold face) on the verb compound. Let us first consider the D-structural representation of Type 2 VI as given in (34):



Since the causative V1 can assign Case, the subject of VP2 receives accusative in situ. That V2 is incorporated onto V1 has no effect on the grammaticality of the construction.

Next consider Type 1 VI, with V1 having no [C] feature specification. Assuming the structures are otherwise the same as (35), the question is how the NP inside VP2 gets accusative Case. In fact, given the version of the Case theory we assume, there is only one way this can be done--the

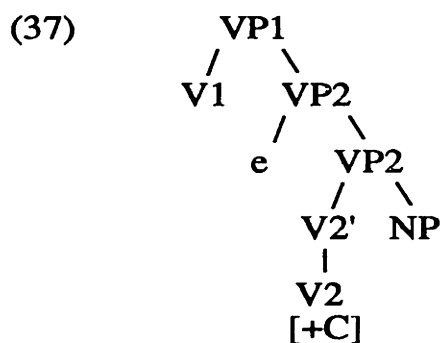
unergative verb V2 is [+C]. Then compound V will assign accusative Case to the subject NP of VP2 after V2 adjoins to V1 in the same way it assigns Case to the same position when V1 is transitive (cf. (30) and the discussion thereof). In fact, there is evidence that unergative verbs assign Case.

Consider the sentences below:

- (36) a. Carol laughed herself silly
 b. They whistled the actor off the stage

The VP-internal NPs *herself* and *the actor* are presumably Case-marked. They cannot receive Case from the predicate phrase following them, so Case must be assigned by the verbs *laughed* and *whistled*, though these verbs independently don't have an object. We therefore conclude that unergative verbs are in [+C] and the embedded subject in (34) indeed receives Case once V2 adjoins to V1 in the construction.

One may ask why, with V1 unable to assign Case in a type 1 causative construction containing an unergative embedded verb, the subject of the embedded VP is not generated as the VP-internal adjunct, just as when the embedded verb is transitive. That is, why isn't (37) the D-structure of (33):



The answer to the question is that (37) is indeed a possibility. Let us examine all the legitimate ways the NP adjunct may get Case. First, if V2 does not move up to adjoin to V1, then it may assign accusative Case to NP because it head-governs the argument. I will argue in Chapter 3 that this is indeed the situation for Romance causative constructions. On the other hand, if V2 adjoins to V1, NP may move to the empty subject position under the top VP2 to be close enough to the verb-compound and receive accusative Case there. This is practically the same as having NP base-generated in the embedded subject position, and as far as I know there is no way to tell the two apart. Thirdly, since NP is in an adjunct position, it may be assigned Dative Case according to our analysis of type 1 causatives with a transitive verb. Obviously this possibility should be ruled out because it has never been reported that the subject of the unergative verb in a causative construction has Dative (or any other Oblique) Case. The solution, I believe, comes from what Chomsky (1988) calls the "least effort" condition, which can be stated as below:

(38) In derivation, "less costly" principles/rules must apply whenever possible.

At this stage, the notion of cost is still more intuitive than well-defined. For instance, Chomsky suggests that principles in UG costs less than language-specific rules. Nevertheless, let us follow this reasoning and propose that assigning a "standard" structural Case such as Nominative and Accusative is less costly than assigning Oblique Cases. Then the least effort condition (38)

will demand that an NP receive a less costly Case whenever possible. In other words, the subject of VP2 in (37) will never have a chance to be marked Dative since there is at least one Accusative Case available for it.

Now let us consider causatives with unaccusative verbs. The Chichewa examples (representing type 1 causatives) are also from Baker (1988):

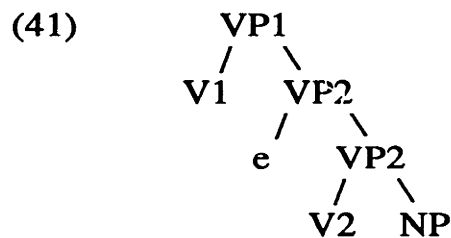
- (39) a. boma li-ku-sow-ets-a nsomba
 government sp-pres-disappear-cause-asp fish
 "the government make fish disappear (become unavailable)"
- b. mulungu a-no-yer-ets-a kunja
 God sp-past-clear-cause-asp sky
 "God made the sky clear"

Baker does not give evidence that the embedded argument in such sentences can trigger object agreement, but only implies that it behaves in the same way as the subject of unergative verbs. However, that this NP indeed functions as object of the whole sentence is confirmed in Italian (examples are from Burzio (1986)):

- (40) a. Maria ha fatto riparare la macchina a Giovanni
 has made repair the car to
 "Maria has made Giovanni repair the car"
- b. Maria fa intervenire Giovanni
 makes intervene
 "Maria makes Giovanni intervene"

(40a) shows that Italian causatives fall into type 1, with the embedded subject marked Dative. In (40b), the embedded verb *intervenire* is unaccusative, and its single argument has accusative Case, as the lack of the Dative marker *à* shows (see Burzio (1986), section 4.5).

The D-structure of such a causative construction is straightforward:



The question again is how NP gets Case. And the answer is that V2 is [+C]. It is well-known that the internal NP argument of unaccusative verbs can get Case in situ under certain conditions:

(42) there arrived a lot of soldiers

It has been argued that the post-verbal NP receives Case through a chain/CHAIN with *there* in (41) (cf. Chomsky (1981), (1986b)). However, Lasnik (1989) notices a problem with this account. Compare (42) with (43):

(43) *there arrives usually a bus at this time

Though the adverb *usually* can occur preverbally, it cannot be between the verb and the NP argument. If this NP receives Case through the expletive

there by transmission, there is no obvious reason why it has to be adjacent to the verb. On the other hand, if it receives Case from the verb in the same way as any other internal argument, the ungrammaticality of (43) is expected since Case assignment demands adjacency.⁸

2.2.2. Passivization

Baker notices that the passivization of the embedded verb is possible in type 2 VI compounds but not in type 1 (examples are quoted from Baker (1988)):

(44) Type 1 (Chichewa)

*Anyamata a-na-umb-idw-its-a mphika (ndi kalulu)
 boys sp-past-mold-pass-cause-asp waterpot by hare
 "the boys made the waterpot be molded (by the hare)"

(45) Type 2 (Chamorro)

Si nana ha-na'-ma-fa'gasi i kareta ni lalahi
 Pn mother 3sS-cause-pass-wash the car Obi males
 "Mother had the car be washed by the boys"

Baker analyzes these embedded passivization cases by assuming the passive morpheme to be dominated by INFL and assigned the external theta-role of the verb (see also Roeper (1984), Jaeggli (1986), and Baker *et al.* (1989)).

This proposal cannot be maintained in the analysis advocated in this paper: If

⁸ Lasnik actually makes the following proposal:

(i) Unaccusatives and *be* are Case assigners

The reader is referred to his paper for details. Belletti (1988) also argues that unaccusatives are Case-assigners. However, she argues that the Case assigned by an unaccusative verb is not Accusative but Partive. If this is the case, my analysis must be revised accordingly. I will leave this issue open for further investigation.

INFL dominates the passive morpheme, then a passivized verb would be the result of moving the verb to INFL. By definition, the trace of the verb would be a variable since INFL and V differ in category. Therefore this trace cannot be bound by another V according to BCC. Given the fact that the embedded verb of a type 2 causative construction can be passivized, my analysis requires that the passive morpheme not be dominated by INFL. Baker's analysis also has an empirical problem: If a morpheme dominated by INFL can occur in a causative compound, why is it that no other INFL elements are allowed in the same environment?

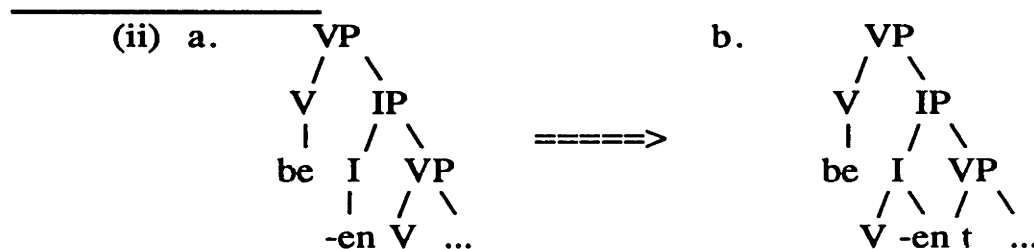
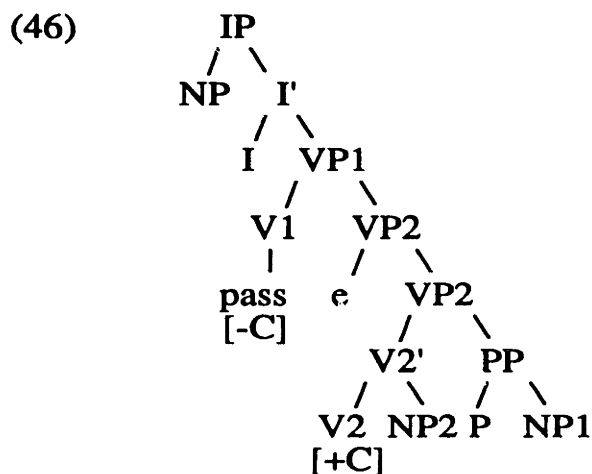
In this subsection, I will consider the possibility of treating the passive morphemes in the examples (44) and (45) as verbs. Park (1984) observes that the Korean passive and causative morphemes are actually the same morpheme.⁹ Based on this observation, Marantz (1985) suggests

⁹ Thanks to M.-Y. Kang and Alec Marantz for informing me of this phenomenon in Korean. In spite of the differences between such an analysis of passives and Baker's, I want to point out that the two approaches don't necessarily contradict each other. First of all, it may be that the two analyses correspond to the two types of passive constructions cross-linguistically -- those introduced with a copula, and those without it. English (as well as many other Indo-European languages) belongs to the first group:

(i) The dragon was (brutally) killed by the prince

In spite of the attempt to treat the copula and the passive morpheme *-en* as dominated by a single X^0 node (see for instance Baker (1988)), such an analysis cannot be right because of the intervening adverb between the two. Thus, the passive morpheme and the copula must occupy different nodes. This is essentially the analysis given in Baker *et al.* (1989), which following Kayne (1987b) argues that *-en* is dominated by INFL while the copula is a verb taking as complement the IP headed by *-en*:

treating the Korean causative verb and passive in a consistent way in terms of the theory developed in Marantz (1984). My analysis below will also assume the same general idea. Suppose a passive sentence has the following D-structure, with relevant constituents differently marked with the [C] feature:



Consequently, *V-en* is a cluster of heads dominated by INFL. This analysis is consistent with the intuition that the passive participle is not a verb. On the other hand, in passive constructions such as Korean which don't use the copula, the passive morpheme is a verb, and the *V-pass* cluster functions as a verb. Notice that whether using a copula or not, the "complete" structure ends up being a VP. In one case, this is achieved with a copula verb; in the other, this is due to the verbal nature of the passive morpheme.

Secondly, even in a structure like (ii), there is evidence that BCC as modified in this thesis is at work. Given (ii), we predict that the embedded *V* cannot move to *I* (i.e. to be passivized) and then to the copula verb due to BCC. This prediction seems correct, for as far as I know, no language using a copula in passives allows compounds composed of the root verb, a passive morpheme, and the copula.

Like a causative verb, a passive morpheme also takes a bare VP complement, in this case VP2. The passive verb V1 is [-C] since it cannot assign Case to anything. And the embedded verb V2 is just an ordinary transitive verb, hence marked [+C]. However, given assumption (B) of the Case theory, V2 cannot actually assign Case since its maximal projection VP2 is governed by a [-C] verb. Since NP2, the object of V2 has no Case, it must move first to the position *e* and then to the matrix subject position to get Case, a typical NP-movement. Notice that VP1 is not a barrier between the matrix subject position and the embedded subject position *e* because *e* is not included by VP2 so that the head of VP1 does not select any maximal projection including *e* (cf. section 1.1.3).¹⁰ I believe that this analysis of passivization is intuitively preferable to the one in Chomsky (1986a), where the complement NP of the verb cannot move to the subject position without violating the ECP unless the verb moves to INFL, the chain headed by the verb is coindexed with the subject, and the notion of extended chains is introduced.

A question arises as to why NP2, the object of V2, cannot land at the *e* position under the top segment of VP2 (or even stay in situ) and receive Case there once V2, which is [+C], has adjoined to the passive V1. Given the mechanisms used in this thesis, this question may be answered as follows. Once V2 incorporates onto V1, the two verb components of the compound have a feature-value clash since V1 has [-C] while V2 has [+C].

¹⁰ Another possibility is for the object of the passivized verb to go to the empty subject position of VP1 (not shown/generated in (46)) since this position is always an option, as we assumed with the X'-schemata. This intermediate step is not necessary for passives, but I will show in the next section that this is how NP-movement takes place with a raising verb.

And one may quite plausibly argue that when this happens, the compound will assume the feature value of the head, i.e. V1. Since V1 has [-C], the compound has [-C] and cannot assign Case to anything. It then follows that NP2 cannot receive Case in the *e* position since the [-C] compound cannot assign Case according to assumption (A) of Case theory. Nor can NP2 receive Case in its D-structure position, because the trace of V2 only inherits the Case-assigning property of its antecedent, which again is the [-C] verb compound. So NP2 must move to the matrix subject position to receive Case.

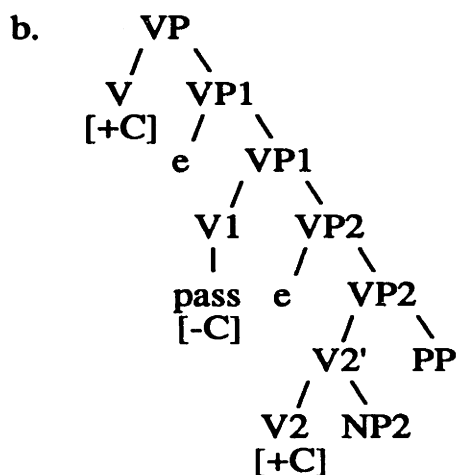
Notice that the thematic subject of V1, marked NP1 in (46), is generated as the complement of a preposition. We will see in Chapter 3 that this configuration yields some desirable consequences. In particular, this makes it possible to distinguish passives from type 1 causatives. Hopefully a structure like (46) can be derived from some general principles, but for now I will simply assume that when V1 is the passive morpheme, the external argument of the embedded verb (V2) must be introduced by a preposition.

Given this analysis of passivization, let us first consider (45), a Type 2 example repeated below with the relevant part of its D-structure:

(47) a. Si nana ha-na'-ma-fa'gasi i kareta ni lalahi

Pn mother 3sS-cause-pass-wash the car Obl males

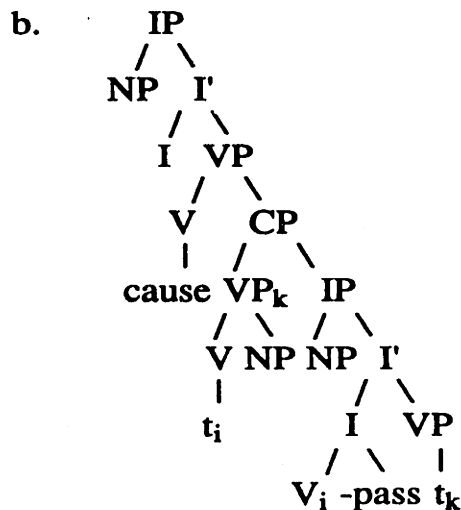
"Mother had the car be washed by the boys"



Governed by a [-C] V1 (-*ma*), V2 (*fa'gasi* "wash") cannot assign Case to NP2 (*i kareta* "the car"). So this NP has to move to a Case-marked position. The lower *e* position cannot be Case-marked even after V2 moves to V1 because the new compound will inherit the [-C] feature of the passive morpheme, which is the head of the compound. However, NP2 can move further to the higher *e* position to receive Case, since V is [+C] and will be the head of the compound after [V1-V2] adjoins to it. Notice that with the passive morpheme a verb, the most embedded verb does not move to the causative verb through any node of a different category, and therefore doesn't yield any BCC violation.

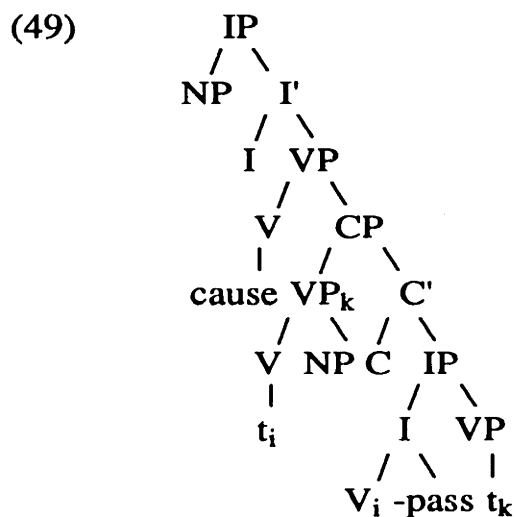
In contrast to the grammaticality of (47), its counterpart with type 1 VI is bad, as (44) shows. Before giving an account for this asymmetry, I will show how Baker analyzes it (Recall that Baker treats the passive morpheme as dominated by INFL and analyzes Type 1 VI by first moving the embedded VP to the Spec position of the embedded CP):

(48) a. *Anyamata a-na-umb-idw-its-a mphika (ndi kalulu)
 boys sp-past-mold-pass-cause-asp waterpost by hare
 "the boys made the waterpot be molded (by the hare)"



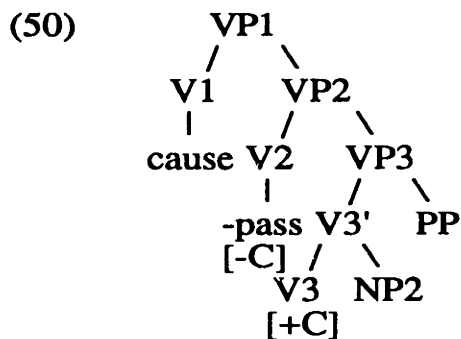
The embedded verb V_i first moves to I to form a passive verb; then the embedded VP_k moves into the embedded CP. Since V_i does not govern its trace t_i and there is no way in (48b) for this verb to move to the matrix verb as the result of C-deletion (cf. ex. (20) above and the discussion thereof), the structure is out. We already pointed out the problems with such an analysis of Type 1 VI in section 2.2.1 above. But let us put these problems aside and assume that the structure is indeed the correct one. Even in this case, it is not clear that (48) can be ruled out. Recall that the effect of C-deletion is to make the matrix causative verb govern the embedded subject. This effect can be achieved only if neither the embedded IP nor CP is a barrier. Given Baker's definition of barriers (note 1 of Chapter 1), CP is not a barrier once its head is removed. As for IP, it is not a barrier before C-deletion because it is selected by C. But what about after C-deletion? After all, selection is defined in terms of the head-complement relation for functional categories (cf. (11) of section 1.1.3). Obviously, some extra

mechanism is needed to mark IP as selected once for all so that IP counts as selected even when C is not present. Assuming that this can be done, then CP and IP are not barriers not only between the matrix verb and the embedded subject, but also between the matrix verb and the embedded INFL for exactly the same reason. Thus, the V-I cluster (= V-pass in (48b)) can actually incorporate directly to the matrix V without violating the ECP. Once the passivized verb adjoins to the causative verb, the whole compound will also be able to govern the trace of the embedded V whose maximal projection VP_k is now in the Spec position of CP. With every trace properly governed in such a structure, (48a) is wrongly predicted to be well-formed unless further restrictions are added to rule it out. For a similar reason, the sentence will also be permitted without C-deletion:



Now the V-pass cluster can first move to C and then to the matrix V; and once it is there, it will properly govern the trace t_i under VP_k . Again, the structure observes the ECP, and additional mechanisms are necessary to prevent it.

Under the analysis proposed in this chapter, (48a) can be ruled out straightforwardly. The relevant structure will be as follows:



Recall that for Type 1 VI, the causative verb lacks the [C] feature, and that due to the [-C] of V2, V3 cannot assign Case to its internal argument (NP2). When V3 adjoins to the passive verb V2, the whole compound will be [-C] since V2 as head of the compound is so marked. Then this compound moves to V1, again resulting in a compound with [-C] due to the lack of the [C] feature in V1. Thus, no matter where NP2 finally ends up in the structure, no verb can assign Case to it. (Note that the matrix subject position is not available because it is occupied by the external argument of the causative verb V1.) It follows that Type 1 VI cannot allow passivization of the embedded verb.

2.2.3. Negation

In Pollock (1989), it is suggested that sentential negation is structurally represented as a maximal projection, NegP, of a negational head Neg, in the same way IP and CP are represented (a structural representation will be provided below). If we follow this analysis, we predict that, though a verb

morpheme may form a compound with Neg, it is impossible for a VI compound to "contain" a Neg which exclusively negates the embedded verb, since the formation of such a compound would create a chain with a Neg element between two V elements. This prediction seems correct, for as far as I know, no VI compounds has such a narrow-scope negation morpheme in them. This can be illustrated with the following Uighur examples:¹¹

(51) a. Jon yügür-mi-di

John run-not-past

"John did not run"

b. Jon Meri-ni yügür-t-mi-di

John Mary-acc run-cause-neg-past

"John did not make Mary run"

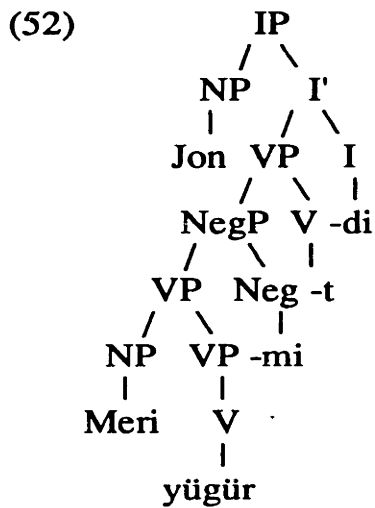
*"John made Mary not run"

c. *Jon Meri-ni yügür-mi-t-ti

John Mary-acc run-neg-cause-past

The D-structure of (51c) would be something like (52), with irrelevant nodes omitted:

¹¹ Thanks to Kahar for patiently providing Uighur examples to me. Uighur is a dialect of Turkish spoken in Xinjiang Autonomous Region in the People's Republic of China.



The embedded V *yügür* would first adjoin to Neg *-mi* and next to the matrix verb *-t*. There is certainly nothing wrong with the semantics of such a construction, since the same meaning can be expressed by a well-formed sentence in English, as one of the paraphrases in (51b) shows. And given Baker's (1988) analysis, this structure should be allowed structurally (in any case, a verb adjoining to an affix of negation should be permitted independently, no matter what the analysis is). But given my analysis of VI, which prevents intervening heads of a different category in head-movement, the impossibility of constructing a VI compound with a D-structure like (52) is expected because of the intervening Neg node between the matrix and embedded verbs.

Notice that examples like (51c) also provide evidence that affixation is not the only factor that allows/disallows VI. In this sentence, the causative verb is certainly an affix; so is the negation morpheme. So if VI takes place in (51b), it should be able to take place in (51c). One might argue that in Uighur the negation affix must appear in a certain "slot" in such a compound, thus (51c) is not possible not because it cannot be formed with a

D-structure like (52), but because the negation affix is placed in the wrong place in the compound. This analysis can be easily proven to be wrong. If this were the case, (51b) should also have the starred reading, which my informant doesn't get. So neither affixation nor fixed morpheme ordering are sufficient to prevent the existence of (51c).

