On the Exceptional Case Marking Constructions within the Minimalist Framework

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이 논문을 문학석사 학위논문으로 제출함

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On the Exceptional Case Marking Constructions within the Minimalist Framework

by
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국문초록

최소주의 이론의 목적은 오직 최소의 가정을 상정하여 언어이론을 구축하는 것이다. 이런 연유에서 연산 체계(computational system)의 설계는 규정적이지 않아야 하고 언어 조건들은 개념적 필연성(conceptual necessity)을 만족하여야 한다. 따라서 연산 체계의 복잡성이나 비 대칭적인 결과를 야기시키는 원리나 조건들은 최소주의 체계 하에서는 배제되어야 한다.

Chomsky (1995)는 부사구가 예외적 격-표시(ECM) 구문에서 주절 작용역(matrix scope)을 갖는다고 제안한다. 그렇다면, 부정사절 내에서는 부사구가 존재할 수 없다. 게다가 그의 가정은 대격 점검이 오직 LF에서만 만족된다고 한다. 그러나 부사구가 경동사(*v*)와 부정사절 주어 사이에 위치한다면 자질 점검이 불가능하게 된다. 대격 점검을 오직 LF에 국한된 현상으로서만 가정한다면 외현적 통사부(overt syntax)에서 적용되는 하위 인접 조건(Adjacency Condition)의 존재를 정당화할 수 없다. 이에 대하여 Chomsky (1995: Ch.4, ft 104)의 가정을 보면 명백하지는 않더라도 부사구는 [AGR, V]의 복합체가 유인할 수 있는 자질을 지니는 것이 가능하다고 하였다. 그러나 이것은 최소주의 가설에 완전히 부합될 수 없다.

본고에서는 어순(word order)과 목적어의 외현적 이동에 초점을 두어 접근하고자 하며 언급된 문제에 대한 해결책으로서 대안을 제시할 것이다. 먼저, 이 현상의 설명을 위해 Koizumi (1995)는 영어의 목적어 명사구(DP) 이동을 외현적 통사현상으로 논의하였고 예외적 격-표시(ECM) 구문의 주어도 S-구조 전에 외현적으로 이동한다고 본다. 그러나 Chomsky (1995)는 AGR이 비 해석성 자질로 구성되어있기 때문에 AGR 투사 전체를 제거한다. 이와는 다르게 우리의 가정은 예외적 격-표시 구문에서 내포된 주어를 [Spec, V]

로 외현적으로 이동하는 것이다. 이런 대안이 문제에 대한 해결책을 제공할 것이다.

On the Exceptional Case Marking Construction
within the Minimalist Framework

Abstract

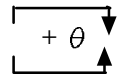
The aim of the minimalist program establishes a linguistic theory by postulating only minimalist assumptions. For this reason, the design of computational system should not be stipulative and the linguistic conditions should satisfy the conceptual necessity. Thus, the principles or conditions of the linguistic theory causing computational complexity or producing asymmetric results should be dispensed with under the minimalist framework.

Chomsky (1995) proposes that the adverbial may have matrix scope in the ECM construction. If so, it is not within the infinitival clauses. Additionally, he assumes that LF is the only configuration at which accusative Case checking is satisfied. But if the adverbial intervenes between *v* and the infinitival subject it makes the feature-checking impossible. If we suppose that accusative Case checking occurs only in the LF component, it is hard to justify the existence of an Adjacency Condition which is supposed to be applied at overt syntax. To solve the problem, Chomsky (1995) assumes in his foot note that the adverb will be relevant only if it has feature that [AGR, V] complex can attract, which is plausible though not obvious. But it does not completely meet the minimalist assumptions.

In this thesis, we explore this problem, focusing on overt raising of object and the word order. We will propose an alternative view that resolves the problems mentioned above. To explain this phenomenon, Koizumi (1995) argues that object DPs in English raise in the overt syntax. And he argues that the ECM subject raises overtly before S-structure. However, Chomsky (1995) eliminates AGR projections entirely since AGR does not have any interpretable features. In stead of it, we may overtly raise the embedded subject to the [Spec, V] in ECM constructions. This alternative approach also provides an answer to the question.

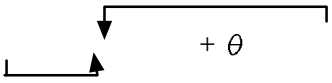
Chapter I. Introduction

Pesetsky (1989) defines ECM as follows: ECM stands for "Exceptional Case Marking", a term which refers to Case-marking across a clause boundary. The reason for being called ECM also lies in the fact that the subject of an embedded clause with [-Tense] receives Case from the matrix verb though it is θ-marked by the predicate in the subordinate clause. For example, in the sentence like *I believe* [*him to be honest*], *him* gets Case from *believe* but is θ-marked by *be honest*:



(1) a. I believe him.

+ Case



b. I believe him$_i$ [$_{IP}$ t$_i$ to [$_{VP}$ be honest]].

+ Case

The ECM constructions has drawn a different attention from researchers. Due to the syntactic behaviors as a result object in passive, *him* in (1b) has been treated as the object of *believe* after raising to the matrix (Postal 1974); due to the grammatical function as subject, it has been treated as the real subject of the embedded infinitive (Chomsky 1981).

Chomsky (1995) suggests that the ECM subject raises to the Spec of

the matrix *v* for feature checking at LF. But if the adverbial intervenes between *v* and the infinitival subject it makes the feature-checking impossible. Let us see the following example.

(2) a. *I've believed for a long time now *John* to be a liar

b. I've believed *John* for a long time now t_i to be a liar

In Chomsky's (1995) framework, since the ECM subject has a Spec position of the infinitive it cannot explain the grammaticality of (2b). To explain this phenomenon, Koizumi (1993) argues that object DPs in English raise in the overt syntax. He also argues that the ECM subject raises overtly before S-structure.

In this thesis, we explore this problem, focusing overt raising of object and the word order. We will propose an alternative view that resolves the problems mentioned above. This alternative approach also provides an answer to the question.

This thesis is organized as follows: In Chapter II, we briefly sketch out the theoretic framework of the minimalist program proposed by Chomsky (1995). In chapter III, we will see the various point of view about the status of the ECM subject. And we will discuss that the ECM subject and the main verb in English move overtly to the matrix one. Chapter IV provides an alternative approach to the problem, adopting Chomsky (1998). Finally, some concluding remarks are presented in Chapter V.

Chapter II. Theoretical Framework

2.1 Introduction

In recent years, most inquiries into generative grammar have pursued the hypothesis that UG is a simple theory with fundamental principles. Under this view, a language is not a rule system but a system of universal principles. Language-specific rules are eliminated and deduced by the invariant principles of UG. In this chapter, we will see a layout of the minimalist assumptions which are necessary for the discussion of the following chapters.

2.2 The Grammatical Framework of the Minimalist Program

The leading idea of the MP is that linguistic principles should be formulated only in terms of conceptual necessity. This requires that the theory should only refer to notions indispensable for the linguistic theory. The design of language is therefore "economical" and language is surprisingly "perfect" in this sense.

2.2.1 Numeration (N)

A linguistic expression (π, λ) must not only satisfy "bare output condition" (BOCs) at PF and LF, but meet the requirement of compatibility[1)]. To meet the compatibility of π and λ, π and λ should

1) Chomsky (1995: 228) mentions that a perfect language should meet the condition of

be based on the same lexical choice. Hence, the computation C_{HL} forming a linguistic expression (π, λ) is regarded as mapping some array of lexical items chosen from the lexicon to the linguistic expression (π, λ).

Chomsky (1995: 225) calls such an array a numeration N: a set of pairs (LI, i), where LI is a lexical item and i is its index, understood to be the number of times that LI is selected. LI is accessed to a computational system by the operation Select:[2)]

(1) Select

Select is an operation of C_{HL} that selects a lexical item LI from the numeration reducing its index by 1, and introduces it into the derivation as SO_{n+1} (Chomsky 1995: 226)

If all indices of lexical items in a given numeration are not reduced to zero, no derivation is generated. So no question of convergence and economy arises.

A linguistic expression (π, λ) generated by operations of a computational system must meet the condition of Inclusiveness:

(2) Inclusiveness Condition

Outputs consist of nothing beyond properties of items of the

---

inclusiveness.

2. Collins (1997) claims that it is not necessary for a numeration N to exist. See Collins(1997) for more detailed discussion.

> lexicon (lexical features); in other words, the interface levels consist of nothing more than arrangements of lexical features. (Chomsky 1995: 225)

Hence, a computational system generating a pair of linguistic expression (π, λ) applies only to the elements already present in the numeration.[3)]

2.2.2 Operations of the Computational System

The computational system C_{HL} is a unique and optimal system existing in human mind/brain. C_{HL} derives a linguistic expression (π, λ) using elementary operations such as Select, Merge, Move and Delete. We will discuss these elementary operations of the computational system.

Given the numeration, an LI is accessed to a computational system by the operation Select. Select pulls out LI from the numeration until its index is reduced to zero, and makes this lexical item available for further operations of the computational system.

A derivation is a sequence S of symbolic elements (δ_1, δ_2, $\cdots$, δ_n) mapped from a numeration such that δ_n is a pair

---

3 Chomsky (1995) further proposes that the reference set to compare derivations for the purposes of economy should be based on the same initial numeration. If so, the two sentences in (i) do not compete with each other since they are not constructed from the same numeration.

(i) a. There is a man in the room
b. A man is in the room.

(π, λ). Given the numeration, the operation of C_{HL} recursively constructs a syntactic object from items in the numeration and syntactic objects already formed. At the LF interface, a syntactic object Σ can be interpreted only if it consists of a single syntactic object. Then, C_{HL} must include a second procedure that combines syntactic objects. Chomsky calls this operation Merge.

(3) Merge

Merge is an operation of C_{HL} that takes a pair of syntactic objects (SO_i, SO_j) and replaces them by a new combined syntactic object SO_{ij}. (Chomsky 1995: 226)

For instance, suppose that a derivation has reached a stage $\Sigma = \{\alpha, \beta, \delta_i, \cdots, \delta_n\}$. The application of Merge that forms γ from α and β converts Σ to $\Sigma' = \{\gamma, \delta_i, \cdots, \delta_n\}$. At any point in a derivation, we may apply Spell-Out, which strips away the elements relevant to PF:

(4) Spell - Out

Spell-Out strips away from Σ those elements relevant only to π, leaving the residue Σ_L, which is mapped to λ by operations of the kind used to from Σ. Σ itself is then mapped to π by operations unlike those of the N $\rightarrow$ λ computation.

(Chomsky 1995: 229)

After Spell-Out, the computation continues, leading to LF. The parts of the computational system that are only relevant to PF are the PF component. The parts of the computational system that are only relevant to LF are the covert component. The parts of the computational system that are relevant to both PF and LF are the overt component.

C_{HL} incorporates a third operation called Move.[4] This operation is needed to account for the displacement property of human languages. In the minimalist framework, this property is assumed to be triggered by the morphologically driven movement. Hence, a core property of C_{HL} is feature-checking: the operation that drives movement under the condition of Last Resort:

(5) Last Resort

Movement of α targeting K is permitted only if the operation is morphologically driven, by the need to check some feature.

(Chomsky 1995: 226)

In addition, there is an operation called Delete:

(6) Delete

Delete is an operation that marks some objects as "invisible at the interface." (Chomsky 1995: 228)

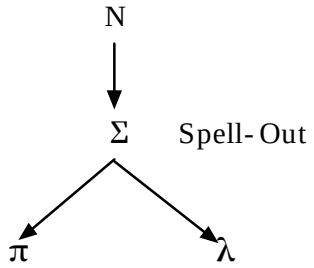
Though deleted objects are invisible at the interface, they are still

4. The definition of Move will be given in 2.5.1.

accessible within C_{HL}. Unlike Select and Merge, Move and Delete apply only when they are required for convergence; otherwise, they do not apply.

At some point in the derivation, the operation Spell-Out applies to the structure Σ and strips away those elements relevant only to π. And the leaved structure is mapped to λ. The model of human language computation is represented as in (7):

(7)



The subsystem of C_{HL} that maps Σ to π is called the phonological component. We call the computation from Σ to λ the covert component, and the pre-Spell-Out computation the overt component.[5)]

Chomsky (1993, 1994, 1995) assumes that formal features of a nonsubstantive category can be either "strong" or "weak".[6)] When α with a strong feature F is introduced at a certain step of derivation, it forces movement before a larger syntactic object. Therefore, only strong features

5. In this model, there is no interaction between π and λ.
6. Most lexical items in a lexicon consist of two kinds: one is a "substantive" category often called a lexical category with noun, verb, adjective, and particle; the other is a "nonsubstantive" category often called a functional category with tense and complementizer.

trigger overt movement and induce strict cyclicity. In MP, we assume that strong features are visible at PF. If strong features remain after Spell-Out, then the derivation crashes. Thus, strong features must be eliminated before Spell-Out through overt movement.

According to Chomsky (1993: 30), covert movement is preferred to overt movement by the principle of Procrastinate:

(8) Procrastinate

LF movement is "cheaper" than overt movement.

(Chomsky 1993: 30)

Covert movement is regarded as computationally "cheaper" than overt movement. When a phrase is moved overtly for [-strong] feature checking, the violation of Procrastinate occurs. This kind of derivation is non-optimal since it contains a more expensive operation. Consequently, this derivation is blocked by the principle of Procrastinate. In English, for example, object elements must raise covertly since they are in the checking relation with [-strong] features of v.[7] If object elements move overtly to the outer Spec of v, the derivation crashes due to the violation of the principle of Procrastinate.

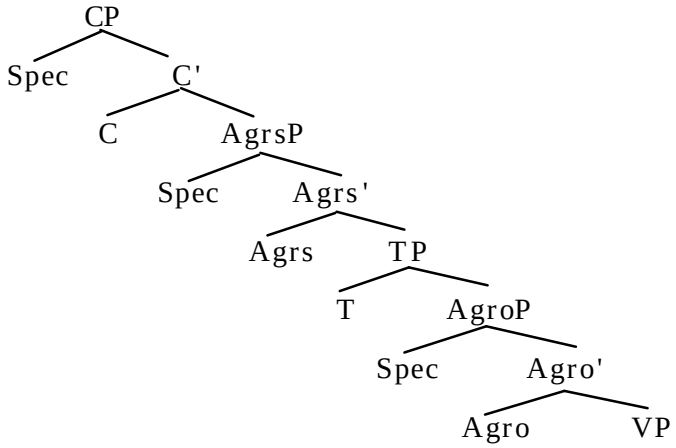
2.3 Basic Clause Structure

Chomsky (1993) assumes the basic clause structure in English as

7. The v is called a "light verb".

represented in (9), which incorporates Koopman and Sportiche's (1991) VP-internal Subject Hypothesis and the Split Infl Hypothesis proposed by Pollock (1989):

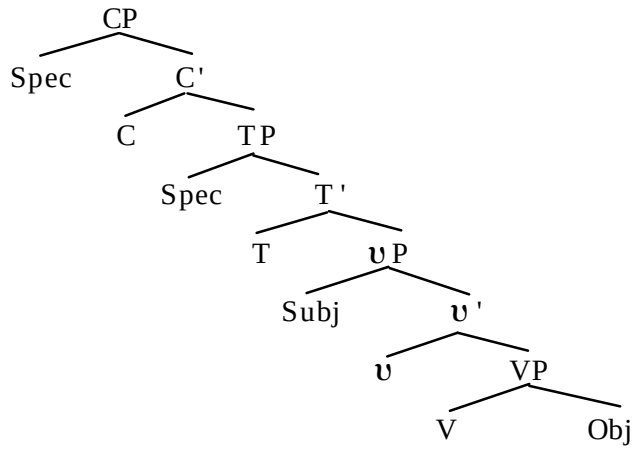
(9)



Later, adopting Larson's (1988) υP-shells, Hale and Keyser's (1993) theory of argument structure, and eliminating Agr projections, Chomsky (1995) reformulates the clause structure above as follows:[8)]

8. The postulation of Agr-projection is motivated only theory-internally, because Agr receives no independent interpretation at the interface levels.

(10)



2.4 Interpretation and Checking of Features

In MP, syntactic features that are accessible to operations are called formal features. These features are assumed to play a central role in C_{HL}. Formal features can be either [+interpretable] or [-interpretable]. [-Interpretable] features must be eliminated for convergence until the time when the derivation reaches at LF. The elimination of [-interpretable] features is carried out by feature-checking.

2.4.1 Formal Features

Chomsky (1995) argues that each lexical item in the lexicon is a complex of semantic, phonological, and formal features. And he also assumes that certain formal features require elimination.[9] According to

9. Features accessible by the computational system are formal features. The other lexical features like phonetic and semantic features are not accessible by the computational system.

Chomsky (1995), we assume the following four types of formal features:

(11) a. categorial features
b. φ-features
c. Case features
d. strong features

φ-features are a bundle of person, number, and gender features. Strong features are the categorial features of functional elements which trigger overt category movement.

In addition, lexical features are imposed the three-parts division by BOCs:

(12) a. Features which are interpreted at the A-P interface
b. Features which are interpreted at the C-I interface
c. Features which are not interpreted at either interface

Features which are interpreted at the A-P interface are phonetic features. Those which are interpreted at the C-I interface are semantic features. Because formal features are never interpreted at the A-P interface, there are no formal features which are also phonetic. There are, however, formal features which are also semantic, which are [+interpretable] formal features. Formal features which do not receive any interpretations at either of the interface levels are called [-interpretable] formal features. In Chomsky's theory, checking is the only way of eliminating

[-interpretable] features; features are eliminated only if they enter into checking relation with the head of the target to which they move. It follows that a derivation converges at LF only if all [-interpretable] features enter into checking relation and are deleted before the derivation reaches LF; otherwise, the derivation crashes at LF.

Formal features are classified into intrinsic and optional features. Intrinsic features are explicitly listed in the lexical entry while optional features are added later. For instance, categorial features are all intrinsic. While the person and gender features of nouns are intrinsic, their number features are optional. The φ-features of verbs, on the other hand, are all optional. The Case features of nouns are optional while the Case features of verbs are intrinsic.

2.4.2 Checking Theory

In MP, all movements take place because of the necessity of feature-checking. The elimination of [-interpretable] features is needed for convergence. Not to violate convergence we use feature checking to eliminate [-interpretable] features. Chomsky proposes that elimination of [-interpretable] features through the checking operation as follows:

(13) a. A checked feature is deleted when possible.[10)]

b. Deleted α is erased when possible.[11)] (Chomsky 1995: 280)

---

10. The possibility is determined by the principles of UG because deletion is impossible if it violates the principles of UG.
11. Erasure arises only for [-interpretable] feature, since [+interpretable] features are visible at LF

Chomsky assumes that deletion makes some object invisible at the interface but accessible to the computation, while erasure eliminates the element entirely so that it is inaccessible to any operation, not just to interpretability at LF.

2.5 Attract F

2.5.1 Move F and Covert Movement

Chomsky (1995) has argued that Move is driven by feature-checking requirement. This requirement is known as the Last Resort condition. Chomsky (1995) proposes that since Move is driven by the requirement that some feature F be checked, the minimal operation should raise only the F. Hence, Move α can be revised to Move F. Move F is defined as follows:

(14) Move F

Move raises feature F to target K in Σ only if

a. F is an unchecked feature, and

b. F enters into a checking relation with a sublabel of K as a result of the operation.

(Chomsky 1995: 269)

In (14), K is the target category. The sublabels of K are the features associated with the label of K. A sublabel of K is a feature of H

$(K)^{MAX}$.

Covert raising is restricted to feature-checking, and overt raising involves a pied-piping of an entire phrase for PF convergence.

(15) F carries along just enough material for PF convergence.

(Chomsky 1995: 262)

In other words, a category α containing F moves along with F only if required for PF convergence. Chomsky argues that movement of F automatically carries along FF[F], the set of formal features of an LI. When Move F raises F to the target category K, a sublabel of K enters into a checking relation with F, and other features of FF[F] may also be checked with sublabels of K as free riders.

2.5.2 Attract/Move F

Chomsky (1995) proposes that the operation of movement should be reinterpreted as "attraction"; movement of α to K should be changed as K attracting the relevant features of α for α to enter into a checking relation with K.

Chomsky incorporates Last Resort and the MLC into a single principle called Attract F:[12)]

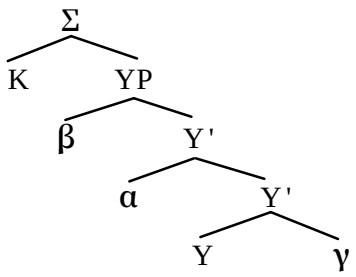
12. Chomsky (1995) claims the reason for the notion of Attract F is that Attract F can reduce computational complexity and solve certain problems arising with respect to the account of superraising. See Chomsky (1995) for more detailed discussion.

(16) Attract F

K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K. (Chomsky 1995: 297)

Chomsky also argues that the notion of Attract F can account for the representative cases of Relativized Minimality. Consider the following structure:

(17)



If K attracts F in α, β cannot block any raising, because β is not closer to K and in the same minimal domain of α. In a similar way, γ can raise to β, since α is not closer to β being in the same minimal domain.

Following Chomsky (1995), we assume the copy theory of movement, where the trace left behind is the copy of the moved element. Under this approach, movement makes a term copied and reintroduced into the syntactic object.

We have investigated a overview of the minimalist assumptions. The leading idea of the MP is that linguistic principles should be formulated only in terms of conceptual necessity. The design of language is therefore

economical and language is surprisingly perfect. The MP assumes only two levels of representations which interface with performance systems The levels of D-structure and S-structure in P&P models are not conceptually necessary from the minimalist perspectives, since their outputs do not provide inputs to performance systems. In a similar way, any stipulations that are not motivated by economy considerations and by properties of the interface levels should be eliminated.