2.2.4. Other VI Triggering Verbs -- Modal-like Verbs

So far we have been concentrating on the properties of causative constructions, but as pointed out in section 1 of this chapter, there are other verbs that may also trigger VI, which are typically modal-like verbs (hereafter referred to as Vm). Some examples are repeated below:

(53) Ndi-ka-pemp-a pamanga (Chichewa, same as (7a))

1sSP-go-beg-asp maize

"I am going to beg maize"

(54) a. kutti urangg-anam (Malayalam, same as (8a,b))

child-dat sleep-want

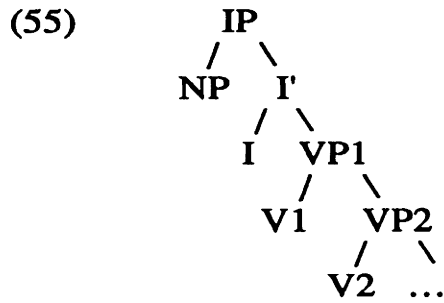
"the child wants to sleep"

b. kutikke aanaye gull-aam

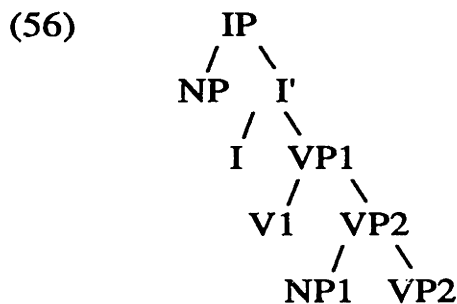
child-dat elephant-acc pinch-may

"the child may pinch the elephant"

It has been argued that all these verbs take bare VPs as complements in VI constructions. I will assume that these sentences have the following structure:



where V1 is the V_m that triggers V_I. While the environment obviously permits the incorporation of V2, two problems arise with this structure. First consider (54a), in which V1 = *anam* "want". There is a clear sense that the subject of the sentence, *kutti* "child", is the subject of both verbs. Thus one wonders exactly how the external theta-roles of the two verbs *urangg* "sleep" and *anam* "want" are assigned. The second problem with (55) concerns the nature of the VP complement. Given our assumption that a small clause is always an alternative to a "subjectless" VP, what if the structure for V_I sentences with V_m's is not (55) but (56), where NP1 is the argument receiving the external theta-role of V2?



Obviously, the answers to these questions are closely related.

Starting with the second problem, let us first examine what form NP1

may take in (56). If the matrix V1 is [+C], i.e., if it can assign Case, then the structure is simply a Exceptional Case Marking (ECM) construction, with NP1 governed and assigned Case by V1. We have seen such an example in (9b), repeated here for reference:

(57) angutik anna-mik taku-kq-ji-juk siitsi-mik (= (9b))
man-abs woman-instr see-want-apass-3sS squirrel-instr
"The man wants the woman to see the squirrel"

Next consider Vm's that don't assign Case to the embedded subject. Since the embedded verb in such a construction can assign Case to its own complement, as (54b) shows, we assume that the Vm has an unspecified [C] feature. Furthermore, if it assigns a theta-role to the subject, we assume that it is a control verb with its subject argument designated as the controller (See for instance Rizzi (1982) and Burzio (1986) for treating such verbs as control verbs). Returning to (56), it is clear that the structure is impossible with V1 = a control Vm. Since NP1 is governed but has no Case, it is pro. V1 as a control verb requires that pro be coindexed with the matrix subject (NP in (56)). However, since this pro is governed by V1, the whole sentence is the governing category for it, in which it must be free according to Binding Condition B. This dilemma leaves us with two alternatives -- either V1 assigns a theta-role to its own subject but its complement is not a small-clause, or V1 assigns no theta-role to its subject.

Clearly, the choice between these two alternatives directly bears on the first question raised earlier in this subsection: how do the matrix verb and

the embedded verb theta-mark the single overt subject in a sentence like (54a) with structure (55)? If both verbs assign a theta-role to the subject, the one from the embedded verb must "percolate" up through the matrix VP to be assigned to the subject. Putting aside the exact mechanism for theta-percolation, this structure raises that old problem of whether a thematically unsaturated constituent can receive a theta-role (cf. Higginbotham (1985)), assuming that V1 in (56) assigns a theta-role to its complement.

Next consider the other alternative -- that V1 does not assign a theta-role to the subject. Structurally, it is clear where this alternative leads us. If the construction has a structure like (55), again we face a thematically unsaturated theta-receiver because the theta-role of the embedded VP must percolate through the matrix VP to reach the subject. To avoid this tricky issue, we must adopt a structure like (56), which means that we are dealing with a raising construction with the subject generated inside the small clause complement and raised to the matrix subject position to get Case (recall that V1 is assumed to be unspecified for [C]). The potential problem with this analysis is why the matrix verb imposes a selectional restriction on the subject if it does not have any thematic relation with the argument. For instance, it is very unlikely that in any language one can say *the book wants to be on the shelf* without using it figuratively (and with the intended reading of *want*). That is, the subject of such a sentence is usually a human, at least some animate entity. However, imposing selectional restriction on the subject is not necessarily the consequence of theta-role assignment. Howard Lasnik points out to me that even English modals participate in selecting the class of NPs that occur in the subject position:

(58) a. this man can move at 20 miles per hour

b. this car can move at 20 miles per hour

In (58a), the modal *can* has two interpretations: "be able to" and "be allowed to". In (58b), however, the "be allowed to" reading is impossible (again in the normal interpretation of the sentence). Thus one reading of this modal selects the subject in the same way *want* does, though few people want to say that *can* as an element of INFL assigns a theta-role to the subject.

In summary, our knowledge of modals and Vm's is not sufficient to let us draw any conclusion concerning the structure of VI constructions with Vm's, but I will tentatively assume that they are cases of a raising construction as shown in (56), with the matrix Vm affecting the selection of the subject in the same way true modals do in English.

2.2.5. Other VI-triggering Verbs -- Bridge Verbs in Eskimo

As made explicit at the beginning of this chapter, my analysis of VI hinges on the claim that only a small group of verbs can trigger VI and that these verbs are all potentially capable of taking bare VP complements. In fact, I have been trying to show that they are either causative verbs or modal-like verbs. Greenlandic Eskimo provides a counterexample. As Fortescue (1984) notices, the group of verbal affixes that form compounds with other verbs also includes two (quite unexpected) morphemes, *nirar* "say" and *sugi/suri* "think", which are not known to take bare VP complements in other languages:

(59) miiraq irniinnaq sini-li-ssa-nirar-paa
child right-away sleep-begin-fut-say-agr
"he said the child would soon fall asleep"

The situation actually looks even worse for the analysis proposed in this work because, as (59) shows, the compound formed through VI also contains a Tense morpheme associated with the embedded verb *li* "begin". Since Tense is usually treated as part of INFL, (59) seems to embody exactly what we claim to be impossible -- that the embedded V first moves to INFL and then they move together to the matrix verb.

However, there is evidence that more is going on than meets the eye in Eskimo. First, Fortescue notices that though embedded Tense is possible in the verb compound, embedded Agr is not allowed (p. 3). Secondly, both of these "exceptional" morphemes belong to the class of what are called bridge verbs in many other languages. Below are the examples in English:

- (60) a. Bill thinks (that) Jill will be back very soon
b. Pat said (that) there wouldn't be any winner today

Notice that the complementizer of the finite clausal complement is optional in these sentences. In contrast, a non-bridge verb does not allow the drop of the complementizer:

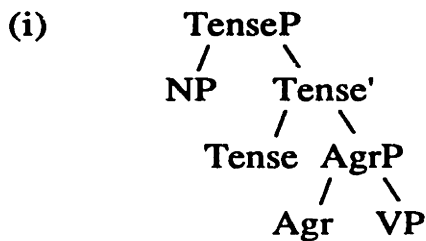
- (61) Pat murmured *(that) there wouldn't be any winner today

I will argue below that this optional absence of the complementizer with bridge verbs is intrinsically associated with their ability to trigger VI in Greenlandic Eskimo.

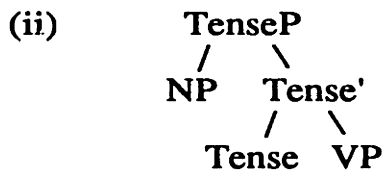
Let us first consider the asymmetrical distribution of Tense and Agr in VI. Given our theory of head-movement, lack of Agr in a VI compound is expected. If Agr is part of INFL, as assumed in this work and many others, then incorporating the embedded verb to the matrix one via Agr will result in a chain [V, ... I, V], which is disallowed by BCC. Put differently, the fact that Agr cannot occur in a VI compound indicates that Greenlandic Eskimo, like other languages with VI, respect BCC as formulated in Chapter 1 of this work. However, this distributional asymmetry also suggests two more things about Tense. First, the Tense morpheme is not dominated by the same node, i.e. INFL, that dominates Agr. Secondly, whatever node dominates the Tense morpheme is "transparent" to BCC in the sense that moving the embedded verb to the matrix one via this node should not create "improper movement". Various possibilities arise to make the current theory capable of handling these two properties of Tense, so do problems, due to our generally poor understanding of Tense. Therefore, instead of offering a specific analysis of Tense, I choose to leave the topic with the assumptions (1) that Greenlandic Eskimo does not provide counterexamples to the modified BCC and my analysis of VI judging from the lack of Agr in (59), and (2) that once generated separately from Agr, Tense somehow does not invoke BCC violation as Agr does.¹²

¹² The fact that Tense and Agr may occur separately reminds us of Pollock's (1989) analysis of Tense and Agr in French and English, which proposes the following configuration:

It was noted earlier that both of the "abnormal" VI verbs in Greenlandic Eskimo are bridge verbs, and that a remarkable property of bridge verbs in English is that the complementizer of their finite complement may be dropped. The examples are repeated below:



with Tense and Agr not only generated in different positions but also each heading its own maximal projection. Following this proposal, we may assume that the lack of Agr in (58) is because Greenlandic Eskimo allows T to directly take VP as complement:



However, (ii) as it is cannot explain the second property of Tense which we deduced from the asymmetrical distribution of Tense and Agr. That is, the node dominating the Tense morpheme is "transparent" to BCC. In other words, the chain [V, Tense, V] must not be considered a violation of BCC. And this can be done only if Tense is either verbal in nature or it is categorially unspecified. In the first case, a [V, Tense, V] chain is in fact a [V, V, V] chain, which is well-formed by BCC. In the second case, since the position marked Tense is unspecified categorially, the node immediately dominating Tense and the embedded verb once the latter adjoins to the former will inherit the category of the verb, again making the final chain [V, V, V] in effect. At this stage, I cannot make a choice between the two possible implementations. It is also possible that the Tense morpheme, rather than being the head taking VP as complement, actually heads a phrase which is an argument of the verb. As long as this Tense phrase is VP-internal, it is selected and its head may incorporate onto the verb.

(62) a. Bill thinks (that) Jill will be back very soon

b. Pat said (that) there wouldn't be any winner today

Let us interpret this optional presence of the complementizer as indicating that the bridge verb may optionally take a finite IP as complement, in contrast to non-bridge verbs which necessarily require a CP complement:

(63) A bridge verb may take a tensed clausal complement which is not a CP.

(63) is a current version of the idea that bridge verbs allow their complement to undergo S' (= CP) deletion, as discussed in Chomsky (1981). A more systematic analysis of bridge verbs will be given in Chapter 4, and I will show that (63) also helps explain a totally different process that also involves verb-movement. For the time being, let us simply adopt (63) and proceed with the analysis of VI in Greenlandic Eskimo.

If (63) describes a property of bridge verbs in general, then the two Eskimo verb morphemes at issue should also be able to take a tensed complement that is not a CP. In fact, the complement doesn't even have to be an IP, given that in this language, the INFL node only dominates Agr. In other words, if the tensed complement of a bridge verb in Eskimo is some maximal projection WP, then WP may be neither CP nor IP. In fact, given the morphemes that occur in VP, WP is either headed by the embedded verb or by the Tense morpheme. If it is headed by the verb, incorporating the head to the matrix verb is expected just as in causatives. If it is headed by

the Tense morpheme, then the embedded verb has to first ajoin to this morpheme and then to the matrix verb. This again is permitted because, as I showed above, Tense is transparent to BCC. Hence we have explained why bridge verbs in Greenlandic Eskimo may trigger VI.

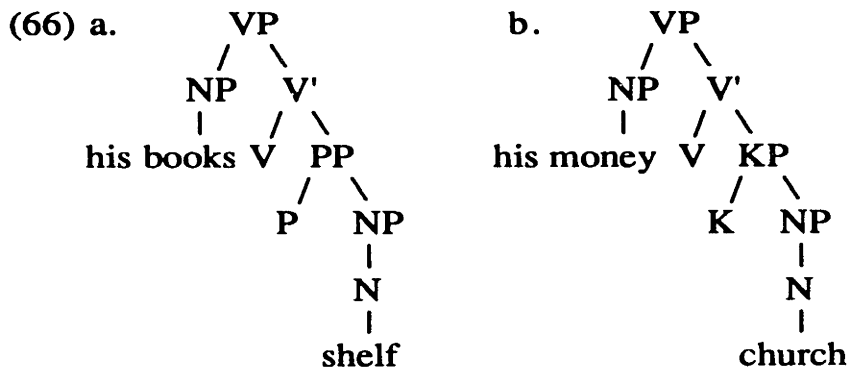
2.2.6. VI in the Lexicon

In the previous sections, I have developed an analysis to correctly restrict the behaviors of VI cross-linguistically. Now I will show, based on the work of Hale & Keyser (1989), that the same analysis can also be extended to explain the (non-)existence of certain derived verbs.

Hale & Keyser (1989) note the following contrast:

- (64) a. John put his books on the shelf
- b. John shelved his books
- (65) a. John gave his money to the church
- b. *John churched his money

They argue that a verb like *shelve* is derived in the lexicon in a structure resembling those in syntax, that the derivation is done by moving the noun *shelf* to the verb of which the noun's projection is an argument. Then, they ask, why is it that there isn't such a verb like *church* with the intended meaning? The structures they gave are as follows:



In these structures, V and P are all "phonologically empty" members of their categories. In (66a), V would mean something like PUT and P is a locative preposition. In (66b), V has the meaning of GIVE and K is a Dative Case marker. Then they suggest that there must be a difference between a "genuine" preposition and a mere Case marker that allows the noun *shelf* to move up to V in (a) but disallows the movement of *church* in (b).

Now let us consider how my analysis can account for this contrast. Recall that two elements are considered the same for the purpose of BCC if they share the level of projection, category, and the T/T' positions they stay in. If Hale & Keyser are right in their analysis, (66a) and (66b) create the following chains respectively:

- (67) a. [V, P, N]
 b. [V, K, N]

With respect to category, both chains are permitted by BCC because no sandwiched chain is involved. That is, though all non-initial elements in these chains are locally bound by something of a different category (and

hence are variables), no element is bound by something of its own category. However, if we look at the positions of these elements in terms of T-positions, it becomes clear that in (67a), all elements are in T-positions because the elements involved are (potential) theta-assigners. On the other hand, in (67b), the elements in the head and the tail of the chain are in T-positions while the intervening one, K (Case), is in a T'-position. Therefore, the trace of the noun (marked N in (67b)) is a variable because of its local binder K and thus cannot be bound by another element in a T-position again. Hence (67b) is a bad chain violating BCC.¹³

Since (66b) can be ruled out only with respect to the T-/T'-positions the elements occupy, I consider the contrast noted by Hale & Keyser a piece of evidence for including T/T' as a factor in determining the sameness of elements for BCC.

2.3. Perception Verbs

One question that arises with my analysis is that in some Germanic languages perception verbs such as *see* and *hear* also take bare VPs as complement:

- (68) a. Chris saw the girl run
 b. Chris heard the girl cry

If these verbs can take bare VPs in some languages, why is it that they never trigger VI (as far as I know)? One can argue that there is something intrinsic

¹³ Hale and Keyser (1989) also suggest adopting my analysis to explain the contrast discussed in this subsection. But in a later paper a different analysis is proposed.

about these verbs so that they can never take the form of affixes. I have shown that affixation cannot be held totally responsible for the presence/absence of VI, but this does not mean to deny the fact that affixation is an important factor in triggering compounding in general. Another fact worth mentioning is that perception verbs and causative verbs are in most languages characterized with very different subcategorizations. For causatives, the complement often takes the form of some infinitive, while for perception verbs, the complement is usually a nominalized VP or even a clause introduced by words like *when* or *as*. Thus, to express the meaning of (68a), Igbo must use the following sentence:¹⁴

(69) John h́u-ŕu Mary mgbe o gba-gba Íośo
 see-past when she run-prog race
 "John saw Mary run/while she ran"

The same sentence pattern is also used in Russian. What (69) suggests is that the bare VP complement of perception verbs in some Germanic languages may just be a coincidence or even a beguiling surface representation, that the constituent occurring in the complement position of such a verb may not even be its complement.

Burzio (1986) also suggests that in Italian, sentences corresponding to (68) behave more like "Chris saw the girl who was running" than perception verbs taking a clausal construction whose predicate is the VP, though on the surface these Romance sentences look the same as (68):

¹⁴ Thanks to Peter Ihionu for providing examples of Igbo and discussing them with me.

(70) Ho visto Giovanni parlare con Maria (Italian)

"I saw Giovanni speak with Maria"

In particular, Burzio argues that (70) should not be given a structure with the matrix perception verb *visto* taking a clausal complement *Giovanni parlare con Maria*. One of his arguments is drawn from the following observation:

(71) a. **alcuni prigionieri furono fatti lavorare senza sosta**

a few prisoners were made work without stop

"A few prisoners were made to work without stop"

b. ***furono fatti alcuni prigionieri lavorare senza sosta**

(72) a. **Giovanni sembrava conoscere la strada**

seemed know the road

"Giovanni seemed to know the road"

b. ***sembrava Giovanni conoscere la strada**

In (71) the matrix verb is a causative, which takes a clausal complement (a VP small clause in my analysis). When the matrix verb is passivized, the embedded subject *Giovanni* becomes the surface subject. Crucially, this surface subject cannot undergo inversion with the matrix verb (71b). In this respect, (71) patterns with (72), where the matrix verb is a raising verb and presumably the surface subject is also the embedded subject in D-structure. In contrast, when a perception verb is passivized, the NP argument immediately following it (hereafter referred to as NPob) may undergo inversion, so does the D-structure object of a passivized transitive verb:

(73) a. **alcuni prigionieri furono visti fuggire**

a few prisoners were seen flee

"A few prisoners were seen to flee"

b. **furono visti alcuni prigionieri fuggire**

(74) a. **molti esperti saranno invitati**

many experts will be invited

"many experts will be invited"

b. **saranno invitati molti esperti**

Thus, NPob behaves more like the object of the verb than the embedded subject of the complement. On the other hand, (70) is not an object control construction, either. For instance, Burzio points out, following Radford (1977), that NPob and the verbal expression following it pass some constituency tests:

(75) **Quello che non voglio vedere è [Maria piangere] (pseudo-clefting)**

what not want see is cry

"what I don't want to see is Mary cry"

If NPob *Maria* in (75) were the object of the perception verb and the verbal phrase following it is the complement clause whose PRO subject is controlled by NPob, the two should not behave as a constituent.

After excluding these two structural analyses for perception verbs,

Burzio proposes to treat NPob as the object of the perception verb modified by an infinitival relative clause. This conclusion not only is consistent with the Igbo example in (69), but also explains why VI is impossible in such constructions -- moving a verb out of a relative clause to the matrix verb inevitably creates a chain with some functional element(s) between the two verbal elements, violating BCC.

Chapter 3

Clitic-Climbing

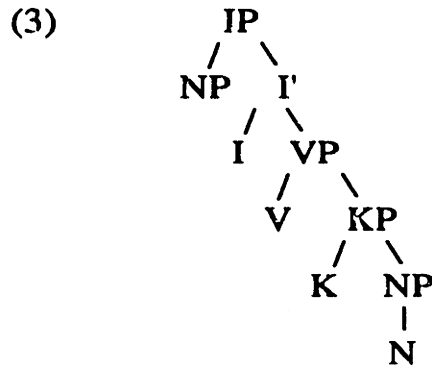
Head-movement is not restricted to incorporations that form compound words in polysynthetic languages. In this chapter, I will examine a different type of head-movement, usually referred to as cliticization:¹

- (1) a. Marie connaît mon frère
 "Mary knows my brother"
 b. Marie le connaît
 "Mary knows him"
- (2) a. On parlera à ce garçon
 "they will talk to this boy"
 b. On lui parlera
 "they will talk to him"

(1) and (2) are sentences containing a transitive verb and an intransitive verb with a dative complement respectively. In (b) sentences, the complements have taken the form of some kind of pronominal and necessarily occur preverbally (in finite clauses). Some Romance linguists have argued or assumed that these pronominal forms are not NPs but N's that undergo movement out of the NP's they head and adjoin to INFL (See for instance Burzio (1986), Kayne (1987a), and Pollock (1989)). Such is also the assumption on which the analysis of this chapter is based.

¹ Unless otherwise noted, all French examples in this chapter are from Kayne (1975), (1987); and all Italian examples are from Burzio (1986).

If clitics are N's, two questions immediately arise with respect to the analysis proposed in this thesis. Consider the D-structure of (2):



where K stands for Case, assuming the unergative verb *parler* "speak, talk" takes a dative complement (See the references above). The reason that K is generated in D-structure is because the Dative Case assigned to the complement NP is inherent and therefore is assigned at D-structure (cf. section 1.1.6). For N in (3) to move to I, the following chain will be created:

(4) [I, V, K, N]

It is clear that (4) is a double violation of BCC as defined in section 1.1.5: First, since N is a T position, the trace in this position is a variable locally T'-bound by K (a T'-position). Thus by Condition C it cannot be bound in the chain by another element in a T'-position. Similarly, the element in K, being in a T'-position, is locally bound by V and is therefore a variable, which cannot be bound in the chain by an element in a T'-position. Since (2) is a grammatical sentence, it looks like a straightforward counterexample to

my analysis of head-movement in the previous chapter unless the movement involved in (2b) does not create a chain like (4). This is precisely what will be proposed in this chapter.

The second question concerns the constituent(s) involved in clitic movement. If we recall the instances of VI in the previous chapter, it is clear that head-movement involved in VI always has a snow-ball effect; that is, whenever a head A adjoins to another head B, the next step of movement must necessarily apply to the "compound" A-B (order irrelevant) instead of to either one of them, as if the morphemes are so "sticky" that they never part once put together. Presumably, this effect follows from the Lexical Integrity Hypothesis in Bresnan (1982a), which says, in modern terms, that syntactic processes cannot affect the components dominated by a X^0 node. Cliticization puts doubt on the claimed generality of this hypothesis, as can be illustrated by what is called clitic-climbing:

- (5) a. On laissera lire ce livre à Jean
 "they'll let Jean read this book"
 b. On le_i laissera lire t_i à Jean
 "they'll let Jean read it"

Usually an object clitic is clause-bound. However, the clitic in (5b) goes all the way from the embedded object position t_i to the matrix INFL, crossing at least the embedded verb and matrix verb. It should be pointed out that the two verbs in (5b) are not dominated by a single \bar{V} node, since various adverbials can occur between the two verbs even with the object clitic

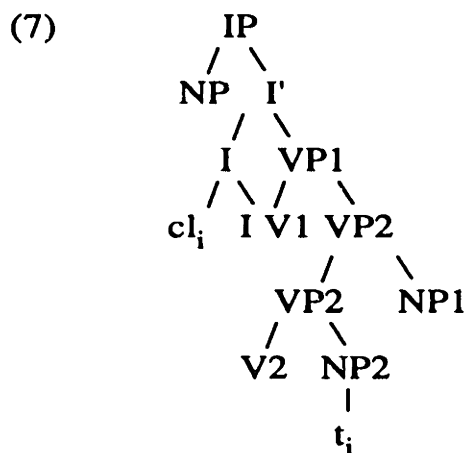
adjoined to matrix INFL (Kayne (1975), p.219):

(6) Ils la feront sans aucun doute pleurer

"they will no doubt make her cry"

The question (5) and (6) raise can be clearly seen with the structure of (5b), with our assumption that causative verbs take a bare VP complement

(irrelevant details are omitted):



Between the clitic adjoined to matrix INFL and its D-structural position t_i , there are two intervening heads--V2 and V1. Given the Head Movement Constraint (which in turn is derived from the ECP, see section 1.1.3.), the clitic must first adjoin to V2, then to V1, and finally to INFL. If the Lexical Integrity Hypothesis (LIH) must hold in this case, then we would expect a string of morphemes bundled together--that is, cl-V2-V1 (and eventually also INFL) all dominated by a single X^0 node. However, as (6) shows, at least V2 and V1 still remain separate. In other words, once the clitic adjoins to V2, it moves along all alone to V1 without taking V2 with it. To conclude, I consider cliticization to show clearly that the domain of the LIH should be

limited, and will continue with the analysis of cliticization assuming that the LIH does not apply in this case.

3.1. Intermediate Trace Deletion in Head-Movement

In this section, I will sketch the mechanism to be used in the rest of the chapter, and show how the question raised by (3) earlier can be answered with this mechanism.

In Lasnik & Saito (1984), the ECP is interpreted as having two parts: assigning a feature [γ] to traces and checking the feature value of each trace:

- (8) a. Assign [$+\gamma$] to antecedent-governed trace² and [$-\gamma$] otherwise
- b. * $[-\gamma]$
- (9) A γ -feature can be assigned at L² to any trace, but at S-structure only to argument traces.