Chapter III. ECM Constructions in Feature Checking

3.1 Introduction

In the minimalist syntax (Chomsky 1995), ECM is expressed in terms of feature checking between an embedded subject DP and the matrix functional category *v*. In Chomsky (1995), the formal feature of the embedded subject DP in English ECM constructions is assumed to raise to the specifier position of the matrix *v* to have its features checked at LF.

3.2 Impossible Feature Checking

In the minimalist syntax, the operation Move is driven by morphological requirement that some feature F should be checked. Chomsky (1995) replaces the operation Move α with the more principled operation Move F. In the syntax, a category, whether lexical or functional, consists of a bundle of features. Move F provides a plausibility to move FF(LI) independently of a lexical item. The raising of the feature F which is the minimal operation is considered to be more economical than the moving of the category containing the feature F. If movement is overt, Move F raises the category α having the phonetic content. On the other hand, If movement is covert, Move F raises only the formal feature of α. Chomsky continually assumes that the embedded subject in ECM constructions does not rise.

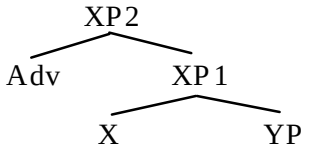
(1) a. Bill sincerely believed [Mary to be here]

b. *Bill believed sincerely [Mary to be here]

In (1), an accusative case is assigned to *Mary* by *believed* under an adjacency condition which is proposed by Stowell (1981). This kind of the approach is problematic on the minimalist grounds since the minimalist framework does not allow any place for the condition of adjacency. Furthermore, if Case is checked by raising to a [Spec, Head] position, adjacency condition must be irrelevant.

Chomsky (1995) proposes that adverbial adjoined to XP to form the two-segment category [XP, XP], projected from X.

(2)



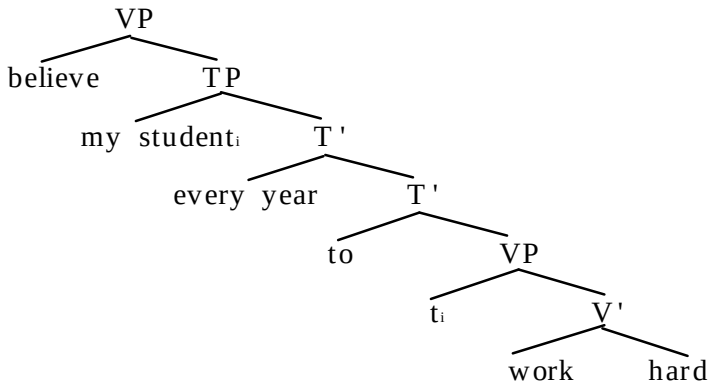
Such structure as (2) could have been derived either by Merge or by Move. Move is ruled out since adverbs seem to have no morphological properties that require XP-adjunction. Moreover, there is no evidence that adverbs form chains by XP-adjunction. The only option is Merge. Adverbials may be adjoined by Merge to phrases that are not theta-related. Thus, they can be adjoined only to X' or to phrases headed *v* or functional categories. Collins (1997) suggests that the adverb in sentences is adjoined to TP or to T'. He also proposes that the post-verbal adverb occupies some kind of VP-internal position(as in

Larson 1988). Under these assumption, let us consider the following example.

(3) I believe my student every year to work hard.(Chomsky 1995:332)

If *every year* were within the infinitival clause, this adverb should be adjoined to T'. The sentence (3) has the following structures through the derivation.

(4)

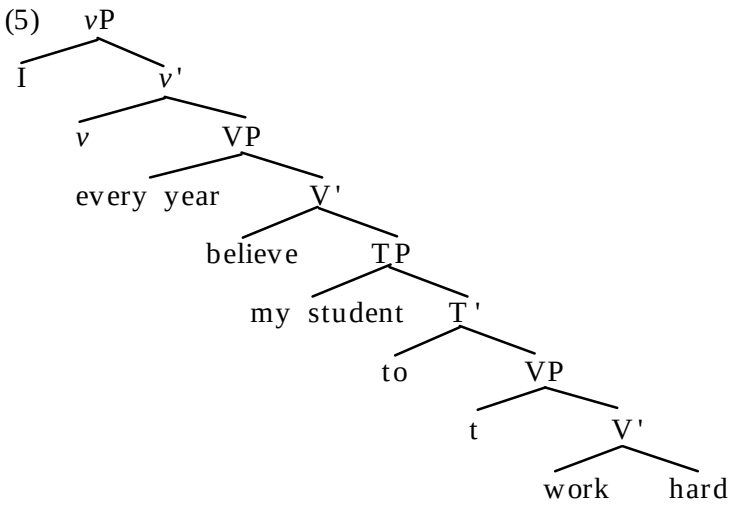


Under the Larsonian analysis, Larson indicates that the lower adverb *hard* is the innermost complements of V. The sister of the verb is an adverb that is not theta-marked at all. But the upper adverb *every year* should have matrix scope. The adjunction of adverbials to T' predicts the wrong result since this adverbial does not have matrix scope.

Chomsky (1995) also proposes that the adverbial may have matrix scope. If so, it is not within the infinitival clauses. We revisit this problem with a Larsonian solution which is suggested by Chomsky (1995:

331). If a verb has several internal arguments, we have to postulate a Larsonian shell, where *v* is a light verb to which V overtly raises. The internal arguments occupy the position of specifier and complement of V. Thus, the external argument cannot be lower than [Spec, *v*]. It would be extended to transitive verb constructions. The agent role would be assigned by the *v*-VP configuration. We assume that the structure underlying (3) is (5).

(5)



All movement is taken to be motivated in order to satisfy the morphological feature-checking, in accordance with the Last Resort condition. To satisfy the morphological properties implicates that [-interpretable] features should be eliminated for LF convergence. Case feature of nouns is considered as accessible to the computational system, but not visible for interpretation at LF. But if there is no overt raising of object, the embedded subject of ECM construction has [-interpretable]

features and is visible at LF. Thus, since this [-interpretable] feature of DP is not checked, that derivation crashes.

Chomsky (1995: 296) incorporates the Minimal Link Condition into the definition of Move. And Chomsky (1995) reformulates "Move" by using the notion "Attract".

(6) Attract (Chomsky 1995: 297)

K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K.

In terms of this notion of Attract, the definition of the Minimal Link Condition and Equidistance are reformulated as (8) and (9), respectively.

(7) Minimal Link condition (Chomsky 1995: 311)

H(K) attracts α only if there is no β, β closer to H(K) than α, such that H(K) attracts β.

(8) Equidistance

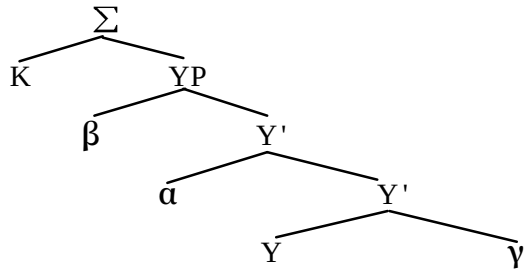
β does not prevent H(K) from attracting α if β is in the same minimal domain.

What is crucial about Attract is that the element which is supposed to undergo movement does not 'search up' for the appropriated landing site for feature checking, but rather, a strong feature to be checked off 'searches down' for the element with a relevant feature and attract the

closest element with a relevant feature.

Chomsky further argues that the notion of Attract accounts for the representative cases of Relativized Minimality. Consider the following the schematic structure.

(9)



In case that K attracts a feature F in α, β cannot block such raising, because β is not closer to K, being in the same minimal domain of α. In the similar way, γ can raise to β, since α is not closer to β, being in the same domain.

Under this analysis, we will reconsider the example (5). When a main verb *believe* overtly adjoins to the light verb *v*, *v* attracts *my student* to its outer Spec position in order to check the strong [D]-feature. But *my student* cannot raise to [Spec, *v*] to have its Case checked since there is a closer intervening element: *every year*. To explain this phenomenon, Chomsky (1995) assumes in his foot note that the adverb will be relevant only if it has feature that [Agr, V] complex can attract, which is plausible though not obvious.

However, Chomsky's (1995) consideration cause conceptual and empirical problems. Let us consider the various approaches.

3.3 Non-raising Approaches

3.3.1 CP-Deletion: Chomsky (1981)

According to Chomsky, the subject of infinitives should keep the site as an embedded subject. Chomsky (1981) proposes CP-Deletion to account for English ECM constructions. Chomsky notes that the verb appear with clausal complements due to the Projection Principle[13]: the clausal complements are the category CP. Chomsky assumes that the category CP is a barrier since government requires PRO to be the subject of the embedded clause, otherwise a lexical NP should be governed. With Case Filter, NPs stand as the subject of an infinitive when the infinitive is in the context V__. English allows a marked case given that the Case assigners are the categories [-N]. English also has a rule of CP-deletion for complements of ECM verbs. In that case, the subject of the embedded complement is governed by the verb. Thus PRO is excluded and a NP is permitted. Case may be assigned over the clause boundary. Thus, ECM verbs such as *believe* and *expect* etc., which delete CP and govern the subject position of an infinitival complement are Case-assigners.

(10) Mary believes [IP him to be intelligent]

As the example shows, the embedded subject is governed and assigned case by the matrix verb *believe*. The government of the matrix verb is

13)(Chomsky 1981:29): Representations at each syntactic level (i. e., LF, and D-and S-structure) are projected from the lexicon, where they observe the subcategorization properties of lexical items

satisfied by CP-deletion, not raising the embedded subject to the matrix object position. *him* is the subject of the embedded clause, not the object of the matrix verb. Since *him* is base-generated as the embedded subject, it satisfies the Projection Principle. This principle indicates that *him* receives a theta-role from the embedded clause. Thus, the embedded subject is prohibited to move to any position where other theta-role is assigned.

3.3.2 Case Percolation: Kayne (1981)

Kayne (1981) shows there are two major differences between English infinitival complementizer *for* and French equivalent *de*.

(11) *Ce serait dommage de quelque chose lui arriver.
`It would be a pity for something to happen to him.'

First, while *for* can be followed by a lexical subject of the infinitive, *de* cannot be, as we can see in (12).

(12) Ce serait dommage de partir maintenant.
`*It would be a pity for to leave now.'

Kayne argues with the above examples that the complementizer *for* in English governs the adjacent infinitival subject position, but French *de* does not. That is, the complementizer *de* cannot assign Case to the subject of infinitives.

Kayne (1981) takes [$_{VP}$ V [$_{CP}$ COMP [$_{IP}$ NP INFL VP]]] as the structure of ECM constructions. He assumes that English prepositional complementizers govern the adjacent infinitival subject position unlike French equivalents. Kayne also examines the difference between *believe* and *croire*. The matrix verb in English can govern the subject position of infinitives, but the matrix verb in French cannot:

(13) a. *Quelque chose lui arriver serait dommage.
`*Something to happen to him would be a pity.'
b. *Je crois/reconnais/constate Jean etre le plus intelligent de tous.
`I believe/acknowledge/have determined John to be
the most intelligent of all.'
c. Quel garcon crois/reconnais/constate-tu etre
le plus intelligent de tous?
`Which boy do you believe/acknowledge/determine (to) be
the most intelligent of all?'

The embedded subject NP cannot receive Case in the French version of (13b); therefore, it is ruled out. In case that the NP is a wh-phrase and moved cyclically, it can avoid Case Filter, as shown by (13c).

In order to make a unified account of English and French infinitival constructions, Kayne posits empty complementizers (O) in Spec of CP. He proves that the difference between *believe* and *croire* comes from the way in which English and French treat null prepositional complementizers. Since French prepositional complementizers do not govern the adjacent

subject position, O will not govern the embedded subject, either. However, English null prepositional complementizer is able to govern and Case-mark the subject of IP.

Kayne claims that the construction of V-CP without raising can Case marks the NP via an abstract prepositional complementizer. This analysis is the only one to account for the absence of ECM in French and the presence of ECM in English. That is to say, the empty COMP Case-marks the subject of infinitives in English. On the contrary, French prepositional COMP does not govern the adjacent subject position, and the empty COMP does not govern the subject of infinitives, either. Ultimately, a lexical subject NP cannot be governed in French; and as a result, Case Filter is violated in (14b).

(14) a. John believes [CP O [IP Bill to have lied]].
+Gov, +Case

b. *Jean croit [CP O [IP Bill avoir menti]].
-Gov, -Case

However, the following example raises a question for Kayne's accounts: Kayne has to make a revision of his analysis in order not to violate the ECP when passivized.

(15) The soul has been demonstrated [CP [O [IP (e) to be immortal]]].

According to Kayne, the above example violates the ECP: the empty category is not governed by its antecedent. But if we assume that O has the essential property of `transmitting' government that if X governs O and O governs Y, X governs Y, the antecedent can govern the empty category. Thus there is no ECP violation since the antecedent is contained in a projection. This transmitting property of O is also true of believe [CP [O [IP John...]. In other words, *believe* assigns objective Case to *John*. This is the concept of Case percolation.

3.3.3 CP/IP Selection: Chomsky (1986)

The case theory proposed in Chomsky (1986) is quite similar to the one presented in Chomsky (1981). Chomsky (1986)'s case theory is as follows.

(16) a. Nominative case is assigned to subject by INFL
b. Accusative case is assigned to the object by V
c. Case is uniformly assigned under government

On the other hand, Chomsky (1986) is little different from Chomsky (1981): where the latter assumes CP-deletion to propound ECM constructions, the former supports selection, i. e., IP-selection vs. CP-selection.

(17) a. Mary believes [α John to be the winner]
b. *Mary believes [PRO to be the winner]

c. *Mary tries [α John to be the winner]

d. Mary tries [PRO to be the winner]

We can notice that *believe*(an ECM verb) in the above examples contrasts with *try*(a Control verb): Chomsky (1986) assumes that *try* selects CP and *believe* selects IP. The verbs *believe* and *try* govern their complement, IP and CP, respectively. *believe* governs the subject of IP, *John*, on the other hand, *try* governs only CP and its COMP. Thus, *believe* can Case-mark *John* but *try* cannot case mark *John* since CP is a barrier against the government. This phenomenon of *try* should be explained by the PRO theorem[14], which determines the distribution of PRO. PRO can show up only the subject of an infinitive or gerund and it should not appear as the infinitival subject of the complement of such verb as *believe* since this position is governed.

Therefore, IP vs. CP selection is based on categorial selection (subcategorization), not raising the embedded subject to the matrix object position.

3.4. Raising Approaches

3.4.1 Covert Raising Approaches

3.4.1.1 On the Subject of Infinitives: Lasnik & Saito (1991)

Lasnik & Saito (1991) argue that the subject of a finite complement clause is not high enough to c-command the adjunct phrases. In other

14) The PRO theorem: PRO must be ungoverned

words, the subject of a finite clause is unable to bind the adjuncts outside of its clause. However, a certain adverbial phrases of the adjunct can be c-commanded since the subject of infinitives raises to Spec AgroP at LF.

They show several pieces of evidence for raising. They assume that syntactic phenomena such as binding and scope relation are observed in terms of the hierarchical notion 'c-command'.

The first evidence for raising comes from the scope relations. (18a) has scope ambiguity while (18b) does not. In the former, if the embedded NP *few students* is adjoined to IP of a matrix clause, it takes a wide scope. In the latter, if it is adjoined to IP of an embedded clause, it takes a narrow scope.

(18) a. The FBI proved [that few students were spies]. (ambiguous)
b. The FBI proved [few students to be spies]. (non-ambiguous)

However, there is no scope ambiguity in case of (18b) since the embedded NP *few students* is raised to the matrix position and has only wide scope. The distinction between (18a) and (18b) is described in terms of the 'c-command', which plays a role in determining quantifier scope. The notion 'c-command' also has a decision on Binding Condition (C): R-expressions should be free everywhere.

(19) a. Joan believes [he$_i$ is a genius] even more fervently than Bob's$_i$ mother does].

b. Joan believes [him$_i$ to be a genius] even more fervently than Bob's$_i$ mother does].

c. Joan believes him$_i$ even more fervently than Bob's$_i$ mother does.

(19a) satisfies Binding Condition (C), where the subject of the embedded clause *he* is not high enough to c-command the antecedent *Bob* in the adjunct of the matrix clause. On the other hand, (19b) violates Binding Condition (C) since the pronoun *him* c-command the R-expression *Bob* at the relevant point in the derivation. If *him* in (19b) remains in the lower clause, there cannot be a difference in grammaticality between (19a) and (19b) with respect to 'c-command.' Thus, the process of raising is required to tell the grammaticality between (19a) and (19b). As we see from the above examples, (19b) and (19c) are quite similar in acceptability. Therefore, the subject of the infinitival complement seems to be approximately as high in the structure.

The distribution of reciprocal expressions displays the relative height between the first NP and the second NP with respect to Binding Condition(A). Binding Condition(A) states that anaphors such as reflexives and reciprocal must be bound within its local domain. Let us consider the following examples:

(20) a. *The DA proved [the defendants were guilty] during each other's trials.

b. The DA proved [the defendants to be guilty] during

each other's trials].

c. The DA accused the defendants during each other's trials.

(20a) does not observe Binding Condition (A) since the embedded subject the *defendants* dose not c-command *each other*. In (20b), the embedded subject raised to a matrix position c-commands *each other*, which satisfies Binding Condition (A). Notice that (20b) and (20c) are considerably better than (20a). It proves that the embedded subject in (20b) may have the same status as the object in (20c).

The c-command relations are also involved in the distribution of the binomial *each*. The antecedent of *each* must c-command it

(21) a. Jones proved [that the defendants were guilty] with one accusation each

b. Jones proved [the defendants to be guilty] with one accusation each.

c. Jones prosecuted the defendants with one accusation each.

(21b) is more grammatical than (21a) as a result of raising to a matrix position. That is to say, in (21b) the *defendants* occupying the matrix position can c-command the adjunct, whereas the *one* as a subordinate argument cannot, as in (21a). The notion of structural height is what distinguishes (21b) and (21c) from the degraded counterpart (21a). In other words, the similarity between (21b) and (21c) indicates that the subject of the embedded infinitival occupies a position comparable in

structural height with that of the matrix object.

We have so far examined some motivations for raising noted in Lasnik & Saito (1991). The data discussed above show that the exceptionally Case-marked subject of a complement clause is able to license or bind an adjunct phrase outside IP. Moreover, the subject of the embedded infinitival structures has roughly the height of the matrix position at LF.

3.4.1.2 Covert Raising: Chomsky (1993)

By positing AGRo along with AGRs, Chomsky (1993) assumes that the object moves in the covert component in order to have its accusative Case feature checked. As AGRs is responsible for nominative Case assignment, this Case assignment can be regarded as an instantiation of Spec-head relation. On the other hand, an accusative Case assignment arises from a head-complement relation between a verb and the accusative NP.

In an attempt to unify the Case checking mechanism, Chomsky (1993) suggests an object agreement projection. The structural relation for an accusative Case can also become a Spec-head relation. In English, the movement to Spec of AGRoP does not take place between D-structure and S-structure. Rather, it takes place between S-structure and LF. This fact implies that the subject of the embedded infinitival subject and the matrix object are in the same status at LF. Thus, the embedded subject is raised to the matrix Spec of AGRoP not at S-structure but at LF. The NP in question goes through covert raising.

Now, let us observe first how Case checking works in this framework.

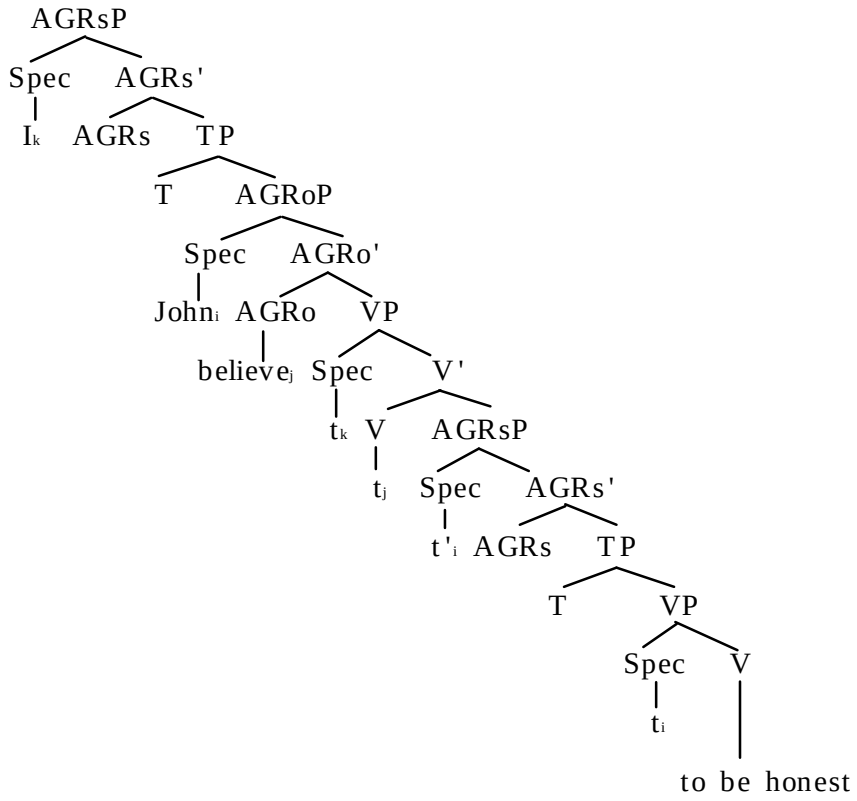
Strong features are visible at PF while weak ones are not. With FI, the strong features must checked off and deleted by the grammatical features of lexical categories before PF since they would not be interpreted at PF. V-to-I raising, for example, is covert in English since the V-feature of I[nfl] is weak. On the other hand, V-to-I raising is overt in French since the V-feature of I[nfl] is strong. Thus, V-to-I raising need not be applied before LF since the features of functional categories are weak. And if we compare the D-feature of T[ense] with the D-feature of Verb, we can find out the overt subject-movement and the covert-object movement. The [Nom]-feature of the subject is checked off by T under Spec-Head relation since the D-feature of T is strong while the [Acc]-feature of the object is checked off by V under Spec-head relation in the covert syntax since the D-feature is weak.