Furthermore, a trace can always be deleted. The ordering of these processes is as indicated below:

- (10) Trace-deletion --> γ -assignment --> γ -checking

What is gained with these mechanisms is that only the intermediate traces of arguments can be deleted at LF without violating the ECP, since the traces of adjuncts are not γ -marked yet by the time trace-deletion takes place at LF.

Once an intermediate trace of an adjunct is deleted, the trace it is antecedent

² Actually [$+\gamma$] is assigned to both lexically governed and antecedent-governed traces, but the former situation is irrelevant to us.

of will never receive a γ -feature and therefore will be ruled out by the ECP later. This way, Lasnik & Saito are able to account for certain properties of movement at the XP level (illustrations to be provided later).

Extending this analysis to head-movement, let us first note that arguments are phrases at A-positions and that A-positions are a subset of T-positions as defined in Chapter 1. Thus let us replace (9) with (11):

(11) A γ -feature can be assigned at LF to any trace, but at S-structure only to traces of elements in T-positions.

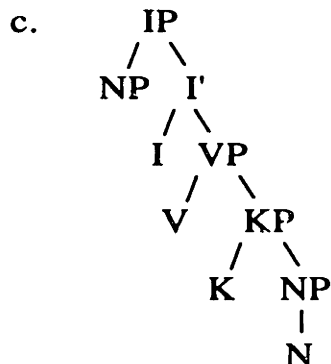
Since arguments are always in T-positions, (11) covers all cases (9) covers. In addition, it also allows a γ -feature to be assigned to traces of lexical heads at S-structure.

With (11), we are ready to answer the first question raised at the beginning of this chapter. The example and its structure are repeated below:

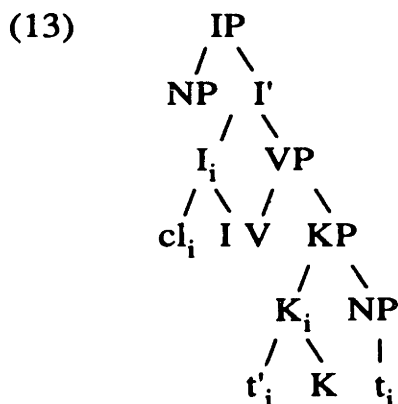
(12) a. On parlera à ce garçon

"they will talk to this boy"

b. On lui parlera



Our problem with (12) is that if N adjoins to K then to V then to I, the trace in K would be an offending trace between two elements in V and N, both of them being T-positions. Similarly, the trace in V would cause the violation of BCC since it intervenes between two T'-elements in the chain. The problem arises because the sentence is actually grammatical though the chain created by cliticization is ruled out by Binding Theory. Let us examine more carefully why a bad chain can be formed in this case. Recall that N must reach INFL via all the intervening heads because of the Head Movement Constraint, which is derived from the ECP. That is, if N does not move one step at a time, the trace it leaves behind will not be antecedent-governed and therefore will result in a violation of the ECP. In other words, it is the ECP that makes it impossible for the clitic to escape any intervening head on its way to INFL, and it is this strict step-by-step movement that creates a chain ruled out by BCC. If the movement can escape those head positions that lead to a BCC violation without being ruled out by the ECP, then (12b) will become grammatical. This is precisely what (11) and the mechanism of trace-deletion allow us to do. Suppose the movement is as shown in (13):



Since K selects NP, the latter is not a barrier between its head and K, and the clitic can adjoin to K with its trace antecedent-governed by K_i . Next, instead of adjoining to V, the clitic moves across it and directly adjoins to INFL, leaving a trace t'_i dominated by K_i (Recall that we assume the Lexical Integrity Hypothesis does not hold in these situations).

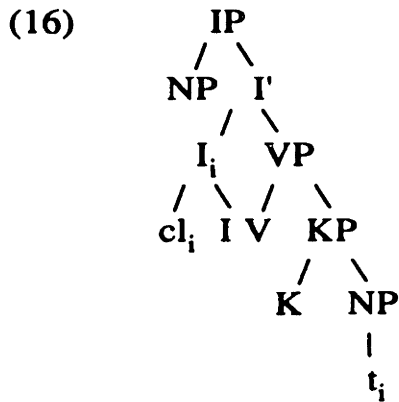
The chain in (13) is [I_i, K_i, t_i], with the trace in a T-position and the other two elements in T'-positions. From the point of view of BCC, this chain is legitimate because neither of the variables K_i and t_i are bound by something of its own sort. It is also fine with the ECP. Starting with the trace, it is in a T-position and is antecedent-governed by K_i . Thus it can be assigned [+ γ] at S-structure. Mapping into LF, (13) first becomes the target of trace-deletion. The root trace t_i cannot be deleted for general reasons. (For instance, the maximal projection NP cannot be without head.) On the other hand, the intermediate trace t'_i can be deleted:



In fact, I will make a further proposal:

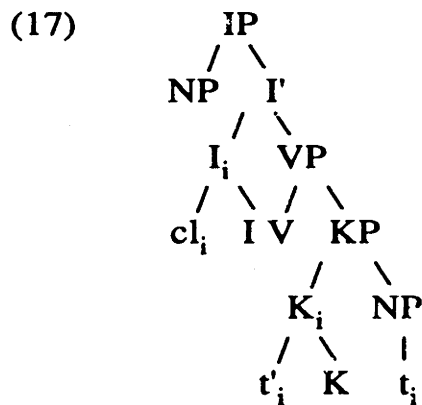
(15) An index is deleted when its source is deleted.

Since the index on the top K node is inherited from the trace it dominates, the index goes away when the trace is deleted, leaving only a "bare" K node. In other words, the effect of trace-deletion precisely reverses that of adjunction. Once trace-deletion has applied, (13) becomes (16):



(16) is now well-formed with respect to the ECP since the trace t_i has already been marked $[+\gamma]$ at S-structure by an intermediate trace adjoined to K. Had trace-deletion not applied, the structure would be (13) and would be ruled out by the ECP since the intermediate trace is not antecedent-governed. To conclude, trace-deletion plus the mechanism of γ -assignment makes it possible for an offending trace to be removed and hence to correctly allow the clitic to adjoin to INFL.

With the basic analysis of cliticization sketched out, let us consider (13) again, repeated below:



With the HMC, the clitic must move up via every intervening X^0 node. Now the HMC can be bypassed because of trace-deletion and γ -marking so that the clitic can cross an intervening head and land at some position further up in a single move. But how far can this move be without causing ungrammaticality? The answer is already given in the UG. The Subjacency Condition as mentioned in section 1.1.4 requires that a constituent cannot be moved over more than one barrier. For the clitic in the position marked with t'_i , KP is not a barrier since it is selected by V and its head K does not select any maximal projection including the clitic. If the clitic adjoins to V, no barrier will be crossed. On the other hand, if the clitic adjoins to INFL, VP will count as a barrier since the head of VP selects KP, a phrase that in turn includes the clitic. Thus, this step crosses one barrier, a move allowed by the Subjacency Condition. It will be shown later that any move across two or more barriers will result in ungrammaticality.

3.2. Causatives in French and Italian

So far I have shown that cliticization within a single clause can be properly handled in my analysis. In such an environment, the movement of the clitic is local, in the sense that it is always confined within a clause. There are two (apparent) exceptions: causative constructions and what is called "restructuring" constructions, where clitics may or must move across the embedded verb and adjoin to the matrix INFL. This is what is conventionally called clitic-climbing. We have seen such examples in (5) and (6) above. What is remarkable about the environments in which clitic-climbing takes place is that they very much resemble the environments for verb-incorporation. That is to say that both cases involve causative constructions and certain modal-like verbs. Since both cases also involve head-movement,

it will be strongly desirable if an analysis for one type of phenomena has something consistent to say for the other. And this is precisely the goal of the rest of this chapter. In this section, I will look more closely into the causative constructions in French and Italian, and provide an account for the different behaviors of object and dative clitics in this construction.

3.2.1. Two Types of *faire*-VP Constructions

Kayne (1975) distinguishes two types of sentences which have as their matrix verb *faire* "make". In both constructions, the embedded verb takes the infinitive form and if it is transitive, its external argument must be introduced by a preposition. The difference is that for one type (which Kayne calls F(aire)I(infinitive)) a dative preposition *à* is used whereas for the other (called F(aire)P(ar)) the preposition is *par*, the same one used in passives for the same purpose:

(18) FI

Il fera boire un peu de vin à son enfant
"he'll make his child drink a little wine"

(19) FP

Elle fera manger cette pomme par Jean
"she'll have that apple eaten by Jean"

If the embedded verb takes a single argument, however, the argument directly follows the verb like an object, whether it is the subject or object of the verb:

(20) On a fait sortir Jean de sa chambre

"they made Jean come out of his room"

The same paradigm also exists in Italian:

(21) a. Maria ha fatto riparare la macchina a Giovanni (FI)

"Maria has made Giovanni repair the car"

b. Maria ha fatto riparare la macchina da Giovanni (FP)

"Maria had the car repaired by Giovanni"

c. Maria fa lavorare Giovanni

"Maria makes Giovanni work"

The FI and FP constructions also differ in which clitics can undergo clitic-climbing. While both object and dative clitics of the embedded verb can "climb" up to the matrix INFL in a FP construction, only object clitic is allowed to do so in a FI construction:

(22) FI

a. Elle fera manger ce gâteau à Jean

"she'll make Jean eat that cake"

b. Elle **le** fera manger à Jean (object clitic)

"she'll make Jean eat it"

c. Je ferai écrire mon ami à sa soeur malade

"I will make my friend write to his sick sister"

d. *Je **lui** ferai écrire mon ami (dative clitic)

"I will make my friend write to her/him"

(23) FP

a. Jean a fait porter ces livres à sa femme par son fils

"Jean had these books taken to his wife by his son"

b. Jean les a fait porter à sa femme par son fils (object clitic)

"Jean had them taken to his wife by his son"

c. Jean lui a fait porter ces livres par son fils (dative clitic)

"Jean had these books taken to her/him by his son"

The same contrast is also reported in Italian (Burzio (1986)). I will show that these contrasts between FI and FP can be readily explained in the theory of head-movement proposed in this thesis.

3.2.2. FI Constructions

Let us start with FI constructions, in which the embedded subject is marked dative Case, and only the embedded object clitic can undergo clitic-climbing. If we look at the Case-marking pattern of such constructions as shown in (18) and (21a), we will notice that there is a strong similarity between FI and type 1 causatives discussed in Chapter 2. Also, as Burzio (1986) points out, the embedded verb in FI cannot be passivized--another similarity to type 1 VI (cf. section 2.2.2):

(24) a. Piero fu invitato

"Piero was invited"

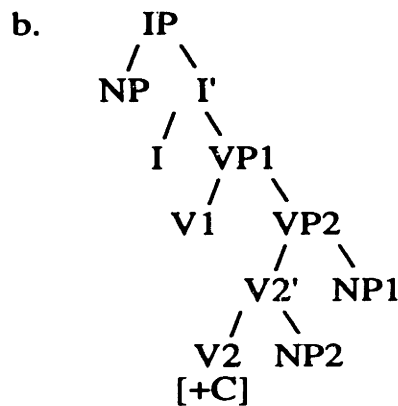
b. *Giovanni farà essere invitato (a) Piero

"Giovanni will make Piero be invited"

In fact, Baker (1988) indeed suggests that the two constructions be treated in the same way. I will follow this suggestion by giving an FI sentence the same structural description as a type 1 causative:

(25) a. Il fera boire un peu de vin à son enfant

"he'll make his child drink a little wine"



where V1 is the causative verb *faire* with the [C] feature unspecified. Recall that such a verb cannot assign Case, though it does not prevent the head of its complement VP from assigning Case to its own object. Thus, NP2 gets Accusative Case from V2 but NP1, the external argument of V2, cannot receive Case at the subject position of the VP small clause and therefore has to be generated as a VP-internal adjunct and receive some Oblique Case later. In French and Italian, as well as in languages allowing VI, this Oblique Case is Dative.³

With (25b) as the structure for FI, let us consider clitic-climbing in

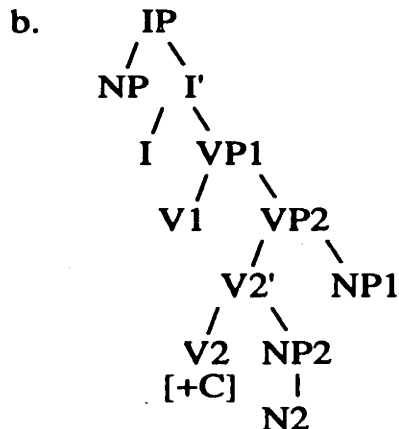
³ It seems that except for Nominative and Accusative Cases, Dative Case is the least costly Case in human languages. While it would be nice to develop a theory of Case hierarchy, it is beyond the scope of this thesis to do so.

this construction, starting with the object clitic:

(26) a. Elle le fera manger à Jean

(= (22b))

"she'll make Jean eat it"



where (26b) is the D-structure of (26a). When N2 as a clitic moves up to INFL, it first adjoins to V2 and from there marks its original trace [+γ] since there is no barrier between V2 and N2. Then either this clitic may adjoin to V1 and finally to INFL, with each step yielding a properly governed trace, or it may jump across V1 and directly adjoin to INFL. This latter path will leave the trace under V2 not properly governed, but this is not a problem at LF since the clitic is base-generated in a T-position and its intermediate trace(s) can be deleted at LF before the application of the ECP. As for BCC, no matter how the clitic gets to INFL, the resulting chain is well-formed: If it moves step by step, the chain is [I, V1, V2, N2]; otherwise the chain is [I, V2, N2]. In each chain, there are more than one variables, but none of them is bound by an element of the same sort in the chain. Hence, (26) is grammatical.

(26b) also helps explain the behavior of the embedded subject clitic. In

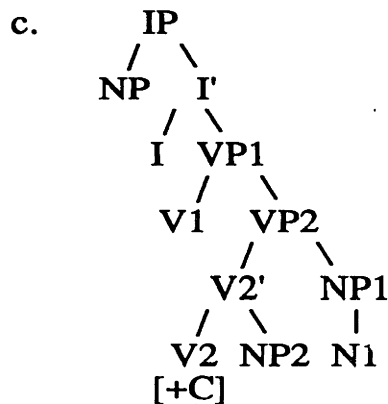
general, the clitic of this argument may climb up in Romance languages:

(27) a. On fera boire du vin à Jean

"they'll make Jean drink wine"

b. On lui fera boire du vin

"they'll make him/her drink wine"



Given (27c), which is equal to (26b), NP1 is selected by V2 since it is VP-internal and receives a theta-role from V2. So NP1 is not a barrier between V2 and the clitic N1. Then the same analysis for the object clitic-climbing holds for the subject clitic, and (27b) is grammatical. Noticed that the embedded subject clitic takes a Dative form (27b), though the NP it heads is presumably Caseless by the time cliticization takes place (27c) because the Dative Case assigned to this subject is structural and assigned at S-structure, as we assumed. In order for the clitic to have the right Case marking, we assume the following condition:

(28) A clitic must embody the same Case as the NP it heads.

Since the embedded subject (i.e. NP1 in (27c)) will eventually receive Dative

Case from V2, the clitic acquires the corresponding form accordingly.

It has been noticed that in FI, the arguments of the embedded verb cannot cliticize onto the verb itself:

- (29) a. *Elle fera les manger à son fils (object clitic)
"she'll make her son eat them"
b. *On fera lui boire du vin (subject clitic)
"they'll make him/her drink wine"

The ungrammaticality of (29) will follow from a structure such as (28c) if we assume that clitics must attach to INFL. Since there is no embedded INFL in a FI construction, the clitic occurring between the two verbs in (29) has landed on a wrong site. The same position is also taken by Rosen (1989), who argues that the clitic always lands at INFL, in contrast to Kayne's (1987a) proposal that it may adjoin either to V or to INFL. According to Kayne, the exact position in which the clitic finally stays totally depends on whether INFL is "rich" enough. If it is, it qualifies to make VP not a barrier so that the clitic may move out of the VP and adjoin to INFL. Otherwise the clitic will have to stay with the verb. One of Rosen's arguments against Kayne's analysis is that in tensed clauses the clitic always adjoins to INFL and never to V:

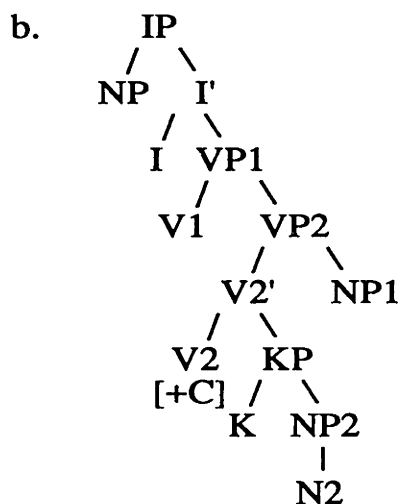
- (30) a. Jean les a mangé
"Jean ate them"
b. *Jean a les mangé

Since the clitic *les* is to the left of the auxiliary *a*, it must be at least outside the VP headed by the verb *mang  *. If the clitic could ever stay with V, there shouldn't be anything wrong with (30b). Meanwhile, since the auxiliary arguably occupies the INFL position (see for instance Pollock (1989)), be it base-generated there or moved into the position, the clitic must have adjoined to INFL.

Now consider dative clitics, which cannot climb up in FI constructions:

(31) a. *Je lui ferai   crire mon ami (= (22d))

"I will make my friend write to her/him"



For N2 (the clitic) to adjoin to INFL, it must first adjoin to K to γ -mark its original trace. Once adjoined to K, however, the clitic cannot directly move to INFL because there are two intervening VP's, both of them being barriers between INFL and the clitic adjoined to K (recall that the Subjacency Condition allows only one barrier to be crossed). So it is inevitable that the

clitic adjoins at least to one of the V's on its way up. In other words, no matter how the clitic reaches INFL, a chain will be created which is [I, V, K, N], violating BCC.

It is important to note here that this analysis crucially depends on the order in which various principles apply. Specifically, it requires that the deletion of intermediate traces is carried out at LF (cf. section 3.1) while BCC applies at S-structure. Only with this order can an intermediate trace that causes the BCC violation remain to be "seen" by BCC. If trace-deletion took place before BCC applies, these offending traces could be deleted even before BCC has a chance to see them, and (31) would be wrongly predicted to be grammatical. Such an ordering of principle/rule application is guaranteed by the assumption in (10), which requires that trace-deletion precedes γ -assignment both in syntax and at LF. Consider (31) again. Suppose a chain [I, V, K, N] is indeed formed in order to avoid the Subjacency violation. As we pointed out, this chain will be ruled out by BCC at S-structure. Therefore either the intermediate trace under V or the one under K must be deleted to yield a grammatical construction. Suppose the one under K is deleted. Since γ -assignment takes place only after trace deletion, the original trace (in the place of N) is not γ -marked yet when the trace under K is deleted. It follows that the structure will be ruled out by the ECP, though the resulting chain [I, V, N] is permitted by BCC. Similarly, if the trace under V is deleted, the one under K is left without γ -marked, leading to an ECP violation. Since an intermediate trace may not be deleted in syntax, it is always visible to BCC.

Having shown that the impossibility of the dative clitic-climbing in FI can be explained by our analysis, let us look at a few details concerning (31). First, the single NP argument of the embedded verb V2 receives Accusative Case, even when it is the "subject" of the embedded verb. Recall that when the external argument is base-generated inside VP, it is assigned Dative Case if the verb is transitive, and this Case is assigned according to assumption (C) in section 1.1.6 as a last resort to license the VP-internal adjunct. So the question arises as to why NP2 is not marked Dative in (31a). The answer lies in treating the unergative verb V2 as [+C] which can assign a structural Accusative Case to an argument it governs (cf. section 2.2.1). Thus NP1 may receive Accusative Case directly from V2 because it is inside VP2 and is governed by V2. It follows that there is no need to invoke the "last-resort" assumption (C) to assign Dative Case.

One may also have noticed that the structural description (31b) for FI yields a different word-order between the single NP argument of the embedded verb and the dative argument as in (22c), repeated below:

(32) Je ferai écrire mon ami à sa soeur malade

"I will make my friend write to his sick sister"

According to (31b), the NP argument should be farther away from the embedded verb than the dative, contrary to the actual word-order in (32). To accommodate (32), I will assume, following Burzio (1986), that there is a re-ordering rule which brings the dative away from the verb. One possible motivation for such a rule is the adjacency requirement in the assignment of certain Cases (e.g. Accusative). Thus, if structurally the single NP argument

cannot get any closer to the embedded verb to receive Case, it at least must be adjacent linearly.

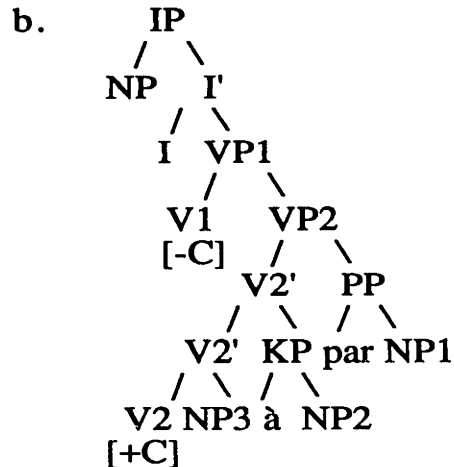
3.2.3. FP Constructions

I have explained, among other things, why the object clitic in a FI construction can climb while the dative clitic cannot. Now let us turn to FP constructions, in which both object and dative clitics can climb. To start with, I propose that the D-structure of FP is essentially the same as FI, with the only difference that the matrix verb *faire* in FP is [-C], in contrast to the *faire* in FI which has [C] unspecified. One motivation for this distinction is that the embedded subject, when the embedded verb is transitive, is introduced by *par*, the same preposition as in passives. In other words, I am assuming that the use of *par* is directly related to the [-C] feature of the matrix verb, while recognizing that this relation itself needs to be explained.⁴ (33a) gives a typical example of FP with (35b) as its D-structural representation:

⁴ Zubizarreta (1985) also treats the FP construction as parallel with passives. Since [-C] verbs don't assign Case themselves, like verbs with unspecified [C] feature, the use of *par* in passives and FP parallels with using *à* in FI constructions. At the moment, it is not clear how these two types of matrix verbs are related to the different ways of assigning Case to the subject of the embedded transitive verb, but one may speculate that assigning dative Case is a property (though a more costly one) of every [+C] verb. In an FI construction, though the matrix verb cannot assign Case itself, it doesn't prevent the embedded verb to assign Case. Thus, dative Case is assigned to the embedded subject since it has no less costly way to be Case-marked. On the other hand, in FP or passives, the matrix [-C] verb prevents the embedded verb from assigning any Case. So dative Case is no longer available and a real preposition has to be used to assign Case to the embedded subject. However, this speculation is not without problems. I will leave it open for further exploration.

(33) a. Jean a fait porter ces livres à sa femme par son fils (= (23a))

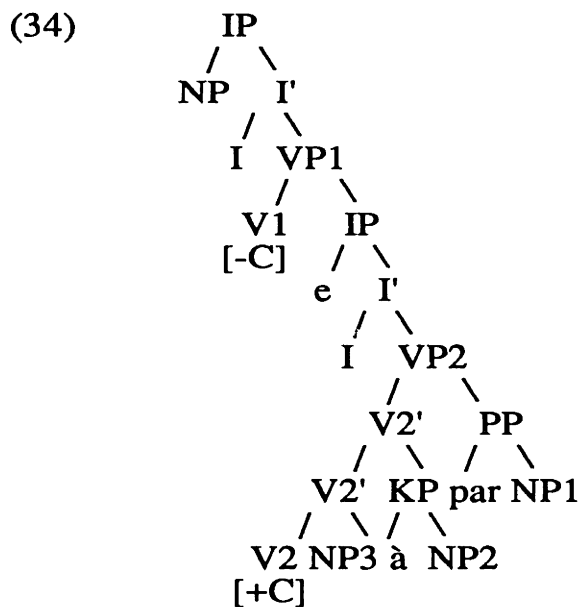
"Jean had these books taken to his wife by his son"



Given our assumptions about Case-assignment, (33b) is unable to pass the Case filter. With the matrix verb V1 being [-C], none of the arguments of the embedded verb V2 can receive Case from V1. Moreover, V1 being [-C] also prevents V2 from assigning any Case. (Compare this with FI, where V1 itself does not assign Case though it allows V2 to assign its own Case.) It follows that the arguments of V2 cannot be Case-marked and the structure is ungrammatical.