Note that object-raising to Spec of AGRo is obligatory in order to satisfy Case filter. So an embedded subject of infinitives moves to its checker. We will analyze the ECM construction in covert raising. Look at the example as follow in (22):

(22) I believe John to be honest.

(22) has the following structure in (23)

(23)



An A-chain is formed by way of the NP movement as showed in (23): that is (*John*$_i$, t_i', t_i). *John*$_i$ enters into Case-checking and agreement checking, t_i' in D-feature checking, and t_i in theta-checking. Every moved element must satisfy universal morphological features. We will analyze the movements involved in the ECM construction.

First of all, T overtly raises to AGRs in order to check the [Nom]-feature of the subject *I* due to the strong D-feature. Secondly, the subject moves out of Spec of VP to Spec of AGRsP in order to check off [Nom] and [+1st, +Sg] of *I*. Thirdly, V raises to AGRo in order to check

off [Acc] of *John* covertly due to the weak V-feature of AGR. Fourthly, the object covertly raises to Spec of AGRoP in order to check off [Acc] and [+3rd, +Sg] of *John* due to the weak D-feature of AGRo and the weak D-feature of V. And AGRo raises to AGRs through T in order for [+Tense] and [+1st, +Sg] of *believe* to be checked off.

In this Chomsky's Minimalist analysis, it does not allow the unnecessary empty object position. Although Chomsky (1993) does not mention much about ECM constructions, we can draw a structure of ECM construction with the checking theory. In a short word, the embedded subject must raise in covert syntax to a higher position.

3.4.2 Overt-raising Approaches

3.4.2.1 On Raising: Postal (1974)

Postal (1974) provides us with some traditional arguments for higher object status, based on passivization, reflexivization, and reciprocal marking. Now we will see how his idea advances.

The examples given below show that the application of raising enables the main clause to be passivized.

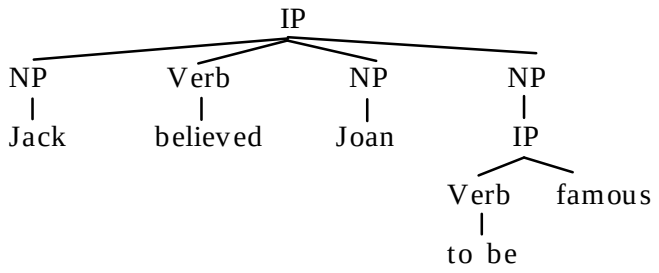
(24) a. Jack believed [CP (that) [IP Joan was famous]].
b. [CP That [IP Joan was famous]] was believed by Jack.
c. *Joan was believed that was famous by Jack.

(25) a. Jack believed Joan$_i$ [IP t$_i$ to be famous].
b. [CP *(For) [IP Joan to be (have been) famous]] was

believed by Jack.

c. Joan$_i$ was believed t_i to have been famous by Jack.

(26)



Since passivization is inherently to be a clause-internal operation, the embedded subject in a subordinate clause cannot be raised to the matrix subject position as in (24c). As we can see in (26), *Joan to be famous* is not even a constituent. Thus it is not possible to get a passivized form (25b) out of (25a). However, after the application of raising the embedded subject, main clause passivization becomes possible since raising lifts only the NP from the subordinate clause to the main clause.

(27) a. Jack$_i$ believed [CP (that) [IP he$_i$ was immortal]].

b. *Jack$_i$ believed [CP (that) [IP himself$_i$ was immortal]].

c. Jack$_i$ believed himself$_i$ [IP t_i to be immortal].

d. *Jack$_i$ believed him$_i$ (he$_i$) [IP t_i to be immortal].

Reflexivization, as in the case of passivization, exemplifies the existence of raising. Since ordinary reflexive marking is exclusively clause-internal, reflexivization is not possible in the same local domain,

where there is a clause boundary. But it is possible when there is no clause boundary as in (27c). However, (27d) violates Binding Condition (B) that pronominals should be free in their governing category since *him* is bound by *Jack* in its governing category, the matrix IP.

The examples in (28) show that like reflexive-marking, reciprocal marking is purely clause-internal.

(28) a. *They$_i$ believed [CP (that) [IP each other$_i$ were honest]].

b. They$_i$ believed each other$_i$ [IP t$_i$ to be honest].

In (28a), *each other* in the embedded CP cannot be licensed by *they* in the matrix clause because of the clause boundary CP, which is indicated as a barrier in Chomsky (1986). However, once *each other* raises to the matrix object position, it can be licensed by the matrix subject as in (28b).

According to Postal, any clause boundary would suffice to block the relevant relations. Hence the second NP position must have become a clause-mate with the first one via raising to the position of object.

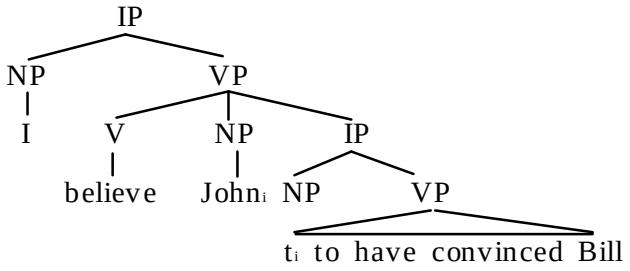
Postal (1974) is for subject-to-object raising and suggests that raising to the object position is applicable with ECM verbs. He proposes the position of subject-to-object raising with base-generated [NP e] as an object of the verb. The subject of infinitives moves overtly up to fill up the empty object position of the matrix verb.

(29) a. I [VP believe e [IP John to have convinced Bill]].

b. I [VP believe John$_i$ [IP t_i to have convinced Bill]].

(29) has the following structure, as in (30).

(30)



The matrix verb *believe* assigns accusative Case to the raised NP which is structurally higher than its trace. In other words, *John* is a matrix argument, as shown by (30).

However, there exist some problems in Postal's transformational analysis in that it does not observe Chomsky's Projection Principle: If α subcategorizes the position β, then α theta-marks β. Accepting the idea that every lexical element assigns a theta-role to every NP or clause in its complement, how can we explain the status of empty NP at D-structure? The empty NP is the complement of verb. Therefore, it must be a strictly subcategorized position and at the same time theta-marked position. If we allow subject-to-object raising (the movement from theta-position to theta-position), that will result in the violation of theta-criterion. As here interpreted, it is not possible for something to move into a theta-marked position, namely a strictly subcategorized position. Here comes out the motivation for the revision of

raising analysis.

3.4.2.2 Raising before spell-out

Koizumi (1995) argues that object DPs in English raise in the overt syntax. He argues that the ECM subject raises overtly prior to S-structure. He presents the following examples to argue for overt movement of the ECM subject. First, the ECM subject may occur to the left of a matrix adverbial.

(31) a. I've believed John$_i$ for a long time now [t_i to be a liar]
b. I have found Bob$_i$ recently [t_i to be more morose]

(32) a. I proved him$_i$ conclusively [t_i to be a liar]
b. I suspect him$_i$ strongly [t_i to be a liar]

In the examples of (31) and (32), matrix adverbs intervene between the moved element and trace, which clearly show overt movement of the ECM subject. Looking at the ungrammaticality of (33) and (34), Koizumi (1995) claims that the landing site for the ECM subject should be higher than the matrix VP, which is Spec of AgroP in his analysis (and also Chomsky 1993).

(33) a. *I've believed for long time now John to be a liar.
b. *I have found recently Bob to be morose.

(34) a. *I proved conclusively him to be a liar.
b. *I suspect strongly him to be a liar.

Koizumi (1995) provides another piece of evidence for overt raising of ECM subjects from English particle verb constructions. As the examples in (35) show, the particle of a particle verb in the matrix clause cannot occur in the embedded clause (35b).

(35) a. They're trying to *make out* that John is a liar.
b. *They're trying to *make* that John *out* is a liar.
c. They're trying to *make out* John to be a liar.
d. They're trying to *make* John *out* to be a liar.

(Kayne 1985)

We note that in (35b) the particle *out* is placed in the embedded clause, which is resulted in ill-formedness. In (35c) raising of the ECM subject *John* is vacuous, on the other hand, in (35d) it has apparently moved to the matrix due to its position to the left of the particle. This phenomenon supports to the overt raising analysis.

3.5 Possible Solution: OVert NP Raising in English

The ECM subject overtly raises into the position of the matrix clause. That is resulted in an SOV order. But this is different from the surface order in English. Thus, V is independently raised in order to establish the surface order of SVO in English.

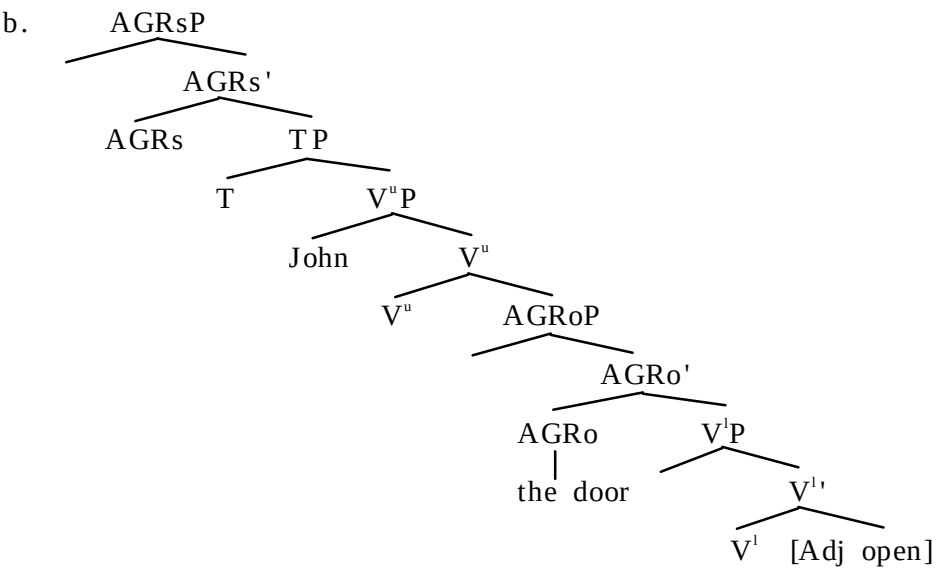
3.5.1 A Split VP Hypothesis: Koizumi (1995)

Koizumi (1995) suggests that verbs are raised overtly in English and that adverbs should adjoin to VP. He argues that in English object NPs as well as verbs overtly raise to the Spec of AgroP and Agro respectively with limiting adverbs to a VP-adjoined position. ECM subject are also Case-licensed in the Spec of AGRoP.