The situation here resembles what is called *of*-insertion in English. In the latter case, some lexical head assigns a theta-role to an argument but provides no Case. So a pure Case-assigner is inserted to save the construction. In (33b), the matrix verb *faire* also demands a complement, this time VP, though its [-C] feature makes it impossible for the arguments of the embedded V to be Case-marked. Before capitalizing on this analogy, let us consider the difference between the two cases. In *of*-insertion, the

argument cannot get Case because the lexical head taking the argument cannot assign Case. So a Case-assigner is inserted. In FP constructions, however, the argument(s) cannot get Case because the verb that takes them is "deprived of" the Case assigning ability by the matrix verb. Thus, instead of simply inserting a Case-assigner to rescue the situation, I propose that something is inserted to "restore" the Case-assigning ability of the embedded verb. In particular, I propose that a "dummy" INFL is inserted (in analogy to the insertion of the dummy preposition *of*), since we have been assuming that a [+C] verb can assign Case if its maximal projection is governed by INFL. The structure after INFL-insertion is given in (34):⁵



Now V2 is capable of assign Case to its argument, and the structure becomes well-formed with respect to the Case theory.

If (34) is the correct structure for FP, we can directly explain why

⁵ The Spec position of IP in (34) is marked *e* because nothing is in it. It is possible that this position is never generated since the head of IP is empty itself.

both the embedded object and dative clitics can climb up in such a construction. For the object clitic, i.e. the head of NP3 in (34), it first adjoins to V2 to make sure the original trace is properly governed, then it may either adjoin to the embedded I and finally to matrix I crossing V1, or it may move across the embedded I, adjoin to V1, and finally to matrix I. In the first case, the chain will be [I, I, V2, N3]; in the second case, the chain will be [I, V1, V2, N3]. Either way, the chain is well-formed according to BCC. The intermediate traces that are not marked [+ γ] will be deleted later. Now consider the dative clitic, i.e. the head of NP2 in (34). It must first adjoin to K. Obviously, if it next adjoins to V2, the chain will immediately be ruled out by BCC since a T'-element intervenes between two T-elements V2 and N2. However, there is now an alternative route -- adjoining to the inserted INFL. From there, the clitic will move across V1 and adjoin to the matrix INFL, yielding the chain [I, I, K, N2], which is permitted by BCC. Therefore, dative clitic climbing is grammatical in FP constructions.

To conclude, dative clitics cannot climb to the matrix INFL in a FI construction because, once it adjoins to K, it cannot jump across two VP barriers to reach INFL because of the Subjacency Condition. In order to observe the Subjacency Condition, however, it has to adjoin to one of the verb heads, but this creates a chain ruled out by BCC. FP constructions differ from FI in the insertion of a dummy INFL between the matrix verb and its VP complement in order to get embedded arguments Case-marked. Once this INFL is in position, the dative clitic dominated by K can jump across only one VP barrier and adjoin to the dummy INFL. From there, it may make another jump across VP1 and eventually land at the matrix INFL.

3.3. Restructuring Constructions

Clitic-climbing is also observed in what is called restructuring constructions

(Examples are from Rizzi (1982)):

(35) a. Mario **lo** vuole risolvere da solo

"Mario wants to solve **it** by himself"

b. Mario **gli** ha dovuto parlare personalmente

"Mario has had to speak **to him** personally"

c. Mario **la** comincia a battere a macchina domani

"Mario will start typing **it** tomorrow"

d. Piero **li** venne a chiamare alla stazione

"Piero came to call **them** at the station"

In this section, I will first argue that these restructuring constructions have a different structure from FI constructions. Meanwhile I will show that this structure directly results in the properties of cliticization associated with these constructions. An account will also be offered for the lack of restructuring effects in French.

3.3.1. Structure of Restructuring Constructions

If we compare the matrix verbs in the examples above with non-causative VI triggering verbs discussed in Chapter 2, it is clear that the two groups heavily overlap. Therefore, it is tempting to give restructuring constructions the same structure as their VI counterparts; namely with matrix verbs taking bare VP complements. However, there is evidence that this cannot be right:

- (36) a. Mario **lo** vuole leggere (Burzio (1986))
 "Mario wants to read it"
 b. Mario vuole legger**lo**
 "Mario wants to read it"

The two sentences have the same meaning, though in (a) the embedded object clitic *lo* undergoes climbing while in (b) it occurs with the embedded verb. This contrasts with FI constructions, in which the object clitic cannot co-occur with the embedded verb. One such example in French was given in (29). Below is an Italian example illustrating the same point:

- (37) ??Mario fa ripararla a Giovanni
 "Maria makes Giovanni repair it"

We have argued that examples like (29) and (37) are ungrammatical because clitics must end up attached to INFL but there is no embedded INFL in FI constructions. In fact, if clitics could either stay with INFL or a verb, as Kayne (1987a) suggests, it would be very hard, if possible at all, to rule out sentences such as (29) and (37) while still maintaining that the causative verb in Romance languages takes a bare VP complement, an analysis also shared by Kayne (1987a). On the other hand, restructuring constructions on the surface do allow clitics to stay with the embedded verb. We take this to indicate that the complement of the restructuring verb is at least an IP. The clitic attaches to the embedded INFL, so does the embedded verb. Hence the superficial V-clitic compound in (39b).⁶ In addition, (35b) shows that a

⁶. Admittedly, more is needed to explain the ordering of the verb and the

dative clitic may also climb to the matrix INFL. If the embedded clausal construction were a bare VP, this would be impossible, as we argued earlier in the case of FI sentences. In contrast, the presence of an embedded INFL will provide an "escape hatch" for the dative clitic, for the reason discussed with respect to the FP construction. So we conclude that the complement of a restructuring verb must have INFL in it.

With the complement of a restructuring verb being at least IP, there are two possible structures for sentences like (36): Either the matrix verb takes a CP or it takes an IP. If it takes a CP complement, a general problem arises as clitic. In fact, it is because of this ordering that Kayne (1987a) proposes that a clitic may either attach to V or to INFL:

- (i) Jean a promis de bien les faire
- (ii) *Jean a promis de les bien faire

The clitic cannot be separated from the verb by an adverb in French (ii), though the Italian counterpart is acceptable. Kayne suggests therefore that this contrast can be explained if *les* may attach to V (and in French it cannot attach to INFL for independent reasons). Hence *les-V* in (i). In Italian, the clitic attaches to INFL, and therefore the adverb adjoined to VP separates it from the verb. This analysis crucially depends on the adverb *bien* in a VP-adjunct position. However, this is not clear. Consider an example from Pollock (1989):

- (iii) parler à peine l'italien après cinq ans d'étude dénote un manque...
speak hardly Italian after five years of-study denotes a lack
"To hardly speak Italian after five years of hard work means ..."

Pollock argues that the adverb *à peine* is in a VP adjunct position and the reason it follows the verb is that in French V moves out of VP. In contrast to (iii), the adverb *bien* can never occur postverbally. Therefore, if Pollock's analysis of (iii) is correct, *bien* cannot be in a VP adjunct position; instead, it must be beyond where the infinitive verb can move to. Since the verb moves to INFL (or, Agr, in Pollock's analysis), it remains unclear that the clitic in (i) is not attached to some node other than V. In any case, the situation here is too complicated to lend any clear support to Kayne's proposal that clitics may adjoin to V. In contrast, if a clitic can stay with V, there is definitely no explanation for (29) and (37) as long as Romance causatives takes a bare VP complement.

to how to distinguish the following examples (Burzio (1986)):

(38) a. Mario **lo** vuole leggere

"Mario wants to read it"

b. *Mario **lo** odia leggere

"Mario hates to read it"

Odia "hates" in (38b) is an "ordinary" verb that does not allow clitic climbing, and arguably such a verb takes a CP complement. If (38a) is given the same structural representation, it becomes impossible to distinguish the two. In order to account for the contrast in (38), I propose that the complement of a restructuring verb is IP. Below I will show that this structural difference between (38a) and (38b) as well as the behavior of clitics in each of them follows from the analysis advocated in this thesis.⁷

⁷ Both Rizzi (1982) and Burzio (1986) treat the complement of a restructuring verb as S, which is ambiguous between IP or CP in current terms. In any case, both analyses have problems. Rizzi suggests that the two verbs in (38a), i.e. *vole* and *leggere*, undergoes a reanalysis so as to be dominated by a single V node. Hence the term restructuring. Putting aside the theoretical questions this analysis may bring about, it lacks empirical support. As the examples below show, adverbs may occur between the two verbs even with clitic-climbing (hence restructuring, according to Rizzi):

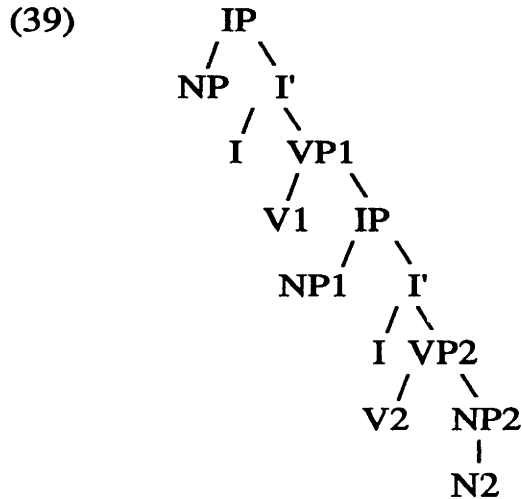
(i) Mario **lo** vuole molto/attentamente leggere

it wants much/carefully read

"Mario wants to read it very much/carefully"

It is hard to imagine that the adverb is also dominated by the V node that dominates the two verbs. Burzio (1986) offers a different analysis, in which the embedded VP moves out of the embedded S and lands somewhere between the restructuring verb and the S complement. Taking this analysis at its face value, the resulting structure is actually badly formed. This is because the landing site, being postverbal, cannot be a D-structural position since there cannot be any selectional or thematic relation between the matrix verb and this position. So the position is created as the result of the VP-

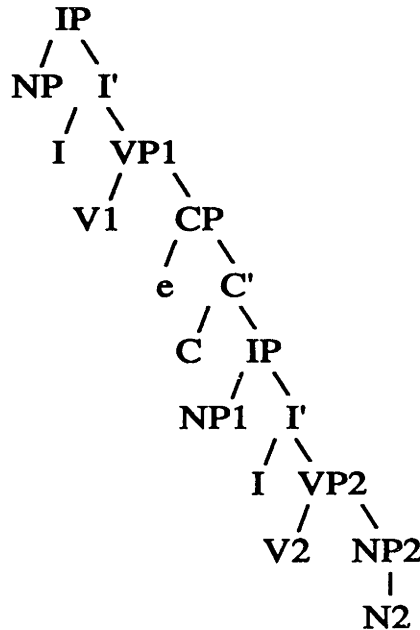
First consider (38a), with the matrix verb taking an IP complement whose specifier NP1 is a phonetically empty pronominal:



when N2 as a clitic attaches to V2, its trace is marked [+γ]. Then it may move to the embedded INFL, and from there to the matrix INFL, creating the chain [I, I, V2, N2] which is well-formed according to BCC. Since the move from the embedded INFL to the matrix INFL crosses only one barrier (i.e. VP1), the Subjacency Condition is satisfied. Then the intermediate trace that is created by the jump and is not properly governed will be deleted so that the chain may pass the ECP. Now consider (38b), in which the matrix verb takes a CP complement:

movement, but this violates the basic requirement of structure preserving.

(40)



Again assuming that the clitic N2 moves to V2 and then to the embedded I, there are two possible landing sites for the next step -- C or V1 (N2 cannot directly attach to the matrix INFL because of the Subjacency requirement). If it first attaches to C, then the final chain after it reaches the matrix INFL is [I, ..., C, I, V2, N2]. This chain is ungrammatical by BCC since I in the middle of the chain is locally bound by C and is therefore a variable (bound by some element of a different category). As a result it cannot be bound in the chain by another I. (Notice that this illustrates the necessity of defining variables in terms of category: With both I and C indicating T'-positions, [I, C, I] would be well-formed with respect to BCC if a variable is not defined with respect to categories.) On the other hand, if the clitic moves from the embedded I to V1, the chain formed so far is already bad because part of it is [V1, I, V2], again a BCC violation. So no matter how the clitic reaches the matrix INFL, the result is ungrammatical, and we conclude that clitic climbing in sentences with embedded CP is in general impossible.

This conclusion, however, is reached with an assumption in our analysis; namely that the clitic moves to the embedded I from V2. Suppose it moves across the embedded IP and attaches to C and from there makes another jump across VP1 to reach the matrix INFL, then the chain will be [I, C, V2, N2], which is well-formed by BCC. With each move across only one barrier VP, the movement is fine with the Subjacency Condition. And the chain is also fine with the ECP after intermediate traces are deleted. Therefore, in order to maintain our analysis, it is crucial that the clitic moves to the embedded INFL. The role of INFL in clitic-climbing will be more carefully examined in the next subsection.

Before ending this subsection, it is necessary to consider one type of Italian restructuring sentence, noted by Rizzi (1982), which seems to suggest that the complement of a restructuring verb is not IP but CP:

(41) Su questo punto, non ti saprei che dire

"on this point, I wouldn't know what to tell you"

With clitic-climbing in (41), the complement should be IP according to our analysis. However, the presence of a *wh*-word *che* "what" seems to argue for the existence of CP. However, Rizzi points out that such examples are "highly marginal". In fact, (41) is the only sentence Rizzi gives that is acceptable, with the rest of the examples of the same structure ranging from one question mark to a star. Therefore, I think the approach to these examples should be to rule them out in general and find out what makes (41) exceptional, not vice versa. In other words, while (41) should definitely be

treated as a problem to be solved, I will not consider it a clear counterexample to the theory proposed in this thesis.⁸

3.3.2. Infinitive INFL

We noted that the difference between a restructuring verb and non-restructuring verb can be explained by giving the former an IP complement and the latter a CP complement, and that this explanation rests on the assumption that a clitic must adjoin to the embedded INFL on its way up. We have been assuming that clitics must end up with INFL, and showed that otherwise it is impossible to explain why FI constructions don't allow the clitic to occur with the embedded verb. Suppose that this relation between clitics and INFL is not accidental, then there must be something about INFL (Agr, for instance) that "attracts" the clitic. Following this line of reasoning, we make the following postulation (see Rosen (1989) and Kayne (1987a) for essentially the same assumption):

(42) INFL attracts clitics and the clitic-INFL cluster is not separable.

⁸ (41) contrasts with the following example:

(i) *Su questo problema, non lo saprei se consigliare o no

"on this problem, I don't know whether to advise **him** or not"

where the complementizer is *se* "whether". As Kayne (1987a) points out, the difference between (41) and (i) is that in the former the COMP position (if there is any) is empty while in the latter the position is occupied by *se*. Based on this observation, Kayne suggests that an embedded clitic can undergo clitic-climbing only when C is empty. However, the same story fails to explain why (ii) below is verb bad (example from Rizzi (1982)):

(ii) ??Un simile problema, proprio non lo saprei come risolvere

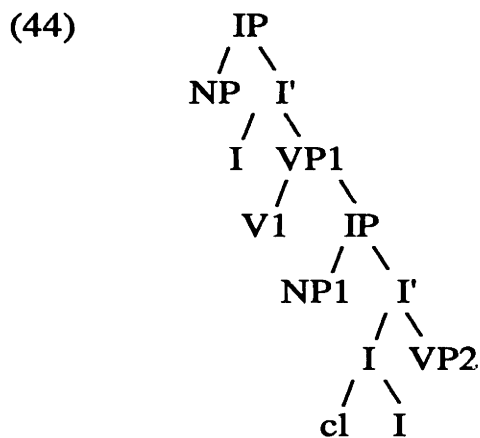
"Such a problem, I really don't know how to solve **it**"

where COMP is empty as in (41) but clitic-climbing makes the sentence almost unacceptable.

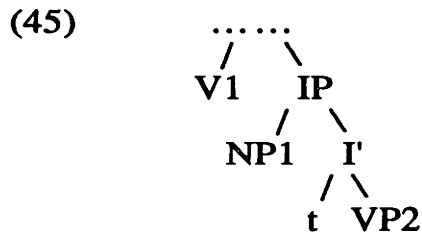
From (42) may be deduced the statement in (43):

(43) If the clausal complement contains INFL, a clitic cannot move out of it.

To prove (43), consider the structure at issue, with the clitic already adjoined to the embedded INFL:



According to (42), the clitic-INFL cluster once formed cannot be separated. This means that for the clitic to move to the matrix INFL, the cluster must move together. Obviously, it cannot attach to V1 (matrix verb) because that would lead to BCC violation, with a chain [V1, I, ..., N]. So the cluster must directly attach to the matrix INFL, crossing the intervening VP1. As always, this move leaves the trace of the cluster not properly governed. The only way to avoid the ECP violation is to have this trace deleted. The structure before trace deletion is given in (45):



The question is whether the trace t can be deleted in (45). According to X'-theory it can't, because the deletion of the trace will make the IP headless, and a headless maximal projection runs counter to the basic idea embodied in the X'-theory, i.e. that X^n exists only as the projection of X^{n-1} , where $n > 0$. (See section 2.2.1 for the same reasoning for ruling out a headless CP.) If the trace of the clitic-INFL cluster in (45) cannot be deleted, then the cluster cannot possibly move to the matrix INFL without violating the ECP. Hence the clitic-INFL cluster cannot move any further, and we have proved (43).

Before exploring the implications of (43), let us recall our analysis of the FP construction. We suggested that a dummy INFL (INFL_d) is inserted in such a construction to restore the Case-assigning ability of the embedded verb. A "by-product" of this INFL_d insertion is that a dative clitic may reach the matrix INFL via the dummy one. If this analysis is on the right track, then (42) obviously does not apply to INFL_d . Otherwise the dative clitic wouldn't be able to "detach" from INFL_d and move any further. In fact, if INFL_d is also subject to (42), even the embedded object clitic in the FP construction would be confined to the embedded clause too, because it would also be attracted by INFL_d . Though no formal explanation can be given to this difference between INFL_d and a non-dummy one (simply referred to as

INFL) at this moment, it is intuitively clear why this is so. If INFL attracts clitics because it contains certain features (e.g. Agr), then INFL_d won't attract them precisely because it lacks any such features. In fact, without these features, INFL_d looks like a head of any other category to clitics -- if a clitic cannot stay with another head (e.g. V. See section 3.2.2), then it cannot stay with INFL_d, either. This is substantiated by the fact that a clitic has to adjoin to the matrix INFL even for the FP construction, though I argued that an INFL_d is inserted here:

- (46) *Il fera me présenter à elle par ses parents
 "he will make his parents introduce me to her"

With both INFL and INFL_d available to head IP, we may have the following matrix, with "+" meaning that IP is headed by the designated type of INFL:

(47)	INFL	-	-	+	+
	INFL _d	-	+	-	+
		A	B	C	D

Since INFL and INFL_d exhaust all possible instances of this category, an IP headed by neither one of them is headless, and by X'-theory, it can't exist. Thus column A of (47) represents a maximal projection that is not IP. FP constructions in Romance languages embody column B because the embedded IP is headed by INFL_d. With INFL_d, a clitic doesn't have to adjoin to it and, once adjoined, may move along by itself, leaving INFL_d behind. By

definition, column C represents all clausal constructions whose INFL is not INFL_d . Thus, a finite clause falls into this category, and we predict from (43) that clitics cannot "climb" out of it. Since non-finite INFL is also of this category (as long as it is not INFL_d), we should expect clitic-climbing to be impossible out of infinitives. The evidence for this prediction comes from French, which is known to exhibit no restructuring phenomenon even in a control or raising construction (Kayne (1987a)):

(48) *Jean les veut voir

Jean them wants see

If even infinitive INFL blocks clitic-climbing, then what about the restructuring constructions in Italian? Since they allow clitic-climbing, the embedded IP must be headed by INFL_d . Meanwhile, since a clitic can also stay inside the embedded clause, the latter must be headed by INFL (recall that a clitic cannot stay with INFL_d for lack of the attracting features). This double behavior of restructuring constructions, I propose, is what column D of (47) describes. Obviously an IP cannot be headed simultaneously by INFL_d and INFL, since they exclude each other by definition. But the double "+" may be interpreted as allowing either INFL or INFL_d to head the IP. With the embedded $\text{INFL} = \text{INFL}_d$, a clitic may (and must) climb to the matrix INFL; otherwise cliticization must be local, according to (42). This interpretation of column D immediately explains a long-noticed fact in clitic-climbing, that is, when two embedded internal arguments cliticize, they must either both climb to the matrix INFL or both stay in the embedded clause. It is impossible for one of them to climb leaving the other behind (Kayne

(1987a)):

(49) a. Gianni **ve li** vuole mostrare

"Gianni wants to show **them to you**"

b. Gianni vuole mostrar**veli**

(50) a. *Gianni **ve** vuole mostrar**li**

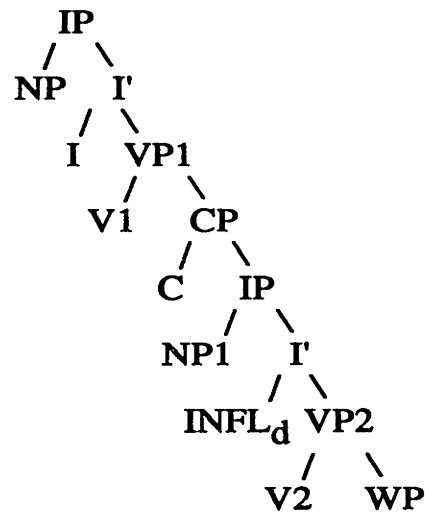
b. *Gianni **li** vuole mostrar**ve**

It is clear given the previous discussion of column D that the embedded clause in (49a) is headed by $INFL_D$ whereas the one in (49b) is headed by INFL. Now consider (50). The fact that one of the clitics stays inside the embedded clause indicates that the latter is headed by INFL. It follows directly that the other clitic cannot move out of the the embedded IP either.⁹

The matrix in (47) has provided a way to distinguish restructuring verbs from non-restructuring ones. That is, restructuring verbs optionally select an IP complement which is headed by $INFL_D$. Now consider the following situation. Suppose a verb takes a CP complement which contains not INFL but $INFL_D$. The structure will be like (51):

⁹ A similar analysis is given in Rosen (1989) and Kayne (1987a), though they interpret clitic-climbing as indicating the total absence of INFL. As I showed, embedded $INFL_D$ is essential to explain Case-assignment in FP and dative clitic-climbing.

(51)



With CP a barrier between the matrix verb V1 and the embedded subject NP1, Exceptional Case Marking is blocked and NP1 must be an empty pronominal (assuming $INFL_d$ like infinitive INFL does not assign Case). Hence (51) would represent a control construction. Since $INFL_d$ does not attract clitics, if $WP = NP$ (i.e. Accusative object), the head of WP may first adjoin to V2, then cross the embedded IP and adjoin to C, then cross the matrix VP and adjoin to the matrix INFL. That is, the embedded object may undergo clitic-climbing. In contrast, if WP is KP (i.e. a dative object), then the nominal clitic must first adjoin to the head of W (= K). From K it can only move to as far as the embedded INFL because adjoining to C in a single move violates the Subjacency Condition. However, any further move from the embedded INFL is forbidden as either a violation of BCC or the Subjacency Condition (cf. section 3.3.1). So a dative clitic cannot climb to the matrix INFL. In short, (61) represents a control construction in which clitic-climbing is allowed for the Accusative object but not for the dative. As far as I know, no such examples have been reported. And to the extent such sentences don't exist, we want to rule out (61). Given our characterization of

restructuring verbs, it turns out to be simple to prevent (61). Assuming that $INFL_d$ is a marked form of infinitive INFL, then it occurs in a structure only if it is overtly required. It can be required by a verb only if the verb selects an IP as complement and hence impose selectional restrictions on the head of IP. If the verb selects CP, it can only indirectly select (the maximal projection of) an infinitive INFL by selecting a specific CP. Since $INFL_d$ is a marked form of infinitive INFL, it can never occur in this case because the "normal" infinitive INFL is the default. Hence (51) can never be generated.

The matrix in (47) also allows us to explicitly describe (though not explain) the impossibility of clitic-climbing out of an object control construction, as noted by Rizzi (1982), Koopman (1984), and Burzio (1986). Assuming that an object control verb also takes an IP as complement (cf. section 3.3.3 below), we are forced to conclude that the verb never takes an IP complement headed by $INFL_d$ -- a non-dummy INFL is sufficient to enforce local cliticization.