Koizumi's suggestion is that XP is a VP for the subject. In other words, the external argument of transitive clauses and unergative clauses originates in the Spec of the upper VP which is labeled XP. He calls this proposal the SPLIT VP HYPOTHESIS. According to him, the upper V (V^u) is like an unergative verb such as *laugh* in *Mary laughed*. It takes an agentive argument in its Spec (the external argument DP) and an event-denoting argument as its complement (AGRP). The lower V (V^l) is an event-denoting "unaccusative" verb such as *arrive* in *Mary arrived*. A transitive verb such as *open* in *John opened the door* consists of two verbs, a V^u and a V^l, which are spelled out as a single "word" *open*. Thus, *John opened the door* has a structure like (36).

(36) a. John opened the door

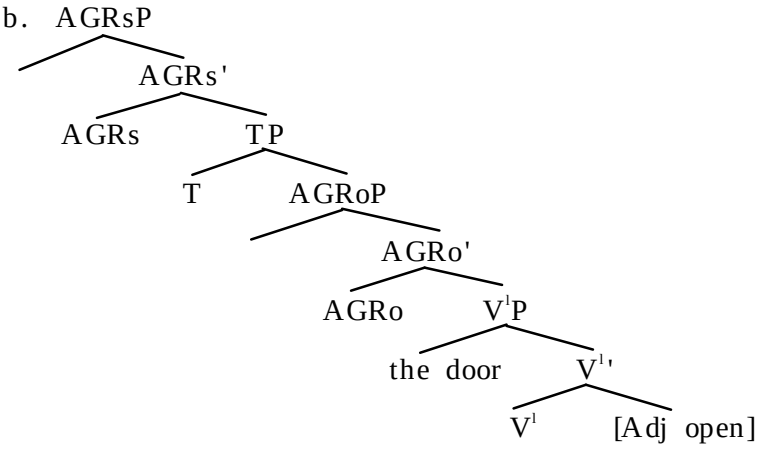
b.



He assumes that *open* starts as an adjective and incorporates into a verb. Unaccusative *open*, a transitive *open* is lacking the upper V. Thus, *the door opened* has a structure like (37).

(37) a. The door opened.

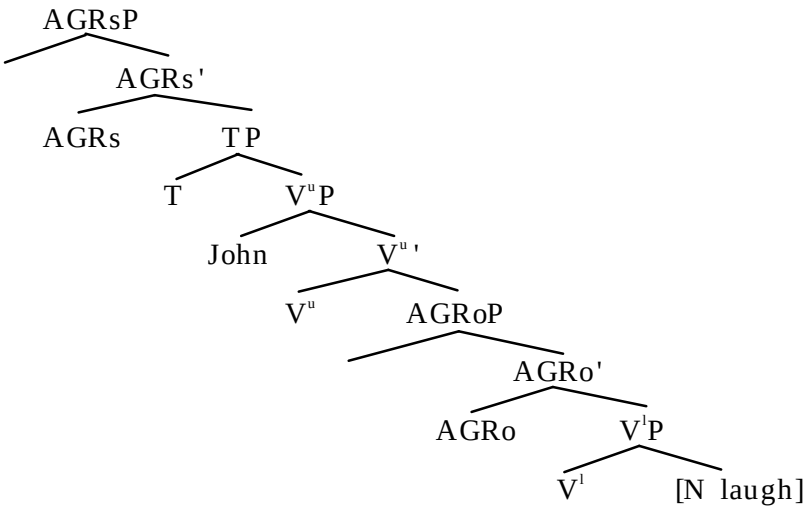
b.



He assumes that sentences with an unergative verb actually contain two VPs. Thus, under the Split VP Hypothesis, the structure of *John laughed* is essentially as follows.

(38) a. John laughed.

b.



The Split VP Hypothesis receives initial from the distribution of VP-adverbs shown below.

(39) a. *[$_{PolP}$ Intentionally [$_{PolP}$ John will talk to her about it]]

b. *John [$_{TP}$ intentionally [$_{TP}$ will talk to her about it]]

c. John will [$_{XP}$ intentionally [$_{XP}$ talk to her about it]]

d. John will talk [$_{VP}$ intentionally [$_{VP}$ to her about it]]

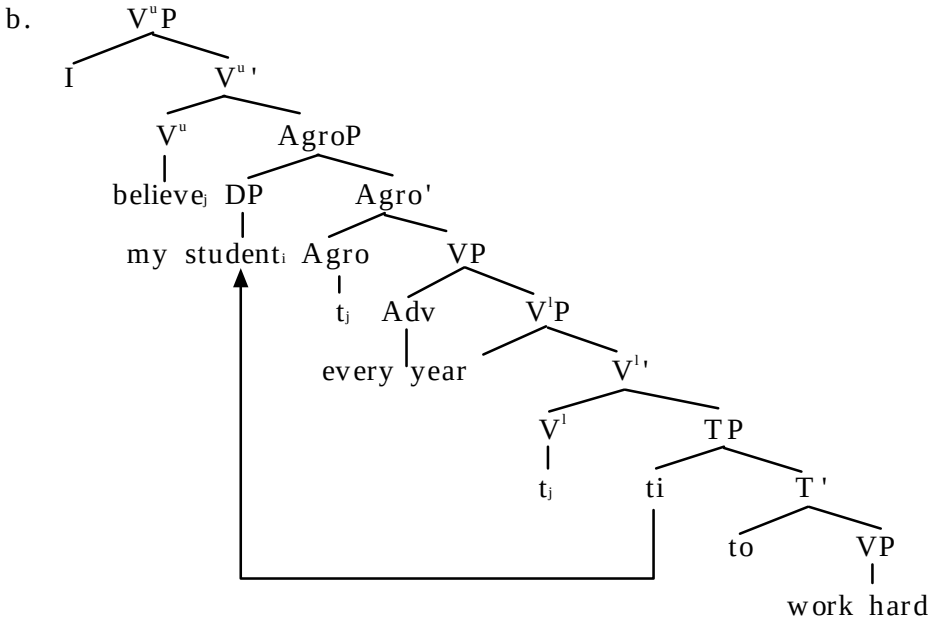
e. John will talk to her [$_{V'}$ intentionally [$_{V'}$ about it]]

As generally assumed, a group of adverbs such as *intentionally* (traditionally called VP- adverbs) occur in the VP-area[15]. Thus, in (39d) and (39e), the adverbs are adjoined to VP and V', respectively. When a VP-adverb adjoins to a projection of a category other than V, the sentence is ungrammatical as in (39a) and (39b). If this generalization is correct, the grammaticality of (39c) may be taken to indicate that XP is a VP.

Under his Split VP Hypothesis, Koizumi (1995) independently argues that the verb and its object overtly move to the higher verb and to the Spec of AgroP, respectively. (40a) would have the structure of (40b) at the point of SPELL-OUT.

(40) a. I believe my student every year to work hard.

b.



15) see Jeckendoff (1972)

Based on the strength of features in Chomsky (1993), Koizumi assumes that both the NP-feature of the lower verb and the V-feature of higher verb ($V^{u}P$) are strong and that they trigger overt object movement and overt verb movement, respectively.

3.5.2 Object Shift and the *v*-VP Configuration: Lee (1998)

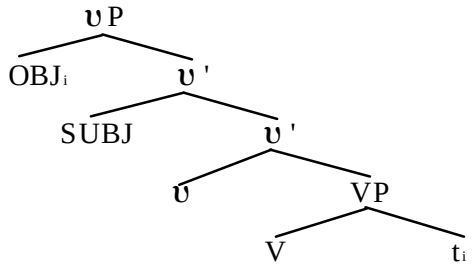
As we discussed, Koizumi (1995) suggests that in English object nominals overtly to the Spec of AgroP, and that AgroP intervenes between the split two VPs. The higher VP has an external argument as its Spec, and the lower VP has an internal argument as its Spec and complement. He also assumes that the verb generated at the head position of the lower VP raises to the head of the higher VP through the position of AgroP due to the strong feature of the higher V. And the object nominal raises overtly to the Spec of AgroP in order to check its Case/Agree features.

But Chomsky (1995: 349-352) eliminates AGR projections entirely. Since AGR does not have any interpretable features, he concludes that the motivation for positing AGR is to provide a position that must be occupied by overt operations. Then, the major function of AGR is to provide a structural configuration in which features can be checked off. In fact, under the theory of AGR-based Case checking, the subject and the object raise to the checking domain of AGR, entering into a checking relation with features of T or V adjoined to AGR (Chomsky 1995: 351).

In addition to it, Chomsky (1995: 352) suggests a simple way to force

overt movement without the functional category Agro: by adding to *v* a strong D-feature that requires overt substitution in the outer spec of a multiple spec configuration.

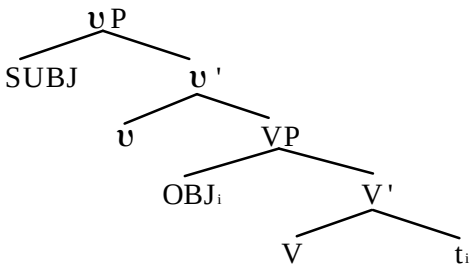
(41)



Under this analysis, the object nominal raises to the outer spec of υP to form a chain (OBJ, t), and it will be able to check its Case and φ-features.

Against Chomsky's suggestion, Lee proposes that overt raising of object takes place in the configuration of a Larsonian VP shell structure. V, that is, has a strong D-feature and it requires overt raising of object to the (outer) spec of VP (not to the (outer) spec of υP as in (42)).

(42)



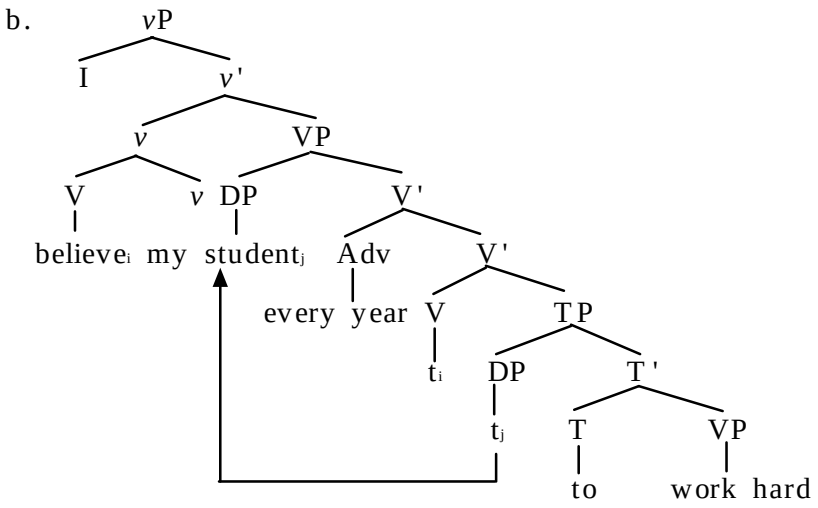
This analysis is compatible with Koizumi's proposal that the landing site

of the shifted object is below the θ-position of the subject.

Lee argues that there is no AgroP intervening between the light verb *v* and its VP complement. He also assumes that adverbials should be considered as adjoined elements to X'. If the object nominal raises to the Spec of V and V raises to *v*, no adverb can intervene between V and the object nominal as seen in (43).

(43) a. I believe my student every year to work hard.

b.



In (43), the object nominal generated in the inner Spec of VP raises to the outer Spec of VP to enter into a checking relation with the verb. This overt raising of object is driven due to the strong D-feature of the verb. After the verb raises and adjoins to *v*, the correct word order appears.

Chapter IV. The ECM Constructions under Agree

4.1 Overview of the Minimalist Framework (1998)

4.1.1. General Architecture

Chomsky (1998) assumes that a particular language L provides information to the performance systems in the form of levels of representation. The performance systems access these interface levels. He also assumes that performance systems are of two kinds. Ones are sensorimotor systems and the others are systems of thought. Thus, the linguistic system has only two levels of representations, PF and LF, providing instructions to the performance system. Under these assumptions we understand that L is a device which generates EXP = <PHON, SEM>: (π, λ). In EXP, π provides the instructions for sensorimotor systems and λ supplies the instructions for systems of thought. π is the information about sound, while λ is the information about meaning.

An EXP must satisfy a certain condition in order to be able to access expressions. In other words, we say that a computation of an EXP converges at an interface level if EXP is legible at the interface level.

(1) Language is an optimal solution to legibility conditions.

Certain features of lexical items are interpretable. That means that they are legible to the external systems at the interface. Thus, we assume that

if an expression contains only features interpretable at the interface level, it converges.

4.1.2 Lexical Array and Elementary Operation

A language is assumed to consist of two components, i. e., a lexicon, specifying the items that enter into the computational system with their idiosyncratic properties, and a computational system C_{HL}, generating derivations and Structural Descriptions(SDs).

A linguistic expression (π, λ) of L must not only satisfy bare output condition at PF and LF, but meet the requirement of compatibility. To meet the compatibility $\pi$and λ. π and λ should be based on the same lexical choice Thus, C_{HL} forming linguistic expression (π, λ) is regarded as mapping of lexical items chosen from the lexicon to the linguistic expression (π, λ). A language keeps the following procedure to derive a particular EXP.

(2) (a) Select [F] from the universal feature set F
(b) Select LEX, assembling features from [F]
(c) Select LA from LEX
(d) Map LA to EXP with no recourse to [LEX] for narrow syntax.

The component of C_{HL} requires several operations. The first operation is Merge which takes two syntactic objects (α, β) and forms K(α, β) from them. The second operation is Agree which establishes a relation

between LI α and a feature F in some restricted search space. The last operation is Move combining Merge and Agree. The operation Move establishes agreement between α and F and merges P(F) and to αP, where is a phrase determined by F and αP is a projection headed by α. P(F) becomes SPEC-α.

Move is more complex than its subcomponents Merge and Agree since Move is the combination of the two, and involves the extra step of determining P(F). Good design conditions would lead us to expect the simpler operations than more complex one so that Merge or Agree are preferred to Move, which is a last resort.

4.1.3. Basic Phrase Structure

We will assume that lexical items are divided into two main categories: substantive and functional. We will take the functional categories as the core functional categories CFCs, which are C (expressing force/mood), T (tense/event structure), and *v* (the light verb head of transitive constructions). All CFCs may have φ-features (obligatory for T, *v*). These are uninterpretable and constitutes the core of the systems of Case-agreement and dislocation (Move).

Let us consider the selectional properties of CFCs. Chomsky assumes that C would be selected by substantive categories, *v* only by a functional category, and T by C or V. If selected by C it has a full component of φ-features; if by V it is defective(T_{def}). He also suggests that C would select T, whereas T and *v* select verbal element.

Chomsky assumes that each CFC also allows an extra SPEC: for C, a

raised wh-phrase; for T, the surface subject; for *v*, the phrase raised by Object Shift (OS). When the Spec of T is filled with a raised subject, this property is called as the Extended Projection Principle(EPP). Similarly, we can call the corresponding properties of C and *v* as EPP-features. Since these EPP-features are uninterpretable, the configuration they establish has effects for interpretation.

Chomsky assumes that basic structural properties of CFCs are illustrated in the configuration (3), where H is the CFC, XP is the extra SPEC selected by its EPP-feature, and EA is the external argument selected by H = *v*. We can find the properties in (4).

(3) α = [XP [(EA) H YP]]

(4) (i) if H is *v*/C, XP is not introduced by pure Merge
(ii) in the configuration [$_\beta$ T$_\beta$ . . . α], β minimal,
(a) if H is C, T$_\beta$ is independent of α
(b) if H is *v*, T$_\beta$ agrees with EA, which may raise to SPEC-T$_\beta$ though XP cannot
(c) if H is T$_{def}$, XP raises to SPEC-T$_\beta$ if there is no closer candidate γ for raising.

Pure Merge is Merge that is not part of Move. The relevant properties of T$_\beta$ have to do with Case/agreement and EPP. In (iib), if EA does not raise, SPEC-T$_\beta$ is introduced by pure Merge to satisfy EPP. The case of H = non-defective T is omitted in (ii): if (iia) holds for C, it holds for T

selected by C. In fuller generality, β in (4ii) should be taken to be the minimal β containing α headed by any CFC H_β, which would therefore be either T or *v*. The relations of T_β to α extend partially to *v* as well; specifically, ECM in (iic) as compared to raising to SPEC-T.

4.1.4. Phase

If we select LA, the computation need no longer access the lexicon. We suppose that at each of the derivation a subset LA_i which is placed in active memory is extracted and submitted to the procedure. When LA_i is exhausted, the computation may proceed or return to LA and extract LA_i. This process continues until it terminates.

What is the characteristics of the subarrays LA, that can be selected for active memory? LA_i should determine a natural syntactic object SO. Perhaps the simplest and most principled choice is to take SO to be the closest syntactic counterpart as a proposition; either a verb phrase in which all theta roles are assigned or a full clause including tense and force. We call these objects propositional. Thus, if LA_i can then be selected LA_i contains an occurrence of C or of *v*, determining clause or verb-phrase.

Chomsky (1998) assumes that a phase is CP or *v*P, but not TP or a verbal phrase headed by H lacking φ-features; neither finite TP nor unaccsative/passive verbal phrase is a phase. He also supposes that phases satisfy a much stronger cyclicity condition.

(5) The head of a phase is inert after the phase is completed,

triggering no further operations.

A phase head cannot trigger the operation of Merge or Attract in a later phase. We can restrict attention to phases where all selectional requirements are satisfied, including EPP for T and for *v*/C, and selection of external argument for *v* if required, otherwise the derivation crashes at the phase level. Thus, any derivation proceeds phase by phase. Here an alternative is to define phase in terms of convergence. The two options are (6):

(6) (i) Phase are propositional
(ii) Phase are convergent

Under (6i), LA_i is determined by a single choice of C or *v*. Under (6ii), local determination is not possible. Complexity considerations therefore favor Option (6i).

The descriptive typology of movement offers other reasons to admit that phases are real, understood under Option (6i). There are several categories: movement can be feature driven or not. Typical cases of any movement include raising to subject (directly feature-driven), the non-final stage of successive-cyclic movement (indirectly feature-driven), QR and stylistic movement (perhaps not feature-driven).

Indirect feature-driven movement (IFM) is subdivided into types depending on the attracting head H in the final stage: (i) A-movement when H has ϕ-features (yielding the Case-agreement system), or (ii)

A'-movement when H has P-feature of the peripheral system (force, topic, focus . . .). IFM has always kept that locality conditions require short movement in successive stages, leading to convergence in the final stage. We can express a version of this idea as a phase-impenetrability condition. Given HP = [α [H β]], take β, to be the domain of H and α to be its edge. The thesis under consideration is (7)

(7) In phase α with head H, the domain of H is not accessible to operations outside α, but only H and its edge.

The cycle is so strict that operations cannot look into a phase α below its head H. H must be visible for selection and head movement, therefore its SPEC as well. Condition (7) yields a strong form of subjacency.

Phases are determined by a choice of C/*v*, not T. The fact that the EPP-feature is optional for C/*v* suggests that it is a property of the phase PH:

(8) The head H of phase PH may be assigned an EPP- and P-feature.

Once PH is completed, (8) may optionally apply, assigning an EPP-feature to H. From the strong cyclicity condition that renders H inert beyond the phase itself, it follows that EPP must be satisfied by raising within PH: pure Merge from outside PH is barred.

4.1.5 Agree

Chomsky suggests that for convergence, uninterpretable features must be deleted in the course of computation of LF. If uninterpretable features trigger the feature-checking, we expect that it is structural Case that enables the closest goal G to select P to satisfy EPP by Merge. We will see that manifestation of structural Case depends on uninterpretable features of the probe: finite T (nominative), *v* (accusative), control (null). The same would be expected for the uninterpretable φ-set of the probe. Its manifestation depends on interpretable features of the goal, so that the uninterpretable features of both probe and goal are determined by Agree.

Matching is a relation that holds of a probe P and a goal G. Not every matching pair induces Agree. To do so, G must be in the domain D of P and satisfy locality condition. The simplest assumptions for the probe-goal system are (9):

(9) (i) matching is feature identity
(ii) D(P) is the sister of P
(iii) locality, reduces to "closest c-command"

Thus D(P) is the c-command domain of P, and a matching feature G is closest to P if there is no G' in D(P) matching P. In the absence of evidence to the contrary, we have a definition of (10) as the minimal domain.

(10) Terms of the same minimal domain are equidistant to probes.

The minimal domain of a head is the set of terms immediately contained in projections of H

If uninterpretable features serve to implement the feature-checking, we expect that it is structural Case that enables the closest goal G to select P to satisfy EPP by Merge. Thus, if structural Case has already been checked, the phrase is frozen in place, unable to move further to satisfy EPP in a higher position. More generally, uninterpretable features render the goal active: to select a phrase for Merge or to delete the probe. The operations Agree and Move require a goal that is both local and active.

We therefore have the possibility of defective intervention constraints in a structure (11), where > is c-command, β and γ match the probe α but β is inactive so that the effects of matching are blocked:

(11) $\alpha > \beta > \gamma$

We therefore understand feature identity to be identity of the choice of feature, not of value. More important, defective intervention effects are induced whether or not β and γ are identical in ϕ-feature value.