3.3.3. Raising vs. Control

So far I have treated restructuring verbs as if they all fall into a single class with respect to their general properties. In fact, they don't. As Burzio points out, they can be further divided into ergative verbs, raising verbs, and control verbs, illustrated in (52), (53) and (54) respectively:

(52) Ergative

Giovanni va a prendere il libro
go to fetch the book

(53) Raising

Giovanni dovrebbe prendere il libro
would have to fetch the book

(54) Control

Giovanni vorrebbe prendere il libro
would want to fetch the book

One of the differences among these three constructions is the selectional restriction of the matrix verb on the subject:

(55) Ergative

*L'acqua viene a scorrere
the water comes to flow

(56) Raising

L'acqua dovrebbe scorrere
the water would have to flow

(57) Control

*L'acqua vuole scorrere
the water wants to flow

As these examples show, while a raising verb doesn't impose selectional restriction on the subject, both ergative and control verbs do. In my analysis below, I will keep the distinction between raising and control verbs, but the term "control" will be used to refer to both control verbs and ergative verbs in Burzio's classification, since these two types of verbs have the same properties for our purpose.

Usually, control verbs and raising verbs are supposed to take different complements: the former taking CP while the latter take IP (see, for instance, Chomsky (1981) and the references cited there). This structural distinction immediately raises a problem with my analysis because I have argued that all restructuring verbs take IP complements. There are two possible ways to get out of this apparent contradiction while still maintaining my analysis. One of them is to say that all restructuring verbs in Italian (or Romance languages in general) are raising verbs. In other words, none of them assigns a theta-role to the subject and all of them take an IP complement. This is reminiscent of my (tentative) treatment of modal-like verbs in VI constructions in Chapter 2. I suggested there that these verbs probably don't assign their own theta-role to the subject, in spite of their selectional restriction on the subject. This suggestion is based on a comparison between these verbs and real modals, which also participate in selecting the subject. The intuition behind this comparison is that both modal-like verbs in VI environments and real modals in languages like English share the property of taking a bare VP as complement. In a sense, the former class are modals taking the form of a verb. This intuition no longer holds for restructuring verbs, which take as complement an IP rather than a bare VP. Therefore, they are more like control/raising verbs in English, which are definitely not modals.

Now suppose restructuring verbs indeed fall into two classes -- raising verbs and control verbs. I will argue that the framework of GB provides mechanisms to draw this distinction in Italian even when the complement is always an IP. Let us start by briefly reviewing why a control verb must take

a CP complement in English:

(58) a. NP V [IP NP1 INFL VP]

b. NP V [CP [IP NP1 INFL VP]]

First suppose the control verb takes an IP complement, as shown in (58a). Since the verb V selects IP, there is no barrier between V and the embedded subject NP1. Also assume that (subject-) control verbs don't assign Accusative Case in a control construction. This leaves NP1 governed but Caseless. Since the matrix subject position is already occupied by the subject of the control verb, NP1 can only be pro (see ex. (31) of 2.2.1) which is controlled by the subject NP. However, precisely because NP1 is governed by V, the whole sentence is the governing category for it, in which it must be free by Binding Condition B. So (58a) is an impossible structure for control verbs. The problem disappears in (58b), where the complement is CP. Since C selects IP which in turn includes NP1, CP is a barrier blocking government of NP1 by V. Therefore, NP1 as an empty pronominal (PRO in this case because the English infinitive INFL presumably does not govern the subject) may be controlled by the matrix subject without violating any principle.

This analysis of control verbs crucially depends on the assumption that the matrix verb V governs the embedded subject if the complement is IP. If this government is somehow blocked, then the embedded subject, being an empty pronominal, will never take the whole sentence as governing category and therefore can be controlled by the matrix subject. The principle that may

help achieve this goal is the Minimality Condition as proposed in Chomsky (1986a) and developed in Rizzi (1989). Specifically, I will use a slightly modified version of the Relativized Minimality Condition in Rizzi (1989), for the reasons that will become clear soon:

(59) X head-governs Y iff

- (i) X is a head,
- (ii) X m-commands Y,
- (iii) no barrier is between X and Y, and
- (iv) Relativized Minimality is respected.

(60) X antecedent-governs Y iff

- (i) X and Y are coindexed,
- (ii) X c-commands Y,
- (iii) no barrier is between X and Y, and
- (iv) Relativized Minimality is respected.

(61) Relativized Minimality

X α -governs Y only if there is no Z such that

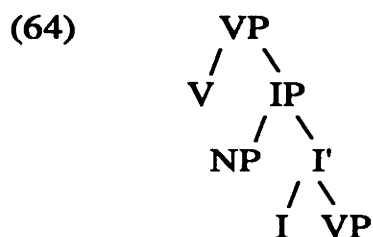
- (i) Z is a Typical Potential α -governor for Y, and
- (ii) Z m-commands Y and does not m-command X.

(62) Z is a Typical Potential head-governor for Y iff Z is a head m-commanding Y.

(63) (Definitions of Typical Potential antecedent-governors are omitted because they are irrelevant to our discussion.)

Two points need to be made concerning the differences between the definitions (59) through (63) and Rizzi's original ones. First, Rizzi includes antecedent-government at the X^0 level as an instance of (63). This is not

necessary for us because, as I pointed out in section 1.1.3, our definition of barriers already incorporates the notion of Minimality into it for X^0 chains. In other words, the Relativized Minimality Condition as given above only involves governees at the XP level. Secondly, Rizzi uses c-command in clause (ii) of (61) whereas I choose to use m-command instead. For Rizzi, this is necessary in the case of the ECM construction:



In order for the matrix V to assign Case to the embedded subject NP, the former must head-govern the latter. Since I doesn't c-command NP, there is no "Z" (cf. (61)) which is a Typical Potential head-governor for NP and c-commands NP but not V. Thus V can indeed head-govern NP. However, as Rizzi notes, c-command seems to be relevant to the determination of Typical Potential head-governor only in the case of IP (and possibly CP). There is evidence that lexical heads need m-command to determine a Minimality barrier (Rizzi, section 2.3.2):

(65) *how_i is he [_{AP} t_i tall]

For independent reasons, the trace of the quantifier in (65) is in the Spec of AP and must be head-governed by the copula outside it to be licensed. Thus the ungrammaticality of (65) indicates that the head of AP blocks this needed

head-government by m-commanding the trace. In the next section, I will propose a further modification of Rizzi's Relativized Minimality to handle the ECM construction in (64). For the time being, let us assume that the Minimality Condition for head-government consistently requires m-command regardless of functional or lexical heads.¹⁰

With Relativized Minimality defined as above, let us return to structure (58a), which I argue to represent the control construction in Italian:

(66) NP V [_{IP} NP1 INFL VP]

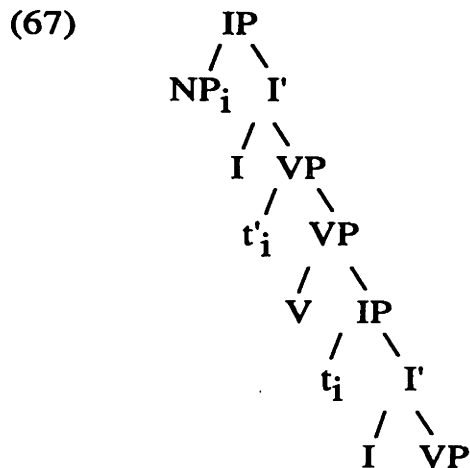
Suppose that in Italian (and possibly other Romance languages) the infinitive INFL is a governor though unable to assign Case. Then according to (61) it will block government of the embedded subject NP1 by the matrix V because it m-commands NP1 but not V. Since by assumption it governs NP1 but assigns no Case to it, NP1 is a pro which by Control Theory will be controlled by the matrix subject (cf. section 1.1.7).¹¹ In addition, with the

¹⁰ Chomsky (1986a) also discusses Minimality in terms of c-command vs. m-command, and tentatively suggests that c-command should be adopted. However, some of his arguments become irrelevant once the Minimality Condition is relativized. Much of Rizzi's analysis involving head-government does depend on c-command. However, it turns out that in these cases a new concept, proper head-government (= head-government by X⁰ within X'), has to be introduced independently of how the Minimality Condition is defined (Rizzi (1989, section 2.2).

¹¹ Notice the implication of this analysis -- since even INFL_d (a dummy INFL) also serves as governor of the embedded subject, it is only natural that infinitive INFL is a governor in general. Since gerundival INFL also seems to govern the subject position, as (i) below shows, PRO is essentially eliminated:

(i) [So many people landing on Mars simultaneously] is incredible

embedded INFL a governor, the embedded IP is the smallest governing category in which a pro must be free, and indeed NP1 is free in it. So (66) is well-formed as a control construction. Now suppose that NP1 is an overt NP, then it must move to the matrix subject position to receive Case. This in turn requires that the matrix verb not assign a theta-role to that position; i.e. that it be a raising verb. The structure after NP-raising is given in (67):



The embedded subject first moves to the subject position of the matrix VP small clause and then to the Spec of the matrix IP. Since the subject position of a small clause is a potential position for theta-assignment, it is a T-position, so the movement creates an A-chain. Notice that the embedded INFL does not block the original trace of NP, marked t_i , from being antecedent-governed by the intermediate trace t'_i because it is only a Potential head-governor and has nothing to do with the relation of antecedent-government in an A-chain. Nor is the embedded IP a barrier between the two traces, with IP selected by the matrix V. To conclude, the

It is not clear that this move should not be preferred. After all, if PRO and pro are subject to the same Control Theory, why should they be distinguished? The same point of view is shared in Huang (1989).

same structure in (66) is sufficient to describe both control and raising constructions in Italian.

3.4. Exceptional Case Marking and Negation

Given Burzio's (1986) analysis of perception verbs, what are usually treated as ECM constructions in Italian (see, for instance, Rosen (1989) and the references cited there) may arguably represent a totally different construction (cf. section 2.3). However, this does not mean that Romance languages in general don't have the ECM construction. The first part of this section will examine one such case in French, with the emphasis on the behavior of clitics while trying to provide an analysis of the ECM construction which is consistent with the theory of cliticization provided in this chapter. This analysis also turns out to be helpful in understanding the interactive relation between cliticization and negation, which will be briefly addressed in the second half of this section.

3.4.1. ECM

In addition to *faire* "make", French also uses the verb *laisser* "let" to form FI sentences:

(68) a. Elle laissera manger ce gâteau à Jean

"She'll let Jean eat that cake"

b. Elle lui laissera manger ce gâteau

"She'll let him eat that cake"

c. Elle le laissera manger à Jean

"She'll let Jean eat it"

d. *Elle laissera le manger à Jean

With the embedded object taking Accusative Case and the clitics necessarily climbing to the matrix INFL, *laisser* obviously patterns with *faire* in an FI construction. However, this verb can also be used in an ECM construction:

(69) a. Elle laissera Jean manger ce gâteau

"She'll let Jean eat that cake"

b. Elle **le** laissera manger ce gâteau

"She'll let **him** eat that cake"

In (69a), the embedded subject *Jean* occurs right after the matrix verb and before the embedded one, just as in the corresponding English causative sentence given as the gloss. In addition, *Jean* is no longer introduced by the Dative Case marker *à* as in the FI counterpart in (68a). That the embedded subject receives Accusative Case is confirmed by (69b), in which the clitic corresponding to this argument takes Accusative Case instead of Dative, as a comparison between (69b) and (68b) shows.

There is also clear evidence that the complement of *laisser* as used in (69) is not a bare VP (small clause):

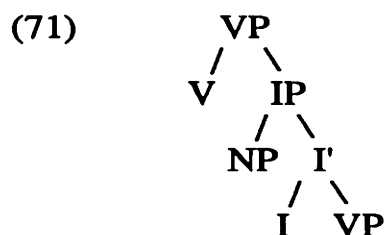
(70) a. Elle laissera Jean **le** manger

"She'll let Jean eat it"

b. *Elle **le** laissera Jean manger

We have argued in section 3.2 that a clitic may only stay with INFL. Thus

the embedded object clitic must climb to the matrix INFL in an FI construction because there is no embedded INFL. This can be seen in (68c) and (68d). The location of such a clitic is just the other way around in (70), where the clitic must stay inside the complement (70a) and cannot undergo climbing (70b). This is expected if there is an embedded non-dummy INFL that "intercepts" the clitic (for the specific reasons of this interception, see section 3.3.2). Since the complement contains INFL and the embedded subject receives Accusative Case, I will treat the examples in (69) and (70) as constructions of Exceptional Case Marking with the matrix verb selecting an IP complement and assigning Case to the embedded subject:



Two questions immediately arise about (71). First, I have argued that at least in Italian the infinitive INFL is a head-governor which, given the Relativized Minimality, blocks head-government of NP by V. Since Case is assigned under government and the embedded infinitive INFL does not assign Case, NP would be Caseless whether or not the matrix V assigns Case. In other words, this analysis as it is predicts the non-existence of the ECM construction in Italian. More generally, it predicts that a language does not allow ECM if it allows clitic-climbing in a control construction, because clitic-climbing requires an embedded IP (rather than CP) and therefore the infinitive INFL must be a governor to prevent the embedded pro subject from

being governed by the matrix verb. While I am not aware of any counterexample to this prediction, I want to be more conservative with its generality and will instead consider an alternative explanation for the way NP receives Case in (71). The second question raised by (71) is how the head of the embedded subject manages to cliticize onto the matrix INFL, as (69b) shows. Recall that NP in (71) is not selected since it is not the complement of INFL. Thus it is a barrier between its head and anything outside it, which in turn means no head-movement is possible.

Starting with Case-assignment to the embedded subject, let us examine the intuition behind the Relativized Minimality. Essentially, this condition says that when there are two potential governors for an element, there is a minimality effect only if both of them are of the same sort. Bearing this idea in mind, we notice that there is a clear sense that the embedded INFL and the matrix V are not of the same sort for the purpose of Case-assignment. That is, V is a Case-assigner while I isn't. In this sense, I cannot block Case-assignment from V because it is not qualified to create a minimality effect for Case-assignment. Let us formalize this idea by defining Case-government:

(72) X Case-governs Y iff

- (i) X is a Case-assigner,
- (ii) X m-commands Y,
- (iii) no barrier is between X and Y, and
- (iv) Relativized Minimality is respected.

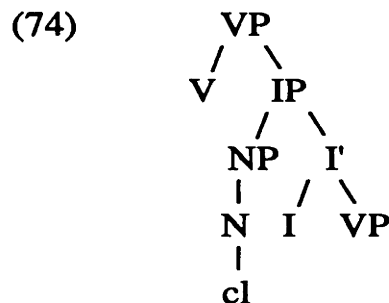
(73) X assigns Case to Y only if X Case-governs Y.

(73) is meant to be a necessary condition to replace head-government in

Case-assignment, with other conditions intact (e.g. a verbal Case-assigner has to be governed, possibly Case-governed, by a [+C] element to actually assign Case).

Now the embedded subject NP in (71) can receive Case from the matrix verb since the embedded INFL, unable to assign Case, fails to satisfy clause (i) of (72) and hence cannot block Case assignment from outside IP. Notice that the same INFL still prevents V from head-governing NP because of Relativized Minimality. So if NP is a pro, it remains governed by INFL and taking the embedded IP as governing category. It is also worth noting that (71) is possible for Exceptional Case Marking only when the embedded INFL is unable to assign Case. If this INFL is finite, it will assign its own Case to the subject and thereby block Case-assignment from outside. We will see in the next chapter that such situations arise when V is a bridge verb.

Turning to the second question -- how can the head of the embedded subject move to the matrix INFL, let us consider the structure again:



Given our definition of barriers, NP is a barrier between its head N and the matrix verb V because it is not selected. This in turn makes IP a barrier by

inheritance because it immediately dominates a barrier, i.e. NP. So there is no way that the clitic can move out of its D-structure position. To solve this problem, I propose to modify the definition of barriers given in Chapter 1. First, the notion Spec-selection is defined:

(75) Let αP = the maximal projection of α , then α Spec-selects β iff α assigns a theta-role to γ which is αP -internal and β is the specifier of γ .

For instance, the embedded subject NP in (74) is Spec-selected since it is in the Spec position of IP which is assigned a theta-role VP-internally. Then we define barriers accordingly:

(76) γ is a barrier between α and β iff γ is a maximal projection that includes β and excludes α , γ is not Spec-selected, and either:

- (i) γ is not selected, or
- (ii) the head of γ selects some XP which includes β .

When a maximal projection is not Spec-selected (i.e. in all the situations other than the embedded subject in an ECM construction), the new definition of barriers in (76) works like the old one. In a structure like (74), however, NP is not qualified for a barrier due to Spec-selection. It follows that IP is not a barrier by inheritance because it does not immediately dominate any barrier between the clitic and the matrix V. Furthermore, since the head of IP does not select NP, it is not a barrier even by clause (ii) of (76). With neither NP nor IP a barrier in between, the clitic may adjoin to V while having its trace antecedent-governed.

Notice that in (74) NP, being Spec-selected, is not a barrier between N and the embedded INFL either, but this does not make it possible for the subject clitic to adjoin to the embedded INFL because antecedent-government is defined with c-command and INFL does not c-command the Spec of IP. So the trace of a subject clitic which adjoins to INFL is not antecedent-governed by INFL, causing an ECP violation. This result is welcome because it is well known that noun incorporation never involves a D-structure subject (see for instance Postal (1979), Mithun (1984), Sadock (1985), and Baker (1988)). To the extent that noun incorporation should be ruled out in this environment, so should cliticization.¹² And this prediction is correct -- even in a French ECM construction, the embedded subject clitic cannot stay inside the complement:

(77) *On laissera la manger ce gâteau
"We will let her eat that cake"

With the behavior of the embedded subject clitic explained, the following data in Kayne (1977) are expected:

(78) a. *On lui laissera le manger
b. On la laissera le manger
"We will let her eat it"

¹² Impersonal *si/se* in Romance languages is sometimes treated as a subject clitic adjoined to INFL (Burzio (1986)), but Baker (1988) argues that it should be analysed on a par with passives. In particular, he suggests that it is the result of base-generating the external argument of verb inside VP and moving its head to INFL.

(79) a. On le lui laissera manger

b. *On le la laissera manger

"We will let her eat it"

(a) sentences are FI constructions while (b) sentences are ECM. (78a) is bad simply because the complement is a bare VP small clause. Thus the object clitic has no place to stay inside it. In (78b), however, this local cliticization is possible with our assumption that the complement is IP. In (79a), both embedded subject and object clitics undergo climbing also due to the lack of embedded INFL (cf. section 3.3.2). In contrast, while the embedded subject may cliticize onto the matrix INFL in (79b) as our new definition of barriers permits, the embedded object cannot because of the existence of the embedded INFL.

3.4.2. Negation

Kayne (1987a) notices that negating the complement affects clitic climbing:

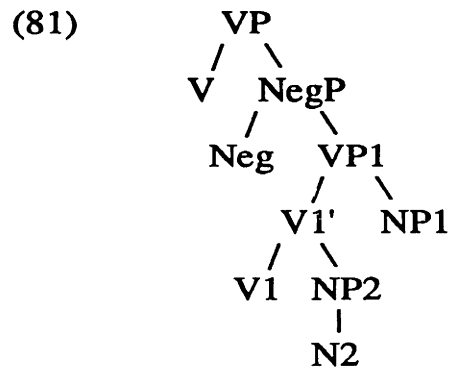
(80) a. ?Jean a fait ne pas manger sa soupe à l'enfant

"Jean has made the child not eat his soup"

b. *Jean l'a fait ne pas manger à l'enfant

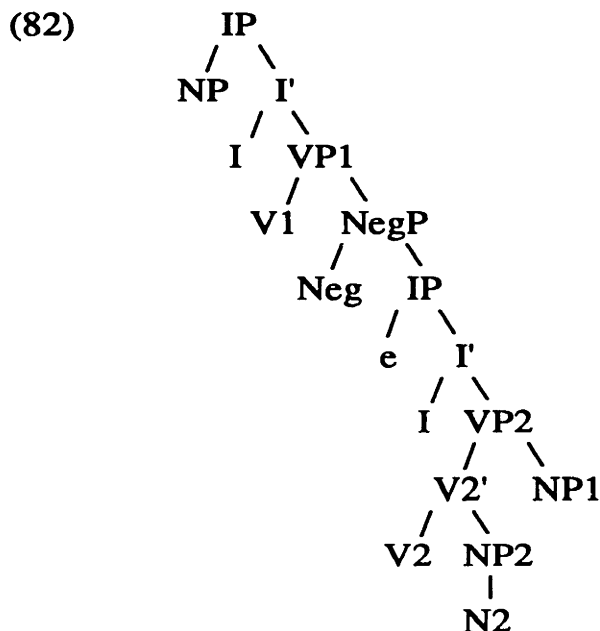
Namely, while negating the complement of an FI construction makes the sentence marginal in (80a), adding clitic-climbing to the situation makes it significantly worse (80b). In Chapter 2, I argued that VI cannot take place when the complement is negated because that would create a chain [V, Neg, V], which does not satisfy BCC. This explanation cannot be directly used for

the contrast in (80). In the case of VI, no matter what the reason, the embedded verb must move cyclically without crossing any intervening head. In clitic-climbing, however, this strict cyclicity is not enforced since the clitic may move over an intervening head to avoid possible BCC violations. In other words, suppose the partial structure of (80) is as follows:



The object clitic N2 must first adjoin to V1 to have its original trace γ -marked. But its next landing site does not have to be Neg -- it may directly move to the matrix V and have its intermediate trace deleted before the ECP, and (80a) and (80b) would thus be predicted to have the same acceptability.

Now let us assume that in French (and possibly many other languages) Neg always selects an IP complement but never a VP complement (see Pollock (1989), who argues that Neg takes AgrP complement). Then insertion of the negative elements *ne ... pas* necessarily creates the following structure for an FI sentence:



The marginality of such a sentence as (80a) can be attributed to the fact that the causative V1 only selects as complement a VP small clause, which NegP is certainly not. Since what is inserted is Neg, not INFL, the insertion rule cannot select a dummy INFL for this purpose. With our further assumption in section 3.3.2 that a non-dummy INFL is the default, the embedded INFL in (82) inevitably attracts clitics, making them unable to climb to the matrix INFL. Hence the ungrammaticality of (80b). This analysis is supported by the following contrast (according to François Dell, personal communication):

- (83) a. *Jean a fait le manger à l'enfant
 "Jean has made the child eat it"
- b. ??Jean a fait ne pas le manger à l'enfant
 "Jean has made the child not eat it"

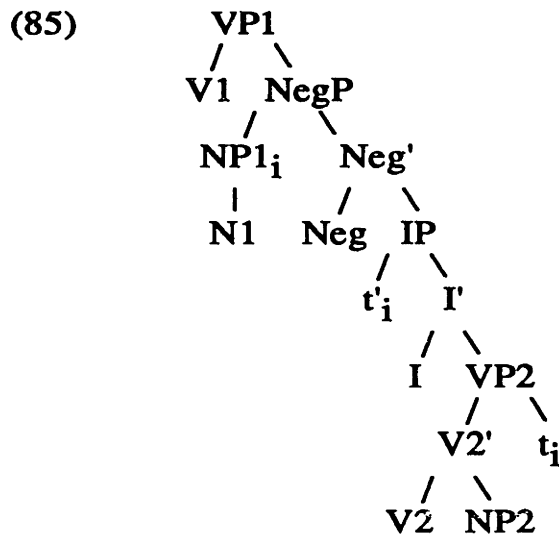
While the object clitic cannot stay inside the complement when the latter is not negated (83a), the sentence becomes better with negation in (83b). The

same degree of contrast in acceptability also exists between (83b) and (80b). The marginal acceptability of (83b) may be explained if INFL is inserted with Neg -- with a non-dummy INFL, the clitic may indeed stay inside the complement, in contrast to (83a), where no such landing site is available because nothing is inserted. Also notice that (83b) cannot be explained by adjoining the clitic to the head of NegP. In French, clitics adjoin to the left of a head (Kayne (1987a)). Assuming either *ne* or *pas* is the head of NegP, the clitic should occur at least to the left of one of them. The fact that it occurs after both but before the embedded verb indicates that it is attached to a head somewhere "below" Neg. Since there is independent evidence that it cannot attach to V, it must be with an intervening head, which I argued to be INFL.