With matching restricted to identity, Case and lexical category cannot enter into Agree or Move, since the probe do not manifest these features. And Object Shift must be for object agreement, with ancillary Case Checking. Move of β targeting α, has 3 components:

(12) (i) A probe P in the label L of a locates the closest matching G

in its domain

(ii) A feature G' of the label containing G selects a phrase β as a candidate for pied-piping

(iii) β is merged to a category K

P and G' are uninterpretable. P deletes if G is active. G' also deletes, but it cannot delete in step (i) before carrying out its function in step (ii). There are reason to suppose that G delete before step (iii).

We take deletion to be a one fell swoop operation. We assume that only a probe with a full complement of φ-features is capable of deleting the feature that activates the matched goal. Suppose that the probe for participial α is a φ-set lacking the feature [person], and that G is the closest matching goal in its search-space: P(G) = DP may be attracted to SPEC-α deleting the probe of α, but the operation will not deletes structural Case in DP, which can move on to SPEC-T, deleting the probe of T and case of DP. *v* and nondefective T, with a full complement of φ-features, deleted the uninterpretable feature that activates the matched goal.

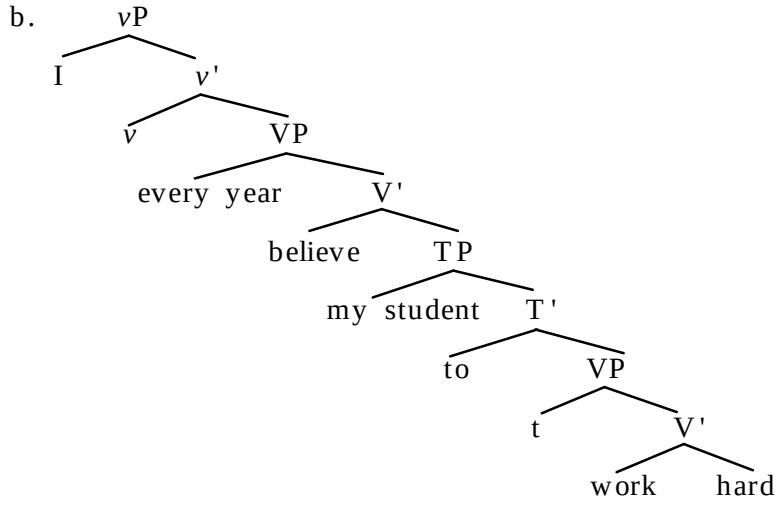
4.2 The Analysis of ECM Constructions under Agree

Chomsky (1995) proposes that the adverbial may have matrix scope. If so, it is not within the infinitival clauses. What is crucial about Agree is that the element of movement does not search up for the appropriated landing site for feature checking, but rather, searches down for the element with a relevant feature in its complement domain and probe the

closest element with a relevant feature. Let us consider the following example.

(13) a. I believe my student every year to work hard.

b.



We assume that only a probe with a full complement of ϕ-features is capable of deleting the feature that activates the matched goal. We suppose that the probe *v* has an uninterpretable ϕ feature and that G is the closest matching goal in its search-space. Thus, the phrase of goal may be attracted to SPEC-*v*. But this operation will not deletes structural Case of DP in the example above, since the adverbial intervenes between the probe and goal.

Under Agree, when the main verb *believe* overtly adjoins to the light verb *v, v* probe agrees *my student* to delete the uninterpretable ϕ -feature. But *my student* cannot delete [+Case] feature because there is a closer intervening element: *every year*. Thus, an adverb plays a role as a

goal. If so, an adverbial must have the uninterpretable feature[16] in order to be active in Agree. I think that this fact is not understood very clearly. For this reason, I suggest that object DPs in English raise in the overt syntax.

If we assumes that phases are determined by a choice of *v*, we will see that the EPP-feature of *v* is optional. Let us assume that the *v* could have the EPP-feature. If so, when phases are completed, EPP must be satisfied by raising within phases. We suppose that, if the *v* of the ECM verbs could have the EPP feature, the grammaticality of (13) can be explained. That is the case in (14) as repeated.

(14) I *v* [$_{VP}$believe [$_{V'}$ every year [$_{TP}$ my student to work hard]]]

The element *v* has uninterpretable features of two types: its ϕ-set and its selectional feature EPP. Like other selectional features, EPP seeks an XP to merge with the category it heads. The ϕ-set as a probe that seeks a goal could match features that establish agreement. There are three kinds of uninterpretable features in this structure.

(15) (i) the agreement feature of *v* (the set of ϕ-features)
(ii) the EPP feature of *v* that requires 'second Merge'
(iii) the structural Case feature of *my student*.

16) We may assume that the adverb has an interpretable feature. This assumption is plausible. But there is no research that makes this assumption sure.

(15i) means that the ϕ-set identifies *v* as a target of dislocation. The EPP-feature (15ii) requires that something could be merged in this position. And (15iii) indicates that the Case feature identifies *my student* as a candidate for such merger. Agree erases all of the uninterpretable features, forming modified lexical items MLIs with a reduced set of features.

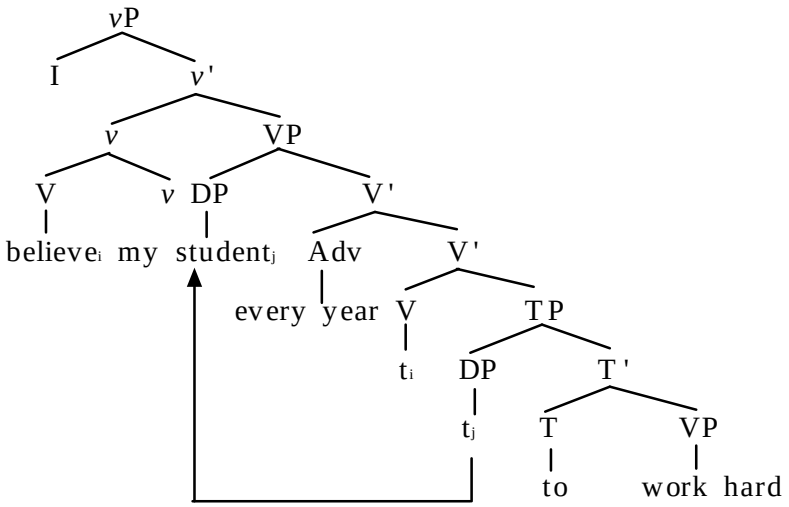
In other words, for the ϕ-set of *v* in (14), there is only one choice of matching features since there is no uninterpretable feature in adverbials: the ϕ-set of *my student*. The goal would take structural Case to be a reflex of an uninterpretable ϕ-set, and it erases under matching with the probe. The erasure of uninterpretable features of probe and goal is the operation of Agree.

But EPP of *v* must also be satisfied by pied-piping of a phrase determined by the goal of *v*'s probe, becoming SPEC-*v* since the combination of selection and Merge of a phrase of the goal, and feature deletion under Agree is the composite operation Move. This causes to dislocate *my student*, eliminating all uninterpretable features. Agree deletes the ϕ-set of *v* and the structural Case of *my student* and Merge satisfies the EPP feature of *v*. Thus, the adverbial does not play any role in this configuration. But, this analysis causes the problem of the word order as in (16).

(16) I [my student$_i$ *v* believe$_j$ [$_{VP}$ t$_j$ [$_{V'}$ every year [$_{TP}$ t$_i$ to work hard]]]

As we discussed before, Lee proposes that overt raising of object takes place in the configuration of a Larsonian VP shell structure. V has a strong D-feature and it requires overt raising of object to the (outer) spec of VP (not to the (outer) spec of υP as in (16)). If the object nominal raises to the Spec of V and V raises to *v*, no adverb can intervene between V and the object nominal. The object nominal generated in the inner Spec of VP raises to the outer Spec of VP to enter into a checking relation with the verb. This overt raising of object is driven to the strong D-feature of the verb. After the verb raises and adjoins to *v*, the correct word order appears as in (17).

(17)



But there is a counter example which makes the explanation impossible. As observed by Kayne (1985), exceptionally Case-marked expletives cannot higher-clause adverbials. We will see that the ungrammaticalty of (18) can not be explained.

(18) *I've believed there for a long time now to be no solution to this problem (Kayne 1985)

Chomsky assumes that if T always has at least a minimal feature complement, which is perhaps only [person] for T_{def}, Move of α to SPEC-T_{def} will delete the φ-set of T but not the structural Case feature of α, so that α can undergo further movement and agreement. Thus, the expletive *there* can merge to Spec-T and raises to Spec-*v* since the Spec-*v*P position is non-thematic. It can not block this illegal movement. This sentence wrongly rules in the ungrammatical sentence above.

Following Lee, when the object nominal raises to the outer Spec of VP to enter into a checking relation with the verb, overt raising of object is driven to the strong D-feature of the verb. And the expletive *there* can not raise to the Spec of VP in order to check the strong D-feature of the verb since the Spec of V is the theta-position. If the theta-related element is confined in the VP configuration, the expletive *there* can not be raised since it has no semantic content.

Chapter V. Conclusion

The minimalist program aims at establishing a linguistic theory by postulating only minimal assumptions that are needed to explain the language faculty of human mind/brain. Moreover, the design of computational system deriving syntactic objects has to be less stipulative and more optimal in order to meet the minimalist assumptions. Thus, the principles or conditions of linguistic theory causing computational complexity and undesirable result should be discarded within the minimalist program.

I have argued Chomsky's covert raising analysis. However, there arises a question. In Chomsky's (1995) framework, since the ECM subject has a Spec position of the infinitive, it can not explain the contrast of the following examples.

ex) I believe my student every year to work hard
* I believe every year my student to work hard

Chomsky (1995) proposes that the adverbial may have matrix scope in the ECM construction. If so, it is not within the infinitival clauses. According to these examples above, if the adverbial intervenes between *v* and the infinitival subject it makes the feature-checking impossible. To solve the problem, Chomsky (1995) assumes in his footnote that the adverb will be relevant only if it has the feature that [Agr, V] complex

can attract, which is plausible though not obvious. Moreover, under the Agree analysis in Chomsky (1998), the probe of the light verb *v* agrees with the goal to delete the uninterpretable phi-feature. In order for Agree to be possible, the goal must have the uninterpretable feature for the purpose of being active. If so, an adverbial must have the uninterpretable feature as a closer element in order to be active in Agree. However, his consideration causes conceptual and empirical problems in the minimalist assumption. Rather, we may raise the embedded subject to the [Spec, V] in ECM constructions.

In addition, I suggest that ECM constructions in English are different from the simple transitive constructions with respect to the possibility of overt object shift and V-movement. I also propose that in ECM constructions the accusative NP undergoes overt object shift and the higher verb moves overtly to ensure the PF convergence. In simple transitive constructions, on the other hand, there is no need for the accusative NP and the verb to undergo overt movement. As a result, they remain in their base-generated positions in overt syntax.

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