In contrast to the ungrammatical (80b) in which the object cliticizes, cliticization of the embedded subject onto the matrix INFL does not change the grammaticality of the sentence (Kayne (1987a)):

(84) ?Jean lui a fait ne pas manger sa soupe
"Jean has made him not eat his soup"

Our explanation for ECM constructions as it is provides a partial answer to this asymmetry between subject and object clitic-climbing with a negated complement. Assuming that NegP also has a Spec position, then the embedded subject may move into it from its D-structure VP-internal adjunct position:



Once in the Spec of NegP, NP1 is Spec-selected by the matrix V1, and its head N1 may adjoin first to V1 and then to the matrix INFL in the same way as the embedded subject of an ECM construction. However, since V1 as a Type 1 causative verb does not assign Case, NP1 relies on its D-structure adjunct position for a structural Dative Case, and its head as a clitic inherits the Dative form accordingly. Thus, to the extent that Neg insertion is marginal, clitic-climbing of the embedded subject is also marginal but does not reduce its acceptability.

What cannot be explained is why only the embedded subject may move into the Spec-position of NegP and have its head cliticize. If the embedded object may do the same thing, we would expect object clitic-climbing to be equally good, as is not the case. This situation reminds us of Baker's analysis of Type 1 VI which I discussed in section 2.2.1. Recall that Baker proposes to move the embedded VP to the Spec of the embedded CP before the head V of this VP incorporates to the matrix causative V. I pointed out there that if head-movement could take place in such a construction, we

would expect the head N of the embedded object to occur between the causative morpheme and the embedded verb morpheme in a language which allows both VI and NI, and showed that at least in Southern Tiwa this seems impossible (cf. examples (18) and (19) of Chapter 2). Given my definition of barriers in terms of Spec-selection, it is not clear how we can explain the lack of this specific ordering of morphemes in a Southern Tiwa compound (as well as refute Baker's analysis of Type 1 VI) because the CP complement (in Baker's analysis) of a causative verb is indeed assigned a theta-role by the verb and therefore anything in its Spec position is Spec-selected. Thus, instances of head-movement out of the specifier phrase of a theta-marked complement fall into two groups. For cliticization of the embedded subject in an ECM construction or in a FI construction with a negated complement, we don't want the NP subject in the Spec of the complement to be a barrier between its head and the matrix verb. For cliticization and incorporation of the head of the embedded object NP (and embedded VP in Baker's analysis), however, we want the phrase to be a barrier once it moves to the Spec position of some theta-marked complement.

A careful examination of the structures involved in these instances of head-movement reveals an interesting distinction between the two groups. For the embedded subject in an ECM construction, the Spec of the embedded IP is the position in which it receives a theta-role. It is also plausible to assume that the Spec of NegP resembles that of IP in that the subject may be base-generated there and receives the external theta-role in situ. In contrast, the object cannot be generated in the Spec of NegP at D-structure to receive the internal theta-role, nor can it do it in the Spec of CP. In other words,

while the Specs of IP and NegP are potential positions for the subject to receive its theta-role in situ, the Specs of NegP and CP are not potential positions for the object to receive its theta-role in situ. To capture this distinction, I tentatively modify the definition of Spec-selection as follows:

- (86) Let αP = the maximal projection of α , then α Spec-selects β iff α assigns a theta-role to γ which is αP -internal and β is the potential D-structure specifier of γ .

Since D-structure is the level at which all thematic relations are directly satisfied (see section 1.1), the object can never be the potential D-structure specifier of CP or NegP. Therefore, moving it to the Spec of such a phrase does not make it qualified for Spec-selection. On the other hand, the subject may be generated in the Spec of IP and NegP (as assumed above) at D-structure. Thus it is a potential D-structure specifier for each of these phrases, and by (86) it will be Spec-selected if other conditions of (86) are satisfied. It follows that the embedded subject of an ECM construction as well as that of a FI construction with a negated complement can cliticize onto the matrix INFL, whereas object cliticization out of a negated complement as in (80b) and the kind of object incorporation missing in Southern Tiwa remain ungrammatical. Notice that intuitively, (86) is preferred to our earlier definition of Spec-selection in (75). When Spec-selection was introduced earlier, it obviously weakened the conditions for determining barriers because a specifier is not selected in any sense by the head which Spec-selects it. This weakening is "mended" by (86), which has the effect of requiring that a specifier phrase is not a barrier for its head only if it is at least in a position in which it can be potentially theta-marked. In other

words, if a maximal projection is not selected, then it won't become a barrier only if it simultaneously satisfies two weaker conditions -- being the specifier of some WP which receives a theta-role and being in a position in which it may be potentially assigned a theta-role.

3.5. Other Clitics: *En* and *Y*

Before ending this chapter, I will briefly consider two other clitics in French -- *en* and *y*. With respect to clitic-climbing, they pattern with the object clitic, not with the dative one (examples from Kayne (1975):

(87) a. *Cela **leur** fera répondre Jean (Dative)

"that will make Jean reply to **them**"

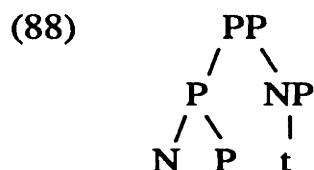
b. Cela **y** fera aller Jean

"that will make Jean go **there**"

c. Elle **en** fera sortir Jean

"She will make Jean come **out of there**"

Following our analysis of clitic-climbing in previous sections, we may infer from (87) that these two clitics are generated as lexical heads (in T-positions) and are not "separated" in their D-structural positions from the embedded verb by any functional category such as K. Specifically, we may view these clitics as the result of lexical word derivation along the lines in Hale & Keyser (1989):



That is, a (pronominal/clitic) noun head attaches to P to form a new clitic.

This treatment of *en* and *y* is consistent both with Kayne's suggestion that *en* and *y* are "pro-prepositional" forms (Kayne (1975), p.105ff) and with the French data in general, though it is not without problems. For *y*, it is quite plausible to argue that it is derived from a structure like (88) because it often replaces locative adverbials or goal arguments (Kayne (1975), p.105). The situation for *en* is much more complicated though, because it is used to replace [*de* NP], whose functions vary from partitives to arguments of verbs and adjectives. In other words, it is not even clear whether *en* represents a word composed of P and N or of K and N.¹³ There is also evidence that *en* does not completely resemble the object clitic:

(89) a. *On lui laissera **le** manger

"we'll let her eat **it**"

b. ?On leur laissera **en** manger trois

"we'll let them eat three **of them**"

(89a) is a typical FI sentence, in which the embedded object clitic *le* cannot stay with the embedded verb *manger*. In contrast, *en* in (89b) is not so bad,

¹³ There are ways to exclude a word derived from incorporating N to K. For instance, it may be argued, not implausibly, that such a word is in essence of category K, and that items of functional categories don't exist in the lexicon. So if *en* is an item provided in the lexicon, it cannot be composed of K and N. At this stage, such suggestions remain at the speculative level, and I'd like to leave them open for further study.

suggesting that these two clitics don't exactly share the same landing sites. One possible way to explain this contrast is to appeal to the lack of singular/plural distinction in *en*. Again assume that there is some feature matching between Agr in INFL and clitics. Then a clitic must stay with INFL. Intuitively, this reasoning implies that the clitic is sensitive to the features of Agr, including number. For object and dative clitics, this is true since they do make the singular/plural distinction. On the other hand, *en* does not change with number. In fact, if the derivation of *en* in (88) is correct, it is essentially a P, which does not/cannot have number distinction (see Kayne (1975) for the same point). As a result, *en* no longer has to end up with INFL because it is not sensitive to number anyway. This approach to the contrast in (89) is attractive, but the final explanation cannot be this simple because we still have to find out why (89b) is not perfect.

Chapter Four

Predicate-Clefting

Predicate-clefting is another phenomenon which is often treated as the result of head-movement. Typical examples are shown in (1):

(1) Vata (Koopman & Sportiche (1986))

a. kòfí ká mI nU

will it do

"Kofi will do it"

b. nU kòfí ká mI nU

"Kofi will DO it"

(2) Haitian (Piou (1982))

a. m tãde zã vini

I hear Jean come

"I heard Jean come"

b. se tãde m tãde zã vini

it's hear I hear Jean come

"I HEARD Jean come"

(3) Papiamentu (Muysken (1977))

a. e ta traha

he asp word

"he is working"

b. ta traha e ta traha

be work he asp work

"he is really working"

Compared with "normal" (a) sentences, (b) sentences emphasize the verb by putting it at the beginning of the sentence and leaving a copy of the verb where it would be without clefting. In this chapter, I will show that predicate-clefting as V-movement also supports the analysis of head-movement as proposed in previous chapters. In section 1, evidence is given for the nature of predicate-clefting: movement of verbs to the clause-initial position, possibly COMP. A comparison is also made between predicate-clefting and clitic-climbing to highlight their (superficial) similarities and differences, which I will account for in later sections. Section 2 will briefly summarize Koopman's analysis of predicate-clefting, which is, to my knowledge, the most recent attempt to systematically explain this phenomenon in the framework of government-binding theory. Both the merits and the problems of Koopman's analysis will be discussed. Section 3 is devoted to accounting for the specific properties of predicate-clefting as shown in earlier sections. Unless otherwise mentioned, all Vata and Gbadi examples are from Koopman (1984), all Haitian examples from Piou (1982), and all Papiamentu ones from Muysken (1977).

4.1. Data

We start by presenting evidence for treating predicate-clefting as verb-movement. The arguments are essentially those of Koopman (1984). Then we will consider the differences between predicate-clefting and clitic-climbing.

4.1.1. Predicate-clefting as V-movement

That predicate-clefting involves movement of some constituent is shown by

the structural conditions under which it takes place. As Koopman (1984) notes, predicate-clefting is not restricted within a single clause in Vata -- long-distance clefting is possible across certain clause boundaries. In this case, it patterns with Wh-movement in the environments of embedded infinitival complement, bridge-verbs (hereafter referred to as Vb), and complex NP (CNP) constructions (examples involving non-bridge verbs will be discussed in section 4.2):

(4) Wh-movement

- a. àlO nI yúe_i n la [t_i la ka] mII la (infinitive)
 who 's children you aux call KA go Q
 "whose children did you go call?"
- b. àlO_i n gugu [na àbà pà wI [na n yE t_i]] yé la (Vb)
 who you think NA Aba throw voice NA you see P Q
 "who do you think that Aba announced that you saw?"
- c. *àbà nO_i n wà [NP fòto_j [CP mUmU_j n tàkà bO t_i t_j]] (CNP)
 Aba who you like picture which you show P

(5) Predicate-clefting

- a. la n da [yué-e la ka] mII a (infinitive)
 call you aux children-the call KA go Q
 "Have you gone to CALL the children?"
- b. yE n gugu [na àbà pa wI [na n yE ngUa]] yé e (Vb)
 see you think NA Aba throw voice NA you saw them P Q
 "Do you think that Aba announced that you SAW them?"

c. *taka n wà [NP fòto_i [mUmU_i n tàkà bO àbà t_i]] (CNP)

show you like picture which you showed P Aba

That a *wh*-phrase can undergo long-distance movement out of an infinitival complement (4a) or a finite clause when the matrix verb is a bridge verb (4b) has long been observed in many languages.¹ In contrast to these environments, moving a *wh*-phrase out of the relative clause in an NP is impossible, as (4c) shows. The contrast among these sentences can be accounted for by assuming that the *wh*-phrase moves to the sentence-initial position from the D-structural one marked with *t* with the corresponding subscript. In (4a) and (4b), the *wh*-phrase moves up cyclically to its destination whereas in (4c) the same movement is blocked because it has to cross two barriers on the way. The embedded CP is a barrier because it is not selected by the noun it modifies, and the NP immediately dominating it is also a barrier by inheritance. As a result, (4c) is ruled out by the Subjacency condition as defined in Chapter 1. To the extent that the (un)grammaticality of sentences in (4) can be explained in terms of movement and that predicate-clefting as exemplified in (5) shows that same behavioral pattern as (4), it may be concluded that predicate-clefting also involves movement of some constituent. The same pattern as in (5) is also found in Haitian (Piou (1982)).

There is also clear evidence that what is moved in predicate-clefting is

¹ The study of bridge verbs and their effects on constituent movement (transformations) dates back to Erteschik (1973). Chomsky (1981) provides an in-depth discussion of this phenomenon in the framework of government and binding. Readers are also referred to chapter 1 of this thesis for the role bridge verbs may play in determining the environment for verb-incorporation.

a verb, not a verb phrase. Koopman gives the following examples in Vata:

(6) a. *li à li-da zué saká*

eat we eat-past yesterday rice

"we ATE rice yesterday"

b. **li-da à li-da zué saká*

eat-past we eat-past yesterday rice

(7) a. *li à lì saká*

eat we ate rice

"we ATE rice"

b. **li saká à lì saká*

eat rice we ate rice

As these examples show, the sentence-initial verb can neither co-occur with a Tense morpheme nor with its object. This can be easily explained by assuming that the sentence-initial position where the clefted verb lands is a X^0 position which can be filled only by a verbal head. Then (7b) is ungrammatical because of projectional mismatch since what is fronted is at least V' (i.e. $[V NP]$). On the other hand, (6b) leads to a categorial mismatch since the V-Tense cluster has the same category as INFL (i.e. $[INFL V Tense]$), assuming that it is formed by moving V to INFL.²

² Koopman notes that in Vata the clefted verb may carry imperfective aspect with it:

(i) *le n le e*

eat you eat Q

"Are you EATING?"

where both verb morphemes undergo high-vowel lowering from *li* to *le* due

The same point can be made with Haitian, which, like Vata, prevents Tense from co-occurring with the clefted verb (from Piou (1982)):

- (8) a. *se te ʃire siltana (te) ʃire rad la
 it's Tns tear Siltana Tns tear coat Det
 b. *se te by~e l (te) by~e
 it's Tns happy he Tns happy

(See Note 2 of this chapter for similar data in Papiamentu.) Therefore, we follow Koopman by concluding that predicate-clefting is the movement of V to some sentence-initial position.³

to the effect of the imperfective suffix. This contrasts with Papiamentu and Trinidadian Creole, where aspect affixes typically cannot occur with the clefted verb (quoted from Muysken (1977), who in turn quotes from Bynoe-Andriolo and Yillah):

- (ii) a. ta traha e a traha (Papiamentu)
 be work he asp work
 "he certainly worked"
 b. *ta a traha e a traha
 (iii) a. iz wok i wokin (Trinidadian Creole)
 is work he working
 "he is really working"
 b. *iz wokin i wokin

The exact structural "location" of aspect in these languages is not clear. It is possible that they are generated under INFL, as Huang (1982) argues about Chinese aspect markers. Thus the same analysis that rules out (6a) will also apply here. No matter what the analysis of these data is, the result seems to put some doubt on the universal validity of the claim of Tenny (1987), in which aspect is treated as a X^0 category taking VP as complement and heading an aspect phrase. If this were universally true, it is not clear at all how to explain the contrast between the Vata example in (i) and the rest in (ii) and (iii).

³. Notice that Vata differs from Haitian and Papiamentu in the way the clefted verb is introduced. In the former case, only a bare verb occurs at the

4.1.2. Predicate-clefting vs. Clitic-climbing

Though predicate-clefting is an instance of V-movement, it differs remarkably from verb incorporation in that the complement of the matrix verb is not a bare VP when long-distance clefting takes place. This can be clearly seen in (5a), repeated below:

- (9) la n da [yué-e la ka] mll a
call you aux children-the call KA go Q
"Have you gone to CALL the children?"

The infinitival complement of the matrix verb *mll* "go" in (9) is introduced by *ka*, an article that always accompanies an infinitival clause. Koopman (1984) treats it as the embedded complementizer, though I will argue in section 4.3 below that it embodies the infinitival INFL, in the same way as *to* in English. In any case, the presence of *ka* indicates that the complement is not a bare VP.

On the other hand, an environment like (9) clearly reminds us of the one for clitic-climbing, where a clitic originated in an embedded infinitival complement may climb to the matrix INFL (see Chapter 3). In fact, though Vata does not allow cliticization and hence clitic-climbing is impossible in this language, its close relative Gbadi allows both predicate-clefting and cliticization (Koopman (1984) and p.c). And in the situation corresponding beginning of a sentence; in the latter, however, this verb is preceded by *se* (derived from French *c'est*) in Haitian and *ta* "be" in Papiamentu. For the purpose of this thesis, this difference does not seem to matter. For a treatment of this initial word, see Lefebvre & Lumsden (1989).

to (9), long-distance movement is possible for both processes:

(10) a. wa kE-bO [zibia pi kà] mI a
they aux-Q fish prepare KA leave Q
"will they go prepare fish?"

b. wa kUá_i-bO [t_i pi kà] mI a
they aux-cl-Q prepare KA leave Q
"will they go prepare them?"

c. pi wa kE-bO [zibia pi kà] mI a (cons. (10a))⁴
prepare they aux-Q fish prepare KA leave Q
"will they go PREPARE fish?"

Thus, we may conclude that predicate-clefting resembles cliticization in not only allowing local head-movement, but also head-movement out of infinitive complements when the matrix verb is subject-control (recall our discussions thereof in Chapter 3).

However, the two instances of head-movement also differ significantly. First of all, while cliticization only leaves a trace behind, predicate-clefting requires that the original position of the clefted verb be filled with a copy of the verb, as all the examples so far illustrate. Secondly, though clitic-climbing is possible with a subject-control matrix verb, it is not permitted when the matrix verb is object-control. In contrast, long-distance

⁴ This example is constructed from (10a). In Koopman (1984), discussion of predicate-clefting is based on Vata only, though she told me (p.c.) that predicate-clefting in Gbadi observes the same conditions as Vata. Throughout this chapter, all examples constructed from real ones in Koopman (1984) are marked (cons. (# of real example)).

predicate-clefting takes place irrespective of this distinction. This difference is illustrated in the following Gbadi examples:

- (11) a. wa nI yU [zibià plà kà] IIb
 they neg child fish-pl buy KA send
 "they haven't sent the child to buy fish"
- b. *wa nUá₁ yU [t₁ plà kà] IIb
 they neg-cl child buy K.A send
 "they haven't sent the child to buy it"
- c. plà wa nI yU [zibià plà kà] IIb (cons. (11a))
 buy they neg child fish-pl buy KA send
 "they haven't sent the child to BUY fish"

In fact, the structural restriction on predicate-clefting is even looser, as shown in the third difference between it and cliticization in Vata:

- (12) yE n gugu [CP na àbà pa-wI [CP na n yE ngUa]] yé e (= (5b))
 see you think NA Aba announced NA you saw them P Q
 "Do you think that Aba announced that you SAW them?"

In (12), the most deeply embedded verb *yE* "see" is clefted across two finite clauses (introduced by *na*), a situation which has never been reported for clitic-climbing.

What is interesting is that the long-distance predicate-clefting exemplified in (12) is possible only when the matrix verb is Vb. In Vata,

such verbs include *gugu* "think", *yla* "say", *nalla/O* "say", *pa-wl* "announce", and *kU-bo* "forget". Most of the verbs that take a finite clause complement don't allow long-distance predicate-clefting:

- (13) a. **ye kòfí ngúnguè [na n ye]*
 come Kofi whisper NA you come
 "Kofi whispered that you were COMING"
- b. **yE kòfí salE ngUá dUdUkU dí [na O yE mO yé]*
 see Kofi told them softly P NA he saw you P
 "Kofi told them softly that he SAW you"

Exactly the same bridge vs. non-bridge verb contrast is also found in Haitian, as Piou (1982) points out:

- (14) a. *se malad li kwè [CP yo di [CP li malad]]*
 it's sick he believe they say he sick
 "he believes that they say that he is SICK"
- b. **se reme mari ap jisote [CP u reme l]*
 it's love Mary asp murmur you love her
 "Mary murmured that you LOVE her"

With both *kwè* "believe" and *di* "say" being Vb's in Haitian, long-distance predicate-clefting is allowed in (14a). In contrast, it is ungrammatical when the matrix verb is not Vb, as in (14b).

To conclude, while both predicate-clefting and cliticization may take place out of the infinitival complement of a subject-control verb, they differ

in that the former must have a copy of the moved head in its original position and can have long-distance movement out of the infinitive complement of an object-control verb and the finite complement of a Vb. In the rest of this chapter, I will show that these differences can be explained in a way consistent with the analyses I have proposed in this thesis. In particular, I will assume that predicate-clefting is the movement of a verb from a T-position to a clause-initial non-T-position.

4.2. Koopman's (1984) Analysis of Predicate-clefting in Vata

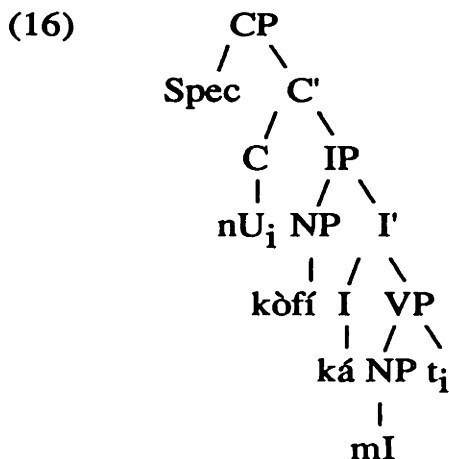
In Koopman's analysis, predicate-clefting is movement from a V position to a non-V position, which patterns with *wh*-movement from an A-position to a non-A-position. Thus her analysis and the one proposed in this thesis share the same basic idea. The difference between the two analyses is in how to implement this idea. (For the general differences between the two approaches toward V-movement, see Note 2 of Chapter 1.) In this section, I will briefly review three specific proposals Koopman makes in her analysis.

First consider the obligatory presence of the copy of a verb in the original position when it is clefted, which was already mentioned in the previous section. Koopman's explanation goes as follows: In clefting, the verb moves with one jump from its D-structure position to a clause-initial position (different from COMP, since Koopman argues that COMP is clause-final in Vata and Gbadi) from which it fails to govern its own trace:

- (15) nU_i [_{IP} kòfí ká [_{VP} mI t_i]]
do Kofi will it

With the trace (t_i in (15)) not antecedent-governed by the clefted verb, (15) violates the ECP. In order to save this construction, a resumptive verb is inserted where the trace is, since a resumptive verb is not a trace and by definition is not subject to the ECP.

While the basic idea of this explanation is plausible and therefore will be maintained in this thesis, more needs to be said about its implementation. In particular, we need to make sure that the verbal trace is indeed not antecedent-governed in the construction. To facilitate our discussions, I will call the X^0 position in which the clefted verb lands COMP. Koopman actually argues that COMP is head-final in Vata and that the landing-site for the clefted verb (and wh-phrase) is a position different from COMP. But this need not concern us at this moment. Now the structure for (15) can be represented as (16):



In order for Koopman's ECP analysis to work, the clefted verb nU must directly move to C. Should it first adjoin to I, t_i would be antecedent-

governed by the V-I cluster and we would wrongly predict the absence of the resumptive verb to be grammatical. To rule out (15), let us make the following assumption:

(17) Neither constituent in [I V I] can move out separately.

In other words, once V adjoins to I, they are not separable -- any movement necessarily affecting both. With (17), if the verb *nU* in (16) first adjoins to I on its way to C, further movement will necessarily involve the V-I cluster. We have established the fact in section 4.1 that C only accepts a verbal head. Since the V-I cluster is dominated by I, it cannot land in the C position. Thus, the clefted verb must not first adjoin to I, and its trace inevitably fails to be antecedent-governed.

(17) is meant to hold even when neither V nor I is an affix, as in (15). In other words, their inseparability doesn't result from morphological requirements. This is necessary because given our analysis of head-movement in this work, there is no way to prevent V from first adjoining to INFL. Since INFL in (15) is not an affix but a modal, V should otherwise be allowed to move away by itself instead of as part of the V-I cluster. One possible reason for this inseparability is that there is an intrinsic relation between V and Tense that takes the form of some affinity. Once the two adjoin, they cannot be separated. With the assumption that Tense is part of INFL, it is expected that the V-I cluster is bound whether there is a modal in the INFL position or not. Admittedly, this is only an informal speculation, and I have to leave the explanation of (17) to later study.

Koopman also notices two differences between predicate-clefting and wh-movement: Though the two processes display a parallelism with respect to long-distance movement out of an infinitive complement, the complement of a Vb, and a complex NP, they differ with movement out of a wh-island:

- (18) a. kO mOmO_i n nI-bO [CP zE_j à nyE-bO t_i t_j] yì
 man-def whom we neg-rel what we gave-rel know
 "the man to whom you don't know what we have given"
- b. *nyE à nI [CP zE_j à ka-bO kòfí t_j nyE] yì
 give we neg what we will-rel Kofi give know
 "we don't know what we will GIVE to Kofi"

Whereas a wh-phrase like *mOmO* may be extracted out of the clausal complement headed by another wh-phrase *zE* in (18a), a verb cannot be clefted in the same environment, as (18b) shows. The two processes are also not parallel when the matrix verb is not Vb:

- (19) a. àlO_i kòfí pE mI [CP na n yE t_i yé] la
 who Kofi shout P NA you saw P Q
 "who did Kofi shout that you saw?"
- b. *yE kòfí pE mI [CP na wa yE mO yé]
 see Kofi shout P NA they saw him P
 "Kofi shouted that they SAW him"

As in the case of wh-islands, the wh-phrase *àlO* in (19a) can move out of the finite clausal complement of the non-bridge verb *pE*, though long-

distance predicate-clefting is not permitted in (19b). To quote Koopman, "whereas all verbs seem to be 'bridge' verbs for wh-movement ..., not all verbs are bridge verbs for the predicate cleft constructions" (p.161).

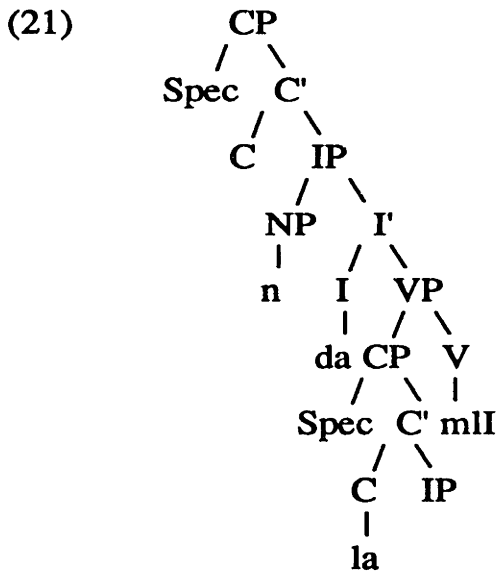
To explain these two differences, Koopman hypothesizes that for verb movement both S' (= CP in current terms) and S (= IP) are bounding nodes while for wh-movement only S' is a bounding node. With Subjacency defined in terms of bounding nodes in the framework Koopman assumes, the clefted verb in both (18b) and (19b) violates the Subjacency Condition on its way to the sentence-initial position since it has to cross at least two bounding nodes -- the embedded S' and the matrix S (because for Koopman the verb moves from the clause-initial position of the embedded S' to that of the matrix S' with a single step). In contrast, though the wh-phrase in (a) sentences also crosses the two nodes, only one of them (i.e. S') counts for the purpose of subjacency and therefore the sentences are grammatical. At the time when this analysis was given, it was sufficient to simply postulate that a node may change its bounding nature in different environments. Viewed in the framework on which the current thesis is based, however, two questions immediately arise. First, one naturally wonders why wh-movement and verb-movement have different bounding nodes. Secondly, if a verb may move locally from head to head, as assumed throughout this thesis, why can't it reach the matrix C with several steps, thus avoiding the Subjacency violation? These questions will be answered in the last section.

The third proposal in Koopman's analysis which I want to consider is her treatment of all clausal complements as S' instead of S (= IP). For her,

this creates no problem because the clefted verb moves from the embedded clause-initial position directly to the matrix one anyway. However, it has been shown, elsewhere and in this thesis, that a head cannot move this far with a single jump. In fact it cannot cross more than two maximal projections without yielding a Subjacency violation (cf. Chapter 3). To illustrate the problem, let us consider (5a) again, in which the verb of the infinitival complement is clefted to the beginning of the sentence:

- (20) la n da [CP yué-e la ka] mII a
 call you aux children-the call KA go Q
 "Have you gone to CALL the children?"

Assuming that the clefted verb first lands at C inside the embedded CP (and ignoring for the moment what *ka* is), let us consider how this verb in the embedded C can reach its final destination -- the matrix C. The relevant part of the intermediate tree structure is given in (21):



The embedded CP is not a barrier for the verb *la* under the embedded C because it is selected by V. However, VP is a barrier since its head V selects a maximal projection (i.e. CP) including the verb. And the matrix IP is also a barrier for the same reason. Thus *la* will have to cross two barriers to directly reach the matrix C, causing a Subjacency violation. It cannot first adjoin to the matrix V, because that will create chain [C, V, C] that is forbidden by BCC as defined in Chapter 1. Nor can it move over V and adjoin to the matrix I. Not only is the chain [C, I, C] ruled out by BCC, but the V-I cluster thus formed will also be illegitimate for clefting. Thus, if (21) were the structure for (20), we would predict the sentence to be ungrammatical. This problem generalizes to the other environment which allows long-distance predicate-clefting, i.e. the finite clausal complement of a Vb. If the finite clause is a CP, again we would predicate the ungrammaticality of long-distance predicate-clefting.

4.3. Predicate-clefting Reanalyzed

Let us summarize the problems we have had so far. We need to explain the following properties of predicate-clefting:

- (22) (i) it allows long-distance movement out of the infinitive complement of an object-control verb;
- (ii) it allows long-distance movement out of the finite clausal complement of a bridge verb;
- (iii) it cannot move a verb out of a wh-island;
- (iv) it cannot move a verb out of the finite clausal complement of a non-bridge verb.

The explanation for all these four properties directly depends on our answer to the question raised at the end of the previous section -- what is the structural environment which allows long-distance predicate-clefting?

4.3.1. Infinitives

As shown earlier, a Vata infinitive clause is introduced by *ka*, which always immediately follows the verb. There is only one reason in Koopman's analysis to treat *ka* as COMP not INFL. That is, INFL is head-initial in this language and COMP is head-final. Since *ka* linearly occurs at the very end of the infinitive clause, it cannot be INFL, which being head-initial should linearly precede everything inside VP. Thus *ka* can only be COMP. And if *ka* is COMP, then the infinitive clause has to be a CP. However, if the analysis of clitic-climbing in this work is on the right track, *ka* in Vata is unlikely to be COMP. Consider again the Gbadi examples given in (10), repeated below:

- (23) a. wa kUá;-bO [t_i pi kà] mI a
 they aux-cl-Q prepare KA leave Q
 "will they go prepare them?"
- b. pi wa kE-bO [zibia pi kà] mI a
 prepare they aux-Q fish prepare KA leave Q
 "will they go PREPARE fish?"

These examples show that clitic-climbing and predicate-clefting may take place in the same environment of infinitive complement introduced by *kà* in

Gbadi. Since a clitic can only move out of an IP (cf. section 3.3.2), at least *kà* in Gbadi cannot be COMP. This in turn puts doubt on Koopman's treatment of *ka* in Vata, because the two morphemes are otherwise exactly the same. Thus, we have a theory-internal argument for treating *kalkà* in Vata and Gbadi not as COMP and analysing the infinitive complement they introduce as IP.

There is also independent evidence in Vata that *ka* does not have to be analysed as COMP. Specifically, though Koopman argues that INFL is head-initial in Vata (and Gbadi) and therefore linearly precedes VP, Vata gerunds indicate that INFL is head-final. In Vata, gerunds are formed by attaching the suffix *-II* to the verb:

- (24) à wà [kòfí yé bátI-II]
 we like Kofi P observe-ger
 "we like observing Kofi"

Koopman notes that such a gerund is clausal. First, the prenominal marker *ná*, which occurs between the head N and other NP-internal phrases (see (25b)), cannot occur between the gerundive verb and its object (25a):

- (25) a. *à wà [kòfí ná yé bátI-II] (cf. (24))
 we like Kofi P observe-ger
 b. àmI jè ná yu'é-e
 me behind children-def
 "the children behind me"

The absence of *ná* in a gerund indicates that the verb remains verbal. Secondly, a gerund allows wh-movement out of it, like other clausal constructions. In contrast, nothing can be extracted out of a NP:

(26) a. yI_i n cè [t_i li-lì] kU lá

what you start eat-ger P Q

"what did you start eating?"

b. *àlO_i n yE [t_i fòto] yé lá

who you saw picture P Q

"who did you see a picture of?"

If gerunds are clausal, we expect the construction to have a non-finite INFL somewhere in it. In English, the gerundive suffix *-ing* has been argued to be generated under the INFL node (see, for instance, Reuland (1983), Baker (1985b), and Milsark (1988)). It is then natural to assume that the gerundive suffix *-ll* in Vata also represents the non-finite INFL of the gerundive construction. We know from (24) that the verb stays in its D-structure head-final position in a gerund. Since *-ll* is suffixed to the verb, we conclude that the gerundive INFL is head-final. Noting that gerundive INFL is non-finite, it seems plausible that the infinitive INFL is also head-final because it is non-finite, just like gerundive INFL. This in turn allows us to treat the particle *ka* in the infinitive clause as INFL. Put differently, if non-finite INFL is head-final, *ka* does not have to be COMP (even when COMP is indeed head-final in Vata).

However, the evidence for treating finite INFL as head-initial in Vata

is also very strong. As Koopman notes, depending on whether there is an auxiliary, a finite clause in Vata may have one of the two word-orders below:

(27) a. n li saká (SVO)

I eat-perf rice

"I ate rice"

b.wa la mO dlá (SAuxOV)

they aux him kill

"they have killed him"

That is, if there is an auxiliary, it occurs after the subject, with the verb following the object; otherwise, the verb occurs after the subject and in front of the object. This ordering, as Koopman points out, can be easily explained if VP is head-final while INFL precedes its complement VP. If INFL is occupied by an auxiliary, the verb remains in situ. Without the auxiliary, the verb moves to INFL under the assumption that the contents of INFL must be realized through a more "solid" lexical item.⁵ Should finite INFL be head-final, it would be very hard to account for the different word orders in (27).

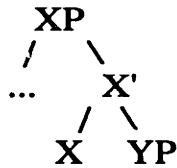
We already argued that non-finite INFL is head-final. Now we have evidence that finite INFL is head-initial. This distinction raises a theoretical question: Should a language allow the head-location of a single category to vary, and if yes, why? I will argue below that this variation is indeed allowed by UG as the result of the interaction between different principles

⁵ Koopman actually proposes that the verb moves to INFL because the subject of the sentence needs nominative Case and only a [+V] element in INFL can assign such a Case.

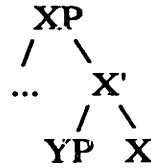
and parameter settings.⁶

Huang (1982) notes that in Chinese V and P are head-initial in their corresponding phrases while N is head-final, and gives them different X'-structures accordingly:⁷

(28) a. X = V, P



b. X = N



Travis (1984) points out that this descriptive difference in the choice of headedness within the lexical categories of a single language may be explained by assuming the head-initial/final parameter to be "a default specification of direction, i.e., if there is a constituent which does not fall within the domain of an already specified parameter, its placement is determined by the headedness parameter." (p. 55) Specifically, Travis proposes that the directionality of Case-assignment is also a parameter and that modern Chinese is head-final but has Case assigned to the right. Since

⁶ The following analysis results from a discussion with Howard Lasnik, who brought to my attention the work of Travis (1984).

⁷ According to Huang, Adjectives are also head-initial because they may optionally take an NP complement after them. I disagree with the data. For me, the following examples are bad:

- (i) *wo hen gaoping ta/tade chengjiu
I very happy him/his achievements
- (ii) *wo hen zihao ta/tade chengjiu
I very proud him/his achievements

But as far as I can see, this disagreement has no effect on my analysis below.

the headedness parameter is a default specification, the structure of a lexical projection first looks at the direction of Case-assignment to determine the location of the head. Verbs and prepositions are Case assigners, therefore the complement that requires Case must be generated to the right of the head. In this case, the setting of the headedness parameter never has a chance to affect the structure. In contrast, nouns don't assign Case, so the directionality of Case-assignment cannot determine the location of the head in an NP, and the head is generated in the final position accordingly.

Let us extend this analysis by assuming that whether certain structural Cases are assigned adjacently is also a parametric factor to be determined by specific languages. In particular, suppose that Nominative Case must be assigned adjacently in Vata and Bbadi (For the same assumption with English Nominative Case, see Pesetsky (1982)). Furthermore, suppose that the X'-structures of these two languages are head-final by default (Koopman (1984) argues that the phrases of all categories are head-final in these languages except IP) and that Case is assigned to the left, as Koopman shows. Following the reasoning in Travis' (1984) analysis of Chinese, the exact structure of IP in Vata should be determined by the headedness parameter only when the directionality and adjacency of Case-assignment have no effect on it. Hence the following two structures are predicted:



If INFL assigns Nominative Case to the left, (29a) is the only well-formed

structure because the assignment of Nominative Case requires adjacency, as we assumed. On the other hand, if INFL does not assign Case, neither adjacency nor directionality of Case-assignment is relevant, and the structure will be determined solely by the setting of the headedness parameter, yielding (29b) since Vata is head-final by default. As we can see by now, (29a) and (29b) precisely represent finite and infinitive IPs in this language-- in finite clauses INFL precedes VP while in non-finite clauses INFL follows VP.⁸

Having established that infinitive INFL is head-final in Vata, we may now safely assume *ka* to be this infinitive INFL and that the infinitive complement is not CP but IP. This partially solves the problem noted in section 4.2. That is, BCC as defined here prevents predicate-clefting from taking place across a CP. Consider (20) again, repeated in (30) below with

⁸ This analysis of the ordering between VP, INFL, and subject also allows us to incorporate the following data in Vata:

- (i) *kòfí nI saká pi-lì*
 Kofi NI rice prepare-gen
 "Kofi's preparing rice"

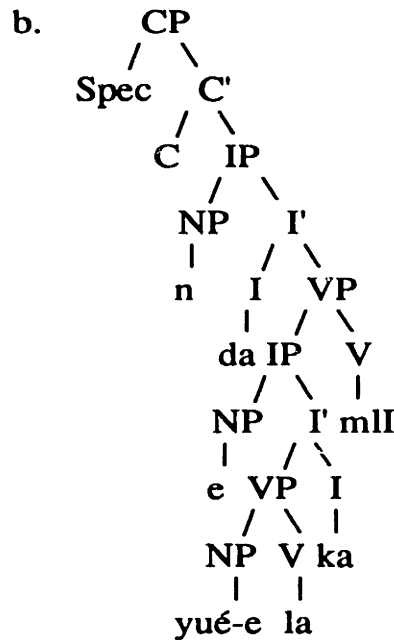
in which *kòfí* is the subject of the gerund and *nI* is the genitive marker necessarily comparing the subject (Koopman (1984), p.21). Since a gerund is a clause, the verb cannot possibly assign an inherent Genitive Case in the D-structure because it is not "nominalized" yet at this stage. So the Case must be assigned by the non-finite gerundive INFL as structural Case. However, assigning Genitive Case does not force the gerundive INFL to occur preverbally because Oblique Cases, as far as I know, usually do not require adjacency for assignment, as shown by many examples in Chapters 2 and 3 as well as the following English ones:

- (ii) Bruce gave a gift to Ellie
- (iii) John's cute little brother

In all these examples, phrases may occur between the assigner of some Oblique Case and the NP with Case. With adjacency not required for assignment Genitive Case in (i), the gerundive INFL is generated postverbally because Vata is head-final by default, as we assumed.

an IP complement instead of CP:

- (30) a. *la n da [IP yué-e la ka] mII a*
 call you aux children-the call KA go Q
 "Have you gone to CALL the children?"



As before, the embedded verb *la* cannot move to the lower INFL *ka* because the V-I cluster, once formed, must move along as a whole. But this V now may move across the embedded IP to adjoin to the matrix V and from there make another move over the matrix INFL to reach C. Each jump crosses only one barrier, as is permitted by the Subjacency Condition. The chain of this movement is [C, V, V], which is well-formed by BCC. Then any intermediate trace which fails to be properly governed will be deleted, using the mechanism proposed in Lasnik & Saito (1984). Thus we correctly predict that predicate-clefting out of an infinitive complement as in (30) is grammatical. Also recall from our analysis of Romance control/raising

constructions in Chapter 3 that the embedded subject in a sentence like (30) is governed by the embedded INFL and hence is a pro free in its governing category (i.e. embedded IP) and eventually controlled by the matrix subject, assuming the matrix verb *mll* "go" in (30a), like its Romance counterpart, is a control verb.

Now let us turn to property (22i) -- that long-distance predicate-clefting is allowed out of the infinitive complement of an object-control verb:

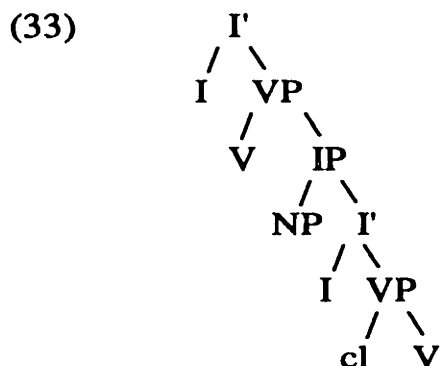
- (31) *pIà wa nI yU [zibià pIà kà] I Ib* (= (11c))
 buy they neg child fish-pl buy KA send
 "they haven't sent the child to BUY fish"

This contrasts remarkably with clitic-climbing, which never takes place in such an environment:

- (32) **wa nUá; yU [t; pIà kà] I Ib* (= (11b))
 they neg-cl child buy KA send
 "they haven't sent the child to buy it"

To see why (31) and (32) display this contrast in their acceptability, let us first review why (32) is bad. In Chapter 3, it was suggested that a couple of factors conspire to prevent clitic-climbing in a configuration like (32). The factors are (i) that clitics must "stop" at each INFL on its way up, (ii) that the relation between a clitic and INFL in such a construction is so close that once adjoined to INFL, the clitic can no longer move away separately, and (iii) that according to X'-theory only the traces of adjoined heads may be

deleted. The relevant part of the tree structure is (33):



As the result of these three factors, when the clitic adjoins to the embedded INFL, any further movement has to apply to the clitic-INFL cluster as a whole. If this cluster moves to the next adjacent head (i.e. matrix V), a chain of [V, I, ... N] will be created which violates BCC. On the other hand, the cluster cannot move across the matrix VP since that would leave their trace not antecedent-governed. If this trace were that of an adjoined head, it could be deleted before the ECP. Since it is the trace of INFL, its deletion is not allowed by the X'-theory. So any movement of the cluster in (33) will violate either BCC or the ECP. Returning to predicate-clefting, the clefted verb doesn't (in fact can't) adjoin to the embedded INFL. Instead, it crosses the embedded IP and adjoins to the matrix V, with its trace filled with a resumptive verb to escape the violation of the ECP (see section 4.2 above). Since no inseparable cluster is formed along the movement, it is expected that predicate-clefting can take place out of the infinitive complement of an object-control verb, provided the complement is IP, not CP.

4.3.2. Wh-Island

Property (22iii) of predicate-clefting, that no verb can be clefted out of a wh-island, contrasts with wh-movement in Vata, which extracts freely in the same environment. The examples in (18) are repeated below:

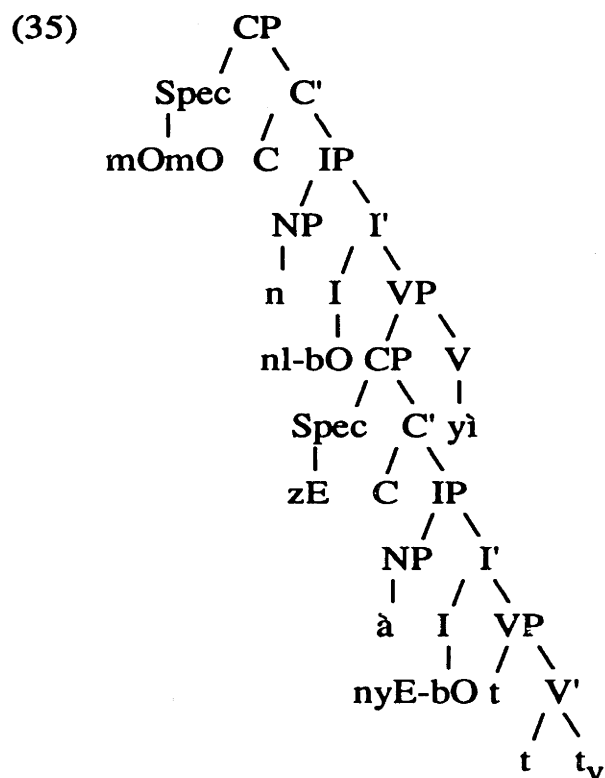
- (34) a. kO mOmO_i [IP n nI-bO [CP zE_j à nyE-bO t_i t_j] yì]
man-def whom you neg-rel what we gave-rel know
"the man to whom you don't know what we have given"
- b. *nyE [IP à nI [CP zE_j à ka-bO kòfí t_j nyE] yì]
give we neg what we will-rel Kofi give know
"we don't know what we will GIVE to Kofi"

As we know, Koopman handles this contrast by postulating that IP counts as a bounding node for V-movement but not for wh-movement. It is our task to explain why.

It is clear why (34b) is bad, where a verb is clefted out of a wh-island. The presence of a wh-phrase in the finite complement clause indicates that it is a CP. Since the embedded verb *nyE* "give" can't adjoin to INFL, it has to move to the embedded C as the first step, as we have assumed so far. It can't jump over both IP and CP because the movement would cross two barriers, causing a subjacency violation. Once the verb reached the embedded C, the next step is ungrammatical no matter where the landing site is: If it adjoins to the matrix verb, a chain of [V, C, V] will result which is not permitted by binding condition C; it can't adjoin to the matrix INFL for the same reason it can't to the embedded one; nor can it reach the matrix C with a single jump because that would cross the matrix VP and IP, both being

barriers for the verb in the position of the embedded C. In other words, there is no way for the clefted verb to move out of a wh-island without violating some general principle.

Next let us consider the relevant part of the structure for (34a), which involves extracting a wh-phrase out of a wh-island.



In (35) t_v stands for the trace of the embedded verb that moves to the lower INFL and the other two t 's for the traces of the two wh-phrases, their exact hierarchical locations in VP being irrelevant to this discussion. With the wh-phrase zE "what" in the Spec of the lower CP, the other wh-phrase $mOmO$ "whom" has to first adjoin to the embedded VP and then directly adjoin to the matrix VP. This movement crosses two maximal projections, embedded

IP and CP, but only CP counts as a barrier since the head of IP does not select any maximal projection which includes *mOmO* "whom", which is dominated only by one segment of the embedded VP. Thus this extraction actually crosses only one barrier. The trace adjoined to the lower VP can be deleted later to satisfy the ECP. Given our assumption throughout this work that 1-subjacency has no effect on the grammaticality of a sentence, we explain why a wh-island does not block the extraction of another wh-phrase (which is necessarily an argument).

This analysis raises one question: if extraction out of a wh-island is grammatical, why does it create marginal acceptability in languages like English:

(36) ?what do you wonder who bought?

It is worth pointing out that though (36) is clearly not perfect, it is not as bad as sentences involving movement crossing two barriers:

(37) *Which book_i did [_{IP} [_{CP} reading t_i] please Bruce?

In (37) the object of the subject clause, *which book*, first adjoins to VP so that the embedded IP does not count as a barrier but the embedded CP is one because its head C selects IP which includes the wh-phrase. The matrix IP also becomes a barrier between it and the Spec position of the matrix CP by inheritance. Since the wh-phrase must cross two barriers to reach its destination, the sentence is fairly bad. Compared with the 2-subjacency example (37), it is as if (36) has its acceptability from "1.5-subjacency". I

will not go into this complexity here. Instead, I will following the basic idea suggested in Chomsky (1986) by assuming that in some languages at least Tensed INFL counts as an inherent "weak" barrier for movement, though not for government (Also see Rizzi (1982) for discussion of parametrically treating IP or CP as "extra" barriers.) Thus (36) is worth a question mark because *what* has to cross the embedded CP, which is a barrier by the definition given in Chapter 1, and IP, a weak inherent barrier in English.

4.3.3. Non-Bridge Verbs

Knowing that predicate-clefting cannot take place across a wh-island, it should be expected that it can't do so across the finite clausal complement of a non-bridge verb either, given the well-accepted assumption that such a clause is also a CP. So property (iv) of (22) is also accounted for in our analysis of head-movement. Nor is there a problem with the non-existence of any island effect in this environment for wh-movement in Vata. If moving a wh-phrase out of a wh-island is grammatical in this language, precisely the same reason should allow wh-movement out of a finite non-wh CP, which has the same structure as an embedded wh-clause. What is not straightforward is why the finite complement of a non-bridge verb serves as an island for wh-movement in English (hereafter referred to as No-bridge Island):

(38) ?What did he murmur that Mary saw?

It was just suggested that in English the finite INFL is an inherent weak barrier for movement. Thus when the Spec of the embedded CP is occupied

by a wh-phrase, moving another one out of it crosses at least one structurally defined barrier (i.e. embedded CP) and one inherent weak barrier (i.e. embedded IP), which causes marginal acceptance. However, this explanation cannot be directly used to account for (38) because presumably the Spec of the embedded CP in this case is not occupied by anything. If this position is empty, the wh-phrase may first land there, crossing only one weak barrier IP. When it moves on to adjoin to the matrix VP, no barrier will be crossed since the embedded CP is selected and does not include any maximal projection that includes the wh-phrase.⁹ It is beyond the goal of this work to provide a detailed analysis of English non-bridge verbs. But I will postulate an account that is in general consistent with my analysis of predicate-clefting.¹⁰

Suppose it is not a coincidence that English has both wh-island and No-bridge island for XP extraction while Vata has neither. Then the same reason for wh-island should also be responsible for No-bridge island; i.e. the presence of IP as a weak barrier should participate in creating the island effect in a sentence like (38). To implement this idea, let us make the following assumptions:

⁹ As Chomsky points out to me (p.c.), the fact that the complementizer *that* cannot be deleted in (38) may also suggest that the clause is not the complement of the matrix verb *murmur*, but an adjunct of some sort. In this case, (38) will be expected to be bad because extraction out of an adjunct always leads to violation of the Subjacency Condition.

¹⁰ Howard Lasnik informs me that a very similar account for bridge/non-bridge verbs is proposed in R. Tredewar's (1989) University of Connecticut dissertation.

- (39) The phrase in the Spec position of CP must agree with the head of CP, i.e. C, in all features.
- (40) The complementizer of a non-wh clause has a set of features F that distinguishes it from that of a wh-clause.
- (41) Adjunction is possible only to a non-argument.

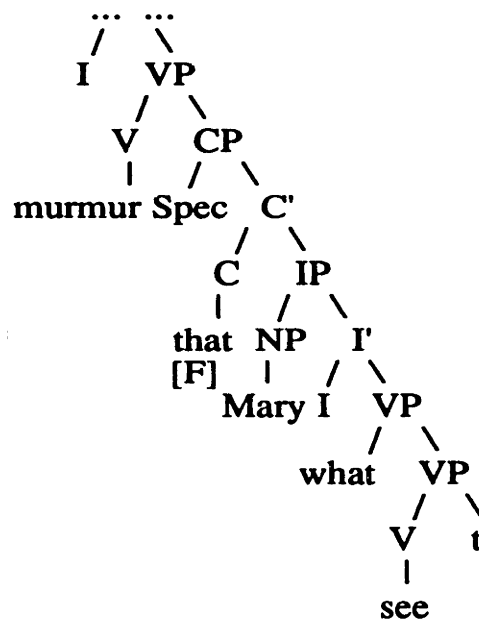
(39) is an instance of a more general assumption widely held in the current Government-Binding framework; namely that the Spec and the X⁰-head of a maximal projection must agree with each other in their features. One clear example is the feature agreement between subject and INFL. The validity of (40) is obvious both intuitively and theoretically -- to the extent that a verb selects whether its complement is a wh-clause or not, the complementizers of the two types of clauses must be different. Otherwise how can the verb make a distinction between two CPs?¹¹ (41) is quoted from Chomsky (1986, p.6) with a modification to incorporate adjunction to heads. See the original work for an attempt to derive (41) from theta-theory.¹²

Now consider (38) again, with part of its structure given in (42):

¹¹ See Grimshaw (1979) for discussing the selectional properties of verbs with respect to declarative and interrogative complements.

¹² As Chomsky points out (following Probal Dasgupta), it is necessary to distinguish adjunction formed by movement and adjunction in small-clause constructions. This distinction turns out important in my analysis, because VP small clauses as arguments play a crucial role in this work.

(42)



The *wh*-phrase *what* first adjoins to the embedded VP, a legitimate step. In this position, IP again does not count as a structurally defined barrier because its head does not select a maximal projection including *what*. But it is an inherent weak barrier, as we assumed earlier. In addition, *what* being a *wh*-phrase cannot land in the Spec of CP because by (39) anything in that position must agree with C in its features but by (40) a *wh*-phrase cannot have the same features (or feature values) as a non-*wh* complementizer. If it had, it wouldn't be able to agree with a *wh*-complementizer. Thus, *what* must land somewhere farther than the Spec of CP. Since CP is an argument, (41) prevents *what* from adjoining to CP. So the "closest" landing site available to *what* is the position created by adjoining to the matrix VP. As in the case of *wh*-island, this step is too big because the embedded CP now will count as a barrier, which plus the inherent barrier IP will make the construction marginal. In contrast, with IP not an inherent barrier in Vata, a *wh*-phrase crosses only one barrier (i.e. CP) from the adjunct position of the

lower VP to that of the higher VP, and the construction is expected to be well-formed.

4.3.4. Bridge Verbs

The last property of predicate-clefting to be considered is the grammatical movement of the verb out of a finite clausal complement of a Vb. Again let us start by re-examining the examples:

(43) a. Vata

yE n gugu [CP na àbà pa-wI [CP na n yE ngUa]] yé e
see you think NA Aba announced NA you saw them P Q
"do you think that Aba announced that you SAW them?"

b. Haitian

se ale li di [CP li vle [CP pu za ale avè l]]
it's go he say he want PU Jean go with him
"he says that he wants that Jean go with him"

Notice that in both examples, the finite clausal complements (optionally) contain some COMP-like element -- *na* in Vata and *pu* in Haitian. For the purpose of this work, they can indeed be treated as COMPs which introduce finite clauses. For complications, see Koopman (1984) on Vata and Piou (1982), Koopman & Lefebvre (1982) on Haitian.¹³

¹³ Koopman (1984) argues that *na* in Vata is actually a verb which selects a finite clausal complement and whose projection is selected by the matrix verb of the sentence (p. 94ff). The evidence for treating *na* as V includes its homophony with the verb *na/la/lo* "say", its restriction on the clausal complement (both *na* and the verb meaning "say" must take a "bare" finite clause without overt complementizer), and the independent evidence that it takes a CP complement:

The question which immediately arises is the following: In the previous sections, it was argued that a verb cannot be clefted out of a CP complement without violating some general linguistic principle. If that is the correct analysis of predicate-clefting in the environment of No-bridge island, why is it that the same V-movement is allowed in (43), which also involve CPs as complements? The answer to this question, I argue, lies in an

-
- (i) O ylá na [mlE n mlE]
 s/he say NA leave you leave
 "s/he says that you LEFT"

If a predicate-cleft construction is a CP, then *na* must be different from COMP, which presumably is filled by the clefted verb. In Koopman & Sportiche (1989), the analysis of some COMP-like element as V is "regularized" based on Abe, in the sense that this V now heads a VP which is the predicate of a clause selected by the matrix verb:

- (ii) yapi hE api [CP [VP kO [CP n kolo O]]]
 Yapi told Api KO he love her
 "Yapi told Api that he loves her"

where the subject of *kO* is an empty category. The evidence for this analysis comes from the possibility of landing the clefted verb *kolo* "love" either immediately following *kO* or preceding it:

- (iii) a. yapi hE api kolo-O kO n kolo P
 Yapi told Api love-Top KO he love her
 b. yapi hE api kO kolo-O n kolo P
 Yapi told Api KO love-Top he love her

Like in Vata, *kO* is homophonous with the verb meaning "say" in Abe. And following the same reasoning as in Vata, since the clefted verb may land after *kO*, it must take a CP complement. In addition, since the clefted verb may also land before *kO* but after every other constituent in the matrix clause, there must be a C node somewhere between it and the matrix verb. Hence the analysis in (ii) above. Both analyses of Vata and Abe have merits and problems. Whichever analysis turns out to be right can be adapted to my analysis here. So I will ignore these complexities and treat *na* in Vata as COMP itself. As for Haitian, it is more or less agreed that *pu* is COMP when used to introduce a finite clause. Koopman & Lefebvre (1982) and Koopman (p.c) believe that there is a close relation between the complementizer *pu* and the modal *pu*. But this need not concern us here.

assumption made in Chapter 1, repeated below:

(44) A bridge verb may take a tensed clause as complement which is not a CP.

We showed that this assumption helps explain an apparent counterexample to my analysis of verb incorporation; i.e. two bridge verbs in Greenlandic Eskimo not only trigger VI, but also allow the embedded Tense morpheme to occur in the compound formed through VI. In the rest of this section, I will show that (44) also helps account for the well-formedness of predicate-clefting out of the finite complement of a bridge verb.

When a Vb is in the "mode" of taking a non-CP finite complement, one of two things may happen: Either it takes a clausal complement which is by nature not a CP (e.g. a VP as in Eskimo, or an IP as will be discussed below), or it takes a CP construction but somehow changes the categorial nature of COMP -- i.e. to make it \neq COMP. Both alternatives are attested.

Starting with the first alternative, we note that Eskimo offers an example for a Vb taking a VP complement. As for taking an IP, the following English sentence may serve as an instance:

(45) I think [Bill saw John]

In Chomsky (1981), it is suggested that (45) is a result of S' deletion, which corresponds to taking a bare IP complement in the current framework.¹⁴ It

¹⁴ Chomsky actually suggests that S' first becomes S so that the clausal

is worth pointing out that the embedded finite INFL is both a head-governor and a Case-assigner, so that the matrix verb *think* can neither govern nor assign Case to the embedded subject *Bill* and therefore that (45) is not a possible ECM construction. Notice how naturally this analysis explains the extraction of the embedded subject in the following sentence:

(46) Who do you [_{VP} t' [_{VP} think [_{IP} t saw John]]

Since IP is selected by the matrix verb *think*, it is not a structurally defined barrier for the subject *who*. Thus the wh-phrase may adjoin to the matrix VP, leaving a trace *t*. *t* is properly governed by *who* (or its trace) because by assumption IP as an inherent barrier is only relevant for movement. The Haitian example in (43b) provides another case of a Vb taking an IP complement:

(47) se ale li di [_{IP} li vle [_{CP} pu za ale avè l]]

it's go he say he want PU Jean go with him

"he says he wants that Jean GO with him"

With no overt COMP observed in the first clausal complement from the left, we may treat it as a bare IP selected by the matrix Vb *di* "say". Assuming the clefted verb can adjoin to the second higher verb *vle* "want", it only need to jump over one barrier (i.e. IP) to reach the matrix verb *di*. So the sentence is expected to be grammatical.

structure is ... [_S [_S ...]] Then the two adjacent S nodes "merge" into one according to a proposal in Lasnik & Kupin (1977).

Next consider the second alternative a Vb has: To change the categorial nature of C which heads the CP complement. Let us make the following assumption:

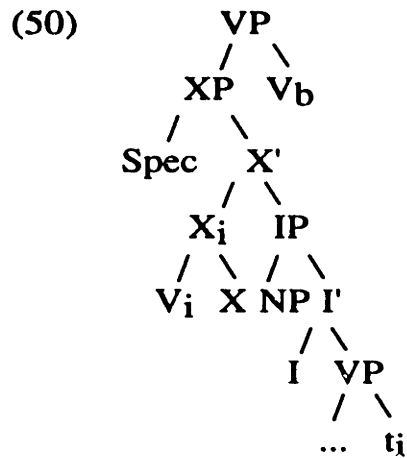
(48) A bridge verb may deprive the head of its complement CP of all its features.

In other words, the head of the CP in such an environment loses all its features and in essence becomes a semantically empty "slot filler". In the discussions below, I will mark such a C as X. Now the structure of a sentence with a Vb will be like (49):

(49) ... V_b [X_P Spec [X' X IP]]

X_P satisfies the requirement of the V_b to take a non-CP complement because it does not have any feature, let alone the categorial feature(s) to identify a node as COMP. It is important to note that X in (49) does not stand for an empty position to be filled by any head and thereby has its category determined, since, as the Haitian example (47) shows, the position is already taken by a phonologically non-empty *pu*. In other words, any head-movement to X is adjunction, NOT substitution.

Now we are ready to explain why predicate-clefting may take place out of the finite complement of a Vb. Below is the relevant part of the tree structure for this construction:



From the D-structure position t_i to the adjunct position under X_i , the verb crosses only one barrier, thus observing the Subjacency Condition, with the trace filled by a resumptive verb later to avoid the ECP violation). If X were C, the verb could not move any further (recall why predicate-clefting is bad out of a No-bridge island). This is so because V adjoins to C and therefore the V-C cluster is dominated by a C node, which represents a T'-position. However, V doesn't adjoin to C in (50); it adjoins to X, which does not have any categorial feature. By the rules of feature percolation in a compound as proposed in Di Sciullo & Williams (1987), the categorial feature(s) of V should be percolated to the node immediately dominating it because X doesn't have any. Thus, the node immediately dominating V and the original X, marked X_i in (50), should be V_i . Since V is a position from which a theta-role can be potentially assigned, V_i counts as a T-position. From this position, the clefted V may move to the matrix V position in (50), then move across the matrix IP, and finally land at the matrix C. No section of this movement crosses more than one barrier, and the chain is [C, V, V, V], compatible with BCC. Therefore, predicate-clefting is correctly permitted. Crucially, the chain thus formed differs from the

corresponding chain if the matrix verb is not Vb and the embedded C is not coerced into X. In that case, the chain would be [C, V, C, V], violating binding condition C.

Now consider wh-movement out of XP, starting with the embedded object:

(51) who do you think [_{XP} that [_{IP} Bruce will visit t]]

In (51), the embedded object *who* first adjoins the embedded VP to antecedent-govern its original trace *t*. According to (48), the complementizer *that* may be deprived of all its features when the matrix verb is Vb, as in (51). Since it is now featureless, it cannot require any specific feature(s) of the constituent in the Spec position of XP. We may interpret this to mean that any phrase is allowed in that position, including a wh-phrase. Hence *who* in (51) may move from the VP-adjunct position to the Spec of XP, crossing only a weak inherent barrier IP, and the sentence is ruled grammatical. Next consider extraction of the embedded subject:

(52) *who do you think [_{XP} that [_{IP} t will visit Bruce]]

Given our analysis of (51), the ungrammaticality of (52) is unexpected because *who* as embedded subject may directly move to the Spec of XP and antecedent-govern its trace *t*. To rule out (52), we may adopt the proposal made in Rizzi (1989), with the definition of *proper head-government* slightly modified for our purpose:

(53) ECP

A trace must be antecedent-governed and properly head-governed.

(54) α properly head-governs β iff

- (i) α is a categorially non-empty head,
- (ii) α c-commands β , and
- (iii) there is no barrier between α and β .¹⁵

(For numerous arguments in favor of this definition of the ECP, see chapters 2 and 3 of Rizzi (1989).) Now (52) is ruled out because the trace of the embedded subject is antecedent-governed but not properly head-governed -- the embedded INFL cannot properly head-govern the trace for lack of c-command; and the embedded COMP is coerced into a featureless head and therefore is categorially empty. It follows that (52) is a violation of the ECP as defined in (53) even when the embedded subject first moves into the Spec of XP. In contrast, extraction of the embedded object in (51) remains grammatical because the original trace is properly head-governed by the embedded verb. Similarly, extraction of subject out of an IP complement is allowed. Example (46) is repeated below:

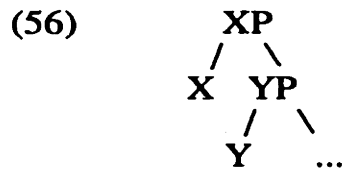
(55) Who do you [_{VP} t' [_{VP} think [_{IP} t saw John]]

Though the trace *t* is not properly head-governed by the embedded INFL, it is properly head-governed by the matrix verb *think*, which c-commands the

¹⁵ Rizzi actually achieves the effect of clause (i) by excluding C from candidates for head-governors. Also, I have dropped the condition for Relativized Minimality simply because it plays no role in the following discussion.

trace so that IP, being selected, is not barrier in between.

Notice that our analysis of head-movement is not affected by the new definition of the ECP. Consider the abstract structure below:

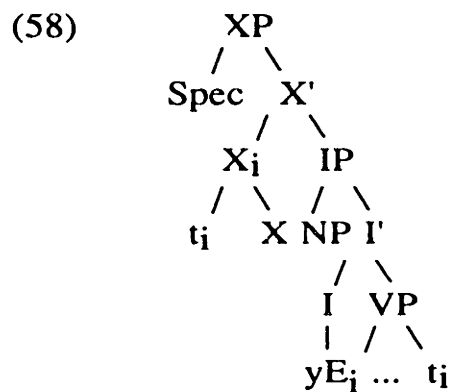


Assuming that Y is a T-position (since all head-movements in this work start in a T-position), then whether X is categorially empty or not, moving Y to X results in a categorially non-empty head which c-commands the trace of Y. Since YP is selected by X, it is not a barrier between X and Y, so Y (more precisely the node immediately dominating Y and X which is adjoined to Y) properly head-governs the trace of X. Since the two are coindexed once X adjoins to Y, there is also antecedent-government, satisfying the ECP. Situations may arise where some intermediate trace is not both antecedent-governed and properly head-governed, but such a trace can always be deleted to avoid an ECP violation. In conclusion, the analysis of head-movement remains valid under the new definition of the ECP in (53).

Before ending this subsection, I would like to point out that my analysis of predicate-clefting as proposed in this chapter imposes a specific implementation on the mechanism of resumptive verbs and its relation with trace. Part of the Vata example in (43) is repeated below, with CP now replaced by XP:

- (57) *yE ... àbà pa-wI [XP na n yE ngUa] ...*
 see ... Aba announced NA you saw them ...
 "... Aba announced that you SAW them ..."

Recall that the finite INFL in Vata is head-initial and that the verb moves to INFL if the latter is not occupied by a modal. When no predicate-clefting takes place, no problem arises. But consider the embedded clause in (57), in which what occurs in the position of INFL is not the original verb but the resumptive. A plausible analysis is that the resumptive verb first replaces the trace in the D-structure position of the clefted verb. Then whatever triggers V-to-INFL movement in "normal" situations makes the resumptive verb move to INFL in (57). Now suppose that the resumptive verb carries the same index as the trace it replaces, then the embedded CP in (57) should have the structure (58):



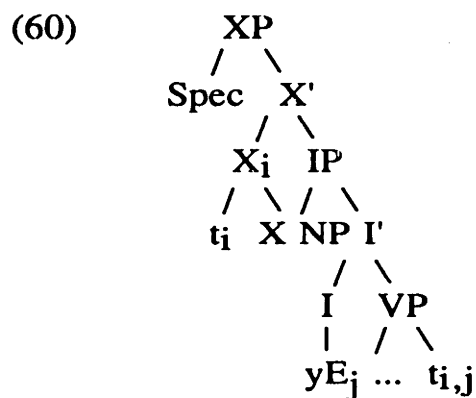
Once the resumptive verb *yE* "see" moves to INFL, it leaves a trace behind, which bears the same index as the resumptive verb and hence as the clefted verb. Also remember that on its way up, the clefted verb must adjoin to some V node. In fact, given our analysis in this section, X_i is actually V_i . It

follows that even within the most embedded clause there is a chain [V, I, V] after the resumptive verb moves to INFL. By binding condition C, this chain should be ruled out, though obviously we want the whole construction to be grammatical.

This problem can be solved with the following assumption:

(59) A resumptive does not inherit the index of the trace it fills in.

The intuition behind (59) is to treat a trace as an empty position and a resumptive as a filler for that position. The index is a property of the position, not one of the filler. When the filler moves out of the position, an index is assigned to both; otherwise the filler doesn't have any index. With (59), when the resumptive verb moves to INFL, it does not necessarily take the same index as the clefted verb, though there is a new index assigned to it and the position re-emptied from its movement. The structure can be represented as in (60):

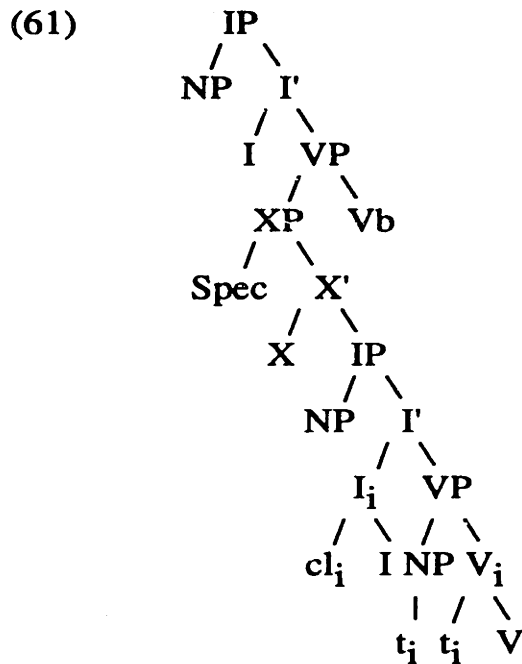


In other words, instead of one offending chain as in (58), two chains are created, one of them being the original [... V, V] and the other [I, V], and

both are well-formed.

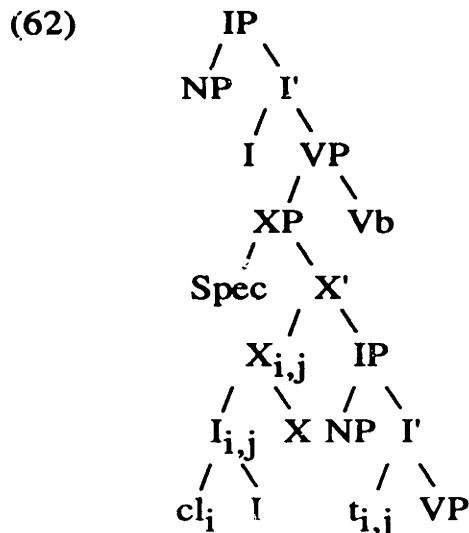
4.3.5. Clitic-Climbing

Given my analysis of bridge verbs in the previous section, it is necessary to see how long-distance clitic-climbing in such an environment can be ruled out. A typical structure with an XP complement is like (61):



Assuming the clitic must first adjoin to the embedded finite INFL, the next step would be to move the cl-INFL cluster together. Since this leaves a trace in the position of I, the trace cannot be deleted because deleting the trace of a head will leave the whole projection headless and hence is not allowed by X'-theory. It follows that the cl-INFL cluster can only move to the next higher head, i.e. the embedded X in (61), in order to antecedent-govern and properly head-govern the trace left in the position of the embedded INFL. In addition, since what is moved is the INFL node, the move starts a new chain

with its own index. This step creates the following structure:



where the index i comes with the chain started at the original position of the clitic and j is for the chain with embedded INFL as the origin. As assumed earlier, $X_{i,j}$ actually has the category of INFL because X itself is categorially unspecified. Thus the chain so far is [I, I, V, N] (see (60) for the "earlier history" of the chain), which prevents the cl-INFL cluster from adjoining to the matrix V as the next step since that would create [V, I, I, V, N], violating BCC. So the cluster must move to the matrix INFL by crossing the matrix VP. This step is fine with respect to the Subjacency Condition, but yields an ECP violation since the intermediate trace of the cl-INFL cluster under $X_{i,j}$ is not antecedent-governed by the matrix INFL (i.e. there is one barrier -- VP -- between the two). Recall that the γ -feature is given at S-structure only to the traces of those elements generated in T-positions (see definition (11) of Chapter 3, which is an expansion of the trace-deletion mechanism in Lasnik & Saito (1984)). As a result, only intermediate traces of a "T-element" can be deleted at S-

structure, while those of a T'-element must be kept to assign the γ -feature at LF. Returning to (62), the intermediate trace of the cl-INFL cluster, dominated by $X_{i,j}$, cannot be deleted precisely because it serves not only as an intermediate trace for the clitic chain, but also as one for the INFL chain, and INFL does not represent a T-position. It follows that this trace is not properly governed but cannot be deleted, with the result that the whole construction is ruled out by the ECP. Essentially the same reason also rules out clitic-climbing out of a finite IP complement under the assumption that the clitic must adjoin to the embedded INFL which, being finite, is never a dummy INFL. See Chapter 3 for detailed analysis. We thus conclude that clitic-climbing is not allowed out of the finite complement of a bridge verb.

